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- **Articles**

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The Entirely Merciful, The Especially Merciful

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[Version 1.0]

Letters in Arabic	**Letters in Roman**	**Arabic Example**	**Romanized as**
ء(همزة)	’	عُلَمَاء	*ʿulamā’*
[ا] preceded by letter with fatha َ	ā	إجَارَة	*ijārah*
[ا]مقصورة	á	تَقْوَىٰ	*taqwá*
[آ] Context specific: (i) In the beginning (ii) In the middle of a word.	(i) ã (ii) ’ā	(i) آيَات (ii) قُرْآن	(i) *ãyāt* (ii) Qur’ān
ب	b	بَاطِل	*bāṭil*
ت	t	تَكَافُل	*takāful*
ث	th	ثَمَن	*thaman*
ج	j	جِزْيَة	*jizyah*
ح	ḥ	حَدِيْث	*ḥadīth*
خ	kh	خَرَاج	*kharāj*
د	d	دَيْن	*dayn*
ذ	dh	ذَهَب	*dhahab*
ر	r	رِبَا	*ribā*
ز	z	زَوْج	*zawj*
س	s	سَلَم	*salam*
ش	sh	شَرِيْعَة	Sharīʿah
ص	ṣ	صَدَقَة	*ṣadaqah*
ض	ḍ	ضَمَان	*ḍamān*
ط	ṭ	طَلَاق	*ṭalāq*
ظ	ẓ	ظُلْم	*ẓulm*
ع	ʿ	عِيْنَة	*ʿīnah*
غ	gh	غَرَر	*gharar*
ف	f	فِقْه	*fiqh*
ق	q	قَرْض	*qarḍ*
ك	k	كَفَالَة	*kafālah*
ل	l	لَازِم	*lāzim*
م	m	مُضَارَبَة	*muḍārabah*
ن	n	نِفَاق	*nifāq*
و	w	وَقْف	*waqf*

Letters in Arabic	**Letters in Roman**	**Arabic Example**	**Romanized as**
و preceded by ُ	ū	صُكُوْك	*ṣukūk*
ه	h	هِبَة	*hibah*
ة	(i) 'h' if at the end of a word. (ii) 't' if in the middle.	(i) زَكَاة (ii) زَكَاةُ الْفِطْر	(i) *zakāh* (ii) *zakāt al-fiṭr*
ي	(i) y (ii) ī when preceded by ِ	(i) يُسْر (ii) يَتِيم	(i) *yusr* (ii) *yatīm*
فتحة َ	a	فَرْض	*farḍ*
ضمة ُ	u	عُرْف	*ʿurf*
كسرة ِ	i	مُسْلِم	Muslim
شدة ّ	(i)When over one-letter word; the letter is to be used twice. (ii) When over two-lettered word, the two letters to be underlined.	(i) تَوَرُّق (ii) غِشّ	(i) *tawarruq* (ii) *ghi<u>sh</u>*

Notes: (i) For [َ] followed by [وْ]; roman letters [aw] are to be used, e.g., "أَوْقَاف" is to be written "*awqāf*". For [َ] followed by [ى]; roman letters [ay] are to be used, e.g., "أَيْنَ" is to be written "*ayna*". (ii) Hamza (ء) in the beginning of a word is not to be Romanized. (iii) Arabic "ال" in composite words is to be always Romanized as "al-" irrespective of the sound of the composite words, e.g., "بَيْتُ المَال " is to be written "*bayt al-māl*" not "*bayt ul-māl*" and "الدَّيْن" is to be written as "al-dayn", not "ad-dayn".

Articles

Institutional Mechanism of Engineering *Istisna* and its Prospects for Saudi Arabia

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ABSTRACT. The article raises the problem of neo-industrial diversification of Saudi Arabia using the institutional mechanism of engineering *istisna*. The article shows that Saudi Arabia has all the objective and subjective conditions for the successful creation of a neo-industrial model of the information society in the process of the fourth industrial revolution. A balanced institutional approach is used to analyze this problem, which assumes the unity and interrelation of institutional and technological changes in the process of neo-industrial diversification in Saudi Arabia. The authors conclude that the institute of engineering *istisna* will allow Saudi Arabia to organize the creation of "smart", automated neo-industrial enterprises by orders of private investors. Thanks to this institutional mechanism, Saudi Arabia in the historical perspective can become the world leader in the controlled process of the fourth industrial revolution, just as England became the leader of the spontaneous process of the first industrial revolution more than two hundred years ago.

Keywords: engineering *istisna*, Islamic economy, Saudi Arabia, fourth industrial revolution, neo-industrial diversification, information society, national technostructure, automated production, customization.

JEL CLASSIFICATION: E60, F50

KAUJIE CLASSIFICATION: G61, K10

1. Introduction

According to *Shariah*, for the sale of goods it is necessary that the goods intended for sale be in the physical or real possession of the seller. This condition has three components. First, the product must actually exist: what does not exist at the time of sale cannot be sold. Secondly, the seller must be the owner of this product. If a product actually exists, but the seller does not own it, he cannot sell it to anyone. Third, mere ownership is not enough. The goods must be in the physical or actual possession of the seller (Siddiqi, 2005).

However, there are exceptions to this general principle in *Shariah*. One of them is *istisna*, which means ordering a manufacturer to produce a specific product for a customer. If a manufacturer undertakes to manufacture goods to order from his own or purchased materials, then an *istisna* transaction arises. To enter into an *istisna* contract, the parties must determine the price and necessary specifications of the goods being produced.

The literature rightfully focuses on the institutional form of *istisna* (Adam, Napiah, & Ibrahim, 2016; Anisza, & Mohamad, 2019; Hafiz, & Buang, 2014). However, it is necessary to fully take into account the dual nature of economic institutions in general and the institution of *istisna* in particular. Their duality is associated with the unity of the institutional form and technological content of economic institutions.

First of all, attention is drawn to the amazing correspondence of the institution of *istisna* to the trends of the fourth industrial revolution, which gives rise to a new technological way of connecting production and consumption, based on individual orders (Li, Sun, Tong, Mustafee, & Koh, 2024). According to many researchers, modern consumers no longer need mass products, they want products that meet their specific, personal requirements (Deng, Sierla, Sun, & Vyatkin, 2023; Wang, Yuan, Luo, Liu, & Yannopoulou, 2023). If production is close to the point of sale, then making the necessary changes becomes much easier. In the fourth industrial revolution, work has been automated to such an extent that labor costs can be largely ignored and the benefits of mass production become less important. Therefore, an individualized way of connecting production with consumption, which involves customization and customerization, inevitably gives rise to a tendency for production to be geographically closer to the consumer. If global value chains are focused primarily on the development, production and promotion of standard consumer goods, then such technological customization and customerization, on the contrary, open up new opportunities for the localization of industrial production in rich countries, whose population is materially and mentally most ready to consume goods based on individual orders. Container shipping is essentially a continuation of mass-flow and large-scale production in the process of circulation. Therefore, products created according to individual orders are more difficult to pack into containers intended for the transportation of mass standard goods. This contributes to the localization of the "digital" production of the fourth industrial revolution and bringing them closer to consumers.

The fourth industrial revolution connects the two worlds of material production and virtual networks through the use of cyber-physical production systems (CPPS). Cyber-physical systems mean the integration of computation into physical processes. Embedded computers and networks monitor and control physical processes, and this is usually accompanied by feedback loops. Due to this close mutual connection, including feedback, physical processes and computation actually act as a unity and together form cyber-physical systems. Such systems synthesize the virtual and physical worlds in a single networked world, in which "smart" things directly and freely communicate and interact with each other. This can lead to factories that operate like a single complex machine. In this case, individual automated devices actually become parts of a single fully automated production process, self-regulating and self-adjusting with little or no human intervention. Cyber-physical production systems, including sensors, actuators and machines, are connected in real time into a single network with the same fully automated business process that controls the flow of raw materials, materials, logistics, marketing, distribution and consumption.

In addition, connecting such iFactories (intelligent factories) to computer design programs will allow the production process to change as new products and technologies appear. This means that almost complete automation of the process of functioning of industrial production can be combined with partial automation of the process of its technological development in the conditions of the fourth industrial revolution. In other words, the purely human innovative function of entrepreneurship in the context of the fourth industrial revolution is, in principle, also amenable to some degree of partial automation. The literature notes the change in the paradigm of industrial production that is taking place in the process of "digitalization" compared to the traditional Fordist model of mass production of strictly standardized consumer goods, which at one time opened the way for the Western "high-consumption society" and radically changed people's lifestyle. This radically changes not only the logic of the production process, but also the technological way of interconnecting production and consumption. For example, as regards after-sales service, it is no longer limited to the fact that service departments simply support the process of using a technically complex industrial product. The product itself now acquires the ability to communicate not only with service centers, but also directly with the machines that participated in its creation, and to give them decentralized commands along the entire chain based on intermachine interaction. Thus, at present, the global industry is on the threshold of the fourth technological revolution. In the long term, in terms of its scale, depth and complexity, this technological transformation may turn out to be completely unlike anything humanity has ever experienced before, and it is still unknown how it will unfold in the future (Schwab, 2017).

One of the most important economic features of the fourth industrial revolution is that it objectively requires active support from the state. This is explained, first of all, by the high capital intensity of automated production. objectively requiring large investments in fixed capital. Perhaps this is why the world leader in robotization of production is not the United States, but South Korea. Largely due to active support from the state, South Korea has achieved the highest level of industrial robotization in the world today (Kim, 2024). At the same time, the United States has a relatively low level of production robotization due to the lack of an active state industrial policy. The absence of such a sufficiently active industrial policy in many Western countries is holding back the deployment of the fourth industrial revolution in them. This largely explains the paradoxical historical fact that the fourth industrial revolution is usually not accompanied by an acceleration of growth in production and productivity in Western countries. On the contrary, the fourth industrial revolution paradoxically corresponds to the so-called "new normal", which means a tendency towards relatively low growth rates in the Western economy and the world economy as a whole.

Inspired by the innovative achievements of the fourth industrial revolution, the literature usually focuses on its technological side, but much less attention is paid to the institutional problems and analysis of these new economic forms and institutional mechanisms necessary for the further full-scale deployment of the fourth industrial revolution. This article attempts to overcome this one-sidedness and focus on finding adequate institutional forms for using the achievements of the fourth industrial revolution in the process of further diversification of production in Saudi Arabia.

This article examines the potential for interaction between the technological achievements of the fourth industrial revolution and the traditional Islamic economic institution of *istisna* in the process of further diversification of the Saudi Arabian economy. At the same time, the ability of *istisna* to save transaction costs is taken into account, thereby opening up the possibility of a new type of investment transactions that meet the needs of further diversification of the Saudi Arabian economy based on the achievements of the fourth industrial revolution.

As a methodological basis for the analysis, a version of the institutional approach is used that seeks to overcome the one-sided nature of, on the one hand, classical institutionalism, and, on the other hand, neoinstitutional direction. It is taken into account that, if classical American institutionalism is based on the methodology of technological determinism (Galbraith, (1967) 2007; Hodgson, 1988; Rutherford, 2001; Schmidt, 1978), then neoinstitutionalism, on the contrary, proceeds from a kind of institutional determinism (Furubotn, & Richter, 2005; Coase, 1998; North, 1992; North, 1995; Keefer, & Knack, 2005; Eggertsson, 2005). In methodological terms, the article seeks to overcome the extremes of these two opposing institutional approaches based on an analysis of the relationship between institutional and technological changes in the process of neoindustrial diversification of the economy in Saudi Arabia.

2. Historical Perspectives of Neo-Industrial Diversification in Saudi Arabia

The fourth industrial revolution requires a new look at the information society. In the literature, an information society is generally considered to be a society in which the majority of workers are engaged in the production, storage, processing and practical use of information. At the same time, it has become generally accepted in the literature to actually identify the information society with the post-industrial one. As Daniel Bell has stated, “a revolution in the organization and processing of information and knowledge, in which the computer plays a central role, is developing in the context of what I have called post-industrial society” (Bell, 1989, p.57). William Martin and many other authors also understand information as a “developed post-industrial society” (Martin, 1995, p.117)

But with the beginning of the fourth industrial revolution, the historical situation began to change radically, calling into question the legitimacy of the categorical identification of information and post-industrial society. As the fourth industrial revolution unfolds, the historical movement towards a new model of the information society, which is based on a fundamentally new “digital” industrial basis, is becoming increasingly obvious. Such an information society of the neo-industrial type, or, what is the same, the neo-industrial model of the information society, is replacing its “old” post-industrial model. This post-industrial model was dominant before the fourth industrial revolution and continues to be dominant today, since today the fundamental neo-industrial transformation of production is only just beginning to unfold. (Zhu, Qiao, & Cao, 2017; Xu, & Chen, 2017; Rauch, Dallasega, & Matt, 2018; Shim, Park, & Choi, 2018).

Conceptually, these fundamental historical shifts require a new categorical path and a combination of the concept of the information society with the consideration of the fourth industrial revolution as a neo-industrial transformation of production. At the same time, it is important to fully take into account that, in the historical perspective, such a neo-industrial transformation creates an adequate production base for a new, higher historical stage of the information society. Such a categorical synthesis is a reflection of a real transformation process leading to a society that is both informational and neo-industrial, namely informational in terms of employment and neo-industrial in its production basis. This neo-industrial model of the information society means a more mature historical stage of development of the information society, based on an adequate production fundament in the form of comprehensively automated production. At an earlier, post-industrial stage of its development, the information society did not yet have and, it must be said, does not have such a neo-industrial production base. It was satisfied mainly with the production base that it inherited from the industrial stage of development and therefore was not yet adequate to the internal nature of the information society.

If the earlier, post-industrial stage of development of the information society is characterized by a tendency towards globalization of the economy, then the process of neo-industrial transformation, on the contrary, is more consistent with the tendency towards localization or, as they also say, fragmentation of production. This trend means that vertical value chains operating under the auspices of transnational corporations are beginning to gradually lose their global character and move inside nation states and thereby localize.

At the same time, another, no less important difference is revealed, related to the characteristics of the neo-industrial transformation of production. If the post-industrial transformation of the Western economy and the transition to an information society occurred spontaneously, then the transition to a neo-industrial model objectively requires conscious management by the state (Agarwal, & Brem, 2022; Chui, Manyika, & Miremadi, 2021). The post-industrial model formed itself, spontaneously, without much effort on the part of the state, and the neo-industrial model of the information society, on the contrary, must be consciously created. Modern Western experience shows that spontaneously this transformation process occurs too slowly. This is clearly manifested in the so-called "new normal," which is characterized by low rates of economic growth and, above all, industrial growth in Western countries. In fact, this so-called "new normal" is by no means normal for the modern economy. In fact, this so-called "new normal" is by no means normal for the modern economy. It indicates, on the one hand, the inadequacy of the spontaneous method of implementing the "digital" transformation of production and, on the other hand, the need to transition to a new model – a model of controlled neo-industrial transformation(Valencia, Lamouri, Pellerin, & Dubois; Grieco, 2017; Erol, & Sihn, 2017).

In contrast to spontaneous development, controlled neo-industrial transformation objectively requires a new type of leadership that requires strong political will. And again, just like a hundred years ago, strong political leaders can come to the forefront of history. Therefore, it cannot be ruled out that in the process of neo-industrial transformation, historical initiative may move from Western countries to the oil-producing countries of the Middle East and, above all, to Saudi Arabia. And the point is not only that the Saudi Arabia has enough money to acquire "smart" neo-industrial enterprises in the West that are capable of operating in automatic mode. Much more important is that Saudi Arabia has a powerful subjective development factor – the young and energetic Crown Prince *Mohamed bin Salman al Saud*. At the same time, the institutional form of an absolute monarchy itself is most suitable for the economic implementation of strong political will in the process of controlled neo-industrial diversification of production. Thus, in Saudi Arabia we see such an absolute coincidence of subjective and objective conditions for successful neo-industrial transformation, unique for the modern world, which makes us recall Hegel's concept of identical subject-object, meaning complete unity or identity of subjective and objective factors of the historical process.

If the United Arab Emirates and, above all, Dubai, are very successfully creating an information society of a post-industrial type, then Saudi Arabia has all the objective and subjective conditions to create a neo-industrial model of an information society with no less success. This model signifies a higher stage of historical development of the information society than the post-industrial model of the American type. Initially, it is based on a neo-industrial foundation in the form of complex automated production, whereas at an earlier, post-industrial stage of development, the information society did not yet have such an adequate foundation. Since modern Saudi Arabia has all the necessary and sufficient conditions for a fundamental neo-industrial transformation, this new historical stage can be called the Saudi development model, which means a higher level of historical development of the information society than the post-industrial model of the American type.

It is not surprising, then, that many experts, including JPMorgan Chief Executive Officer, Vishwas Raghavan, are now predicting an economic boom for the Middle East. At the same time, Bloomberg indicates that in the near future, the most advantageous positions in the Middle East will be enjoyed by Saudi Arabia, the United Arab Emirates (UAE) and Qatar. These countries will attract the attention of top managers and investment funds from around the world. According to Raghavan, this scenario will remain relevant in the region for a long time. He said: "This is a golden era for companies in the Middle East and, in general, for the region. I think this is a long-term trend." He attributes the growing financial attractiveness of the region to the desire of local authorities to diversify economic models, reducing dependence on income generated by the oil and gas sector, and move to more technological industries. He notes that global geopolitical tensions are also helping to increase the flow of foreign investment and talent to the Middle East (Bloomberg News, 2023).

Saudi Arabia may well move to neo-industrial transformation, bypassing the stage of classical industrial society. As is known, the economic development of oil-producing countries along the classical industrial path can be hampered by the so-called “Dutch disease”, which increases the cost of their manufacturing products and makes them less competitive in the foreign and domestic markets. The basis of the “Dutch disease” is the high level of wages converted into dollars. Complexly mechanized industrial production requires a massive labor force. This may hinder its large-scale development in oil-producing countries due to the relatively high level of wages denominated in dollars due to the strengthening of the national currency. But, if production is as comprehensively automated as in “digital” enterprises of the fourth industrial revolution, then this inhibitive factor is reduced to a minimum and practically disappears. Thus, in the new historical era associated with the fourth industrial revolution, some oil-producing countries and, above all, Saudi Arabia, may well overcome the inhibitive effect of the “Dutch disease” on industrial development. This development is no longer just industrial, but neo-industrial development, which allows minimizing the impact of high wages associated with the relatively high exchange rate of the national currency of oil-producing countries.

In this regard, China has been known to take the exact opposite path, artificially depreciating the yuan to stimulate labour-intensive industrial exports (Higgins, 2020; Wang, & Zhang, 2022; Zhu, & Ge, 2021). However, the fourth industrial revolution opens up a completely different path of historical development for Saudi Arabia and other oil-producing countries in the Middle East. It is no longer associated with classical mechanized industrial production, but with automated neo-industrial enterprises, which mean a higher level of technological development of production. That is why neo-industrial diversification will make it possible to create a new model of the information society in Saudi Arabia, which may be called the Saudi model. Such a new information society of the Saudi type will differ from the

American model of the "old" post-industrial type, first of all, in its reliance on a neo-industrial production base in the form of fully automated enterprises corresponding to the technological achievements of the fourth industrial revolution.

Mechanized production in classical industrial enterprises corresponds to the automatic action of the spontaneous forces of market competition, which determine the development of not only the industrial, but historically the post-industrial economy that follows it. On the contrary, automated production is no longer adequate to the automatic action of spontaneous market forces, but to a completely different economic model – a model of controlled technological development. Therefore, the leaders in integrated production automation may well become those oil-producing countries that atone time did not become leaders in the development of mechanized industrial production. The fact is that the process of comprehensive automation of production in the conditions of the fourth industrial revolution opens up the possibility of systematically organized creation and development of the market for "digital" enterprises. An example of such a conscious use of market forces by the state can be, in particular, the institutional mechanism of engineering *istisna*, which is discussed in this article.

Thus, the fourth industrial revolution opens up a new way to overcome the inhibitive influence of the "Dutch disease." Saudi Arabia and other oil-producing countries of the Middle East may well use it for the organized creation of capital-intensive neo-industrial production in comprehensively automated "digital" enterprises. It should be taken into account that the concept of the so-called "Dutch disease" gives a somewhat one-sided idea of the possible economic consequences of the relatively high exchange rate of the currencies of oil-producing countries. And the point is not only that these ideas, corresponding to the classical industrial stage of production development, may turn out to be largely outdated in the era of neo-industrial transformation. No less important is the fact that when considering the so-called "Dutch disease", the advantages of a strong currency of oil-producing countries, which, on the contrary, can contribute to technological modernization and, especially, neo-industrial diversification of their production, are usually not fully taken into account. For example, due to the relatively high exchange rate of the real against the dollar, euro and yen, the equipment of "digital" enterprises purchased from Western countries becomes cheaper, and this makes its acquisition by Saudi Arabia more profitable. As for the products of these "digital" enterprises, a strong Saudi Riyal is not able to significantly increase their prices, since the share of wages in costs is small, and production costs consist mainly of costs for raw materials, materials, information products and depreciation of equipment. Because these resources are largely imported, the strong real makes them as cheap as automated plant equipment. Thus, the so-called "Dutch disease", on the one hand, reduces the price competitiveness of non-oil products of classical industrial production, mainly due to increased labor costs. But, on the other hand, with regard to comprehensively automated production in practically unmanned "smart" enterprises, then in relation to it is not a "disease" at all, but, on the contrary, can contribute to neo-industrial diversification of production in oil-producing countries with high consumption levels.

The potential economic opportunities of Saudi Arabia, which can be realized in the very near future, are evidenced by the first brilliant results of the practical implementation of Vision 2030 in Saudi Arabia. This program, quite Keynesian in spirit, developed in 2016, has clearly demonstrated its ability to serve as a powerful source of additional investment and consumer demand (IMF, 2023). Largely thanks to this program, Saudi Arabia became the G20's fastest-growing economy in 2022.

Overall growth reached 8.7 percent, including 4.8 percent growth in non-oil GDP, driven by robust private consumption and non-oil private investment, including giant projects. Saudi Arabia's unemployment rate is currently at a historic low. With the overall unemployment rate falling to 4.8 percent by the end of 2022, youth unemployment has halved in two years to 16 percent in 2022, and female labor force participation has reached 36 percent, exceeding the Vision's target of 30 percent 2030." Moreover, with such rapid economic growth in the non-oil sector, inflation remains low. In 2022, the average consumer price index rose 2.5 percent year-over-year. Despite rising to 3.4 percent year-on-year in early 2023, headline inflation returned to 2.7 percent year-on-year in April 2023. Non-oil sector growth is expected to remain strong going forward as strong consumer spending and accelerated investment projects drive aggregate demand (IMF, 2023).

The brilliant economic results of the ongoing practical implementation of Vision 2030 show the high macroeconomic efficiency of investments in ambitious large-scale projects in Saudi Arabia. This undoubted economic success clearly demonstrates Saudi Arabia's potential readiness to implement a large-scale historical project of advanced neo-industrial diversification. Such a controlled neo-industrial transformation, which means the creation of a fundamentally new historical model of the information society, will allow Saudi Arabia to move from catching-up development to a trajectory of accelerated economic development. An important role in this process can be played by the systematically organized creation and development of the market for “digital” enterprises based on the institutional mechanism of engineering *istisna*.

3. Institutional Mechanism of Engineering *Istisna*

The problem of the optimal relationship between active state regulation and spontaneous self-regulation of the economy runs through the entire history of Western economic thought. The entire development of Western economic thought appears from this point of view as a struggle between economic liberalism and supporters of active government regulation. However, despite their ongoing opposition, both theories have something essential in common. None of these directions, both liberal and anti-liberal, have ever linked the problem of regulation and deregulation with the distinction in a single economic system of two different mechanisms – the mechanism of development and the mechanism of economic functioning. Economic theory has never tried to tie into one knot such two binary oppositions as regulation and deregulation, on the one hand, and the functioning and development of the economy, on the other. On the contrary, Western thought tends to view the economic system simply as an obvious, immediately given, self-evident, unproblematic unity of functioning and development. Such tacit ignorance of the hidden, dormant potential in the depths of the economic system for the separation of the mechanism of functioning and the mechanism of development has become a firmly rooted intellectual tradition for economic theory. But maybe economic theory did not separate these mechanisms simply because this cannot be done at all? One of the purposes of this article is to show that this is not the case.

This is not a purely speculative question. It captures the very essence of the economic history of the past and present centuries. As is known, the Soviet system made it possible to systematically accumulate scientific and production potential, but could not ensure its effective use due to the lack of a market mechanism for the functioning of the economy. Due to the non-market and therefore ineffective functioning mechanism, the possibilities for systematic economic development here could not be fully used. The Soviet economy could grow, but was not able to function effectively, and this was manifested in a constant surplus of some goods and shortages of others.

Of course, a market system can ensure a more efficient functioning of the economy. But with development, not everything is so smooth here. John Keynes emphasized the capricious, unstable nature of private investment. He viewed them as the most important source of macroeconomic instability. The instability of private investment, their economically dangerous dependence on changes in the mood of entrepreneurs and, consequently, on the entire complex range of their psychological experiences, as is known, caused the greatest anxiety in Keynes (Keynes, (1936) 2018, p. 125-127). This instability of private investment is a significant drawback of the spontaneous method of development. Therefore, the Saudi economic model may well discard the weaknesses of these opposing systems and take on their strengths based on combining predominantly competitive functioning with predominantly planned economic development.

It must be taken into account that neither purely private nor purely public investments, taken separately from each other, nor even their simple mechanical combination are the optimal option for the economic system. The problem, therefore, is to create an institutional mechanism that ensures their organic connection, allowing them to be firmly linked into a single, continuously operating investment system that would be capable of ensuring consistent and vigorous diversification of the economy.

The scheme of such an institutional mechanism itself is extremely simple. Its top level is the state-organized creation of "smart" comprehensively automated enterprises that correspond to the technological achievements of the fourth industrial revolution. But the thing is that these "smart" enterprises are not just created. They are created in accordance with the *istisna* contract as goods for private orders for subsequent functioning on a market basis in competition with other private enterprises. Such an organized creation of "smart" enterprises for private orders on the basis of the *istisna* contract constitutes, as it were, the upper level of the new investment system, ensuring the consciously controlled development of neo-industrial production, while, on the other hand, the lower level of this system ensures the competitive market functioning of new enterprises.

The absence of a long gap in time between the creation and sale of an enterprise to a private customer is very important not only technologically, but also economically. This creates an economic opportunity to directly compare the price of an enterprise with the costs of its creation, which makes it possible to sharply limit the possibility of abuse. In such an investment system, cost calculation becomes clear market criteria for the efficiency of spending money on creating an enterprise.

Such an institutional mechanism can become a powerful tool for stimulating private investment in the development of neo-industrial production, not only internal, but also external, and thereby compensate for the insufficient activity of private business in this direction. By offering private business to order the creation of new enterprises under the *istisna* contract, the state will have the opportunity to involve business in such industrial sectors, without the development of which full-scale diversification and structural restructuring of the economy based on the achievements of the fourth industrial revolution is impossible today.

It should also be emphasized that such an investment mechanism not only does not lead to monopoly, but, on the contrary, can become a powerful factor in enhancing competition and increasing the competitiveness of national producers. New enterprises organized in this way will enter into competition with already operating enterprises and, in including with foreign enterprises selling their products on this national market.

The National Engineering Company may be at the center of such an institutional mechanism. Although it should not be purely state-owned, the state can at the same time be one of its shareholders. The purchase of shares by a private investor is combined here with an *istisna* agreement, in which all the parameters, technical characteristics and sequence of creating a new enterprise are clearly defined. If the enterprise is created in full accordance with this agreement, then the shareholder (individual or institutional) pays its cost by returning the company's shares in exchange for ownership of the enterprise. If an enterprise is created in violation of the *istisna* contract, then the shareholder may refuse to pay for it with his shares and lawfully demand the elimination of violations of the *istisna* contract either by appropriately remaking the created enterprise or by creating a new enterprise in full compliance with the *istisna* contract. Thus, with this transactional practice, a private investor first buys shares of the engineering company, and then pays the cost of the order with these shares, when the enterprise has already been created in full accordance with the *istisna* contract.

In this case, possible losses of the National Engineering Company can be covered by the purchase of its shares by the state. Engineering *istisna* implies the possibility of refusing to pay for the enterprise with shares of the engineering company if the enterprise was created in violation of the *istisna* agreement. In the case of such a legitimate refusal, the state can cover the loss of the engineering company by buying out its shares and using them to strengthen its control in order to improve the activities of the engineering company. Unlike private and corporate entities, the state does not use these shares to purchase enterprises but retains the shares for control and management. Thus, a decrease in the quality of engineering activities is automatically accompanied by the acquisition of company shares, and this allows the state to strengthen its control and use it to improve engineering. And, on the contrary, with sufficiently effective engineering activities, the company does not have to cover significant losses, and state control over the company’s activities remains at the same level. Thus, an automatic regulator of state control over the activities of the National Engineering Company is built into the institutional mechanism of engineering *istisna*, which allows automatically strengthening control when financial results deteriorate and leaving control at the same level with relatively normal financial results of engineering activities.

This “trial and error” method will allow us to empirically find the most promising areas of neo-industrial diversification of the Saudi economy, which are difficult to determine a priori. Each such investment is a kind of “reconnaissance in force”, designed to help find optimal directions for controlled diversification of production and separate them from those that in practice may turn out to be ineffective. Therefore, from the point of view of the economic strategy of the state, it may be quite acceptable to cover possible losses of the National Engineering Company. These possible losses are essentially a kind of strategic costs of managed neo-industrial diversification, carried out on the basis of the institutional mechanism of engineering*istisna*.

The fourth industrial revolution makes the individual form of communication between production and consumption characteristic of ordinary industrial goods. Engineering *istisna* is capable of extending this individual method of market communication between sellers and buyers to a fundamentally new type of product – to “smart” enterprises. At the same time, “smart” enterprises not only produce consumer goods by individual orders, but are also created as complex investment goods for sale by individual orders. Thus, customization and even customerization are possible in relation not only to consumer goods, but also to technologically complex investment goods of a special kind, which in the neo-industrial investment system are new, comprehensively automated enterprises themselves. For this purpose, the National Engineering Company can develop virtual electronic models of such "smart" enterprises and send them to the widest possible circle of various economic entities. At the same time, the possibility of customization is left, that is, modification of the virtual model of the enterprise in accordance with an individual order. After the formation of a customized model of the enterprise and the agreement on the price, an engineering *istisna* contract can be concluded. It specifies not only the price, but also all the technological parameters of the new enterprise.

Thus, the National Engineering Company can take on the role of a so-called system integrator, which usually mediates the connection between the consumer and the manufacturer of industrial equipment in the modern engineering market. Since modern production is characterized by the systematic use of machine tools and other industrial equipment, such system integrators are becoming key players in the industrial engineering market (Erol, & Sihn, 2017). They select all the necessary equipment, form the entire turnkey technological chain, and sometimes ensure its launch and subsequent maintenance, that is, full engineering and service (Buyurgan, & Saygin, 2008). In a neo-industrial investment system of the Saudi type, all these functions of a system integrator can be assumed by the National Engineering Company.

Engineering *istisna* can take on an active, offensive character if the National Engineering Company offers owners of monetary capital various projects of “smart” enterprises that it can create if it receives an appropriate individual order, taking into account the modifications that the buyer insists on. The engineering company does not have to wait for the client, but itself sends the draft *istisna* contract to potential buyers of new enterprises. If a buyer cannot be found, then the enterprise is not created, and the investment project is temporarily not implemented until buyers of the future enterprise appear. Of course, clients, in turn, can make their own changes and additions to the project and the *istisna* contract and propose them to the engineering company. The main thing is that as a result of these customization iterations, the *istisna* contract leaves as little room as possible for uncertainty and asymmetry of information.

Thus, such a traditional Islamic economic institution as *istisna* can become a key element of the institutional mechanism of neo-industrial diversification of the Saudi Arabian economy. It allows one to overcome the relatively narrow investment boundaries of private business and remove many of the economic barriers that hinder the diversification of industrial production in Saudi Arabia. At the same time, the upper level of the new investment system is designed to organize the consistent diversification of production, and the lower level is able to ensure the effective use of accumulated production potential in the process of market functioning of neo-industrial enterprises on a competitive basis. This combination of centrally managed neo-industrial diversification and the competitive functioning of neo-industrial enterprises opens up new horizons for Saudi Arabia, which has sufficient financial resources to practically implement the technological capabilities of the fourth industrial revolution.

On the other hand, the engineering version of *istisna* will stimulate not only private investment, but also household savings. It should be borne in mind that despite the generally high level of savings in Saudi Arabia, the bulk of it belongs to the state, while the household savings rate remains below the 10 percent global standard, recognized as the minimum level ensuring long-term financial independence (KPMG, 2020) link to sources). Therefore, one of Saudi Arabia's macroeconomic problems remains the gap between government savings and household savings. To stimulate the household savings and support the growth of the national economy, Saudi Arabia has adopted a corresponding financial sector development program (FSDP) SSDP. To diversify it, it is envisaged to encourage and provide new financial planning opportunities by expanding the savings products available in the market, strengthening the savings ecosystem and improving financial literacy (KPMG, 2020).

An equally effective way to solve the problem of household savings can be the massive involvement of these savings in the process of neo-industrial diversification through the institutional mechanism of engineering *istisna*. The National Engineering Company, located at the center of this institutional mechanism, is capable of not only stimulating household savings, but also organically linking them directly with private and public investments. Therefore, engineering *istisna* can become an institutional mechanism for such a direct connection of savings and investments, not mediated by the money capital market and interest rates, which completely excludes debt and interest from its purely “equity” scheme for financing real investments in the process of controlled neo-industrial diversification of production. This liberation of the investment system from interest and other “debt” elements is fully consistent with the principles of Islamic economics, which gives preference to the equity method of financing investments over the debt method.

The institutional mechanism of engineering *istisna* makes it possible to reduce the costs of investment transactions to such a level that allows filling the traditional institutional form of *istisna* with new technological content and thereby opens the way for neo-industrial diversification of production. Engineering *istisna* appears here as an adequate institutional form of a new, neo-industrial transactions type associated with the production of complex automated enterprises as particularly complex investment goods for sale under private and corporate orders. Therefore, the practical use of the engineering *istisna*in the process of neo-industrial diversification in Saudi Arabia can become one of the most important areas of coverage of the Islamic economy, along with banking directly in the area of high-tech neo-industrial production associated with the implementation of the fourth industrial revolution achievements.

Thus, thanks to the institutional mechanism of engineering *istisna*, Saudi Arabia can “cut the corner” and immediately move on to neo-industrial diversification by creating comprehensively automated enterprises, bypassing the classical industrial stage of development. Thus, Saudi Arabia can become a global leader of a centrally controlled neo-industrial transformation, just as England became the leader of the spontaneous process classical industrial transformation more than two hundred years ago.

4. Neo-Industrial Techno-Structure and Its Perspectives in Saudi Arabia

One of the most important conceptual instruments of ideological blocking of the controlled neo-industrial transformation in modern Western society is neoliberal economic theory. It includes, first of all, the neoclassical mainstream, as well as the adjacent neo-institutional direction. Neo-institutionalism is called upon to push classical American institutionalism into the background, assigning it the not very attractive label of "old" institutionalism. Despite significant methodological differences, neo-institutionalism in a purely ideological sense is essentially an institutional continuation and development of neoclassical economic liberalism. In addition, the neo-institutional direction includes the so-called “new economic history” of D. North, built on the principle of the “end of history” in the sense that it connects historical progress with the development of the specification and protection of property rights, which, of course, means first of all, private property (North, 1992). And, since in the modern Western economy the level of specification and protection of private property really reaches its highest point, Western society is actually considered in neo-institutional theory as the highest point of historical progress, and there is no point in talking about any higher level of development at all.

On the other hand, classical American institutionalism, including John Galbraith and his concept of techno-structure, remains outside the modern neoliberal mainstream of economic theory. This concept covers the widest possible range of professionals who are specialists in a wide variety of fields. It includes not only purely technical specialists, but also various kinds of experts, organizers, economists, managers, lawyers, marketing, advertising, design specialists, etc. (Galbraith, (1967) 2007, p.112-119). And although, as is known, at one time and especially in the era of the neoliberal "market renaissance" some of the conclusions of J. Galbraith were subject to fair criticism, the very fact of the formation in large corporations of such a techno-structure based on the division of functions between various specialists can hardly raise doubts.

The relevance of this concept in the current century is due to the fact that in the conditions of the fourth industrial revolution, the techno-structure can, in principle, go beyond corporations and move to the supra-corporate, that is, to the regional and national level. The institutional concept of such a supra-corporate techno-structure may be one of those alternatives that is much more consistent with Islamic economics than the mainstream "neoclassical synthesis", whose macroeconomic model is centered on the interest rate. Therefore, by combining the principles of Islamic economics with some critically revised elements of classical institutionalism, the possibility of creating the concept of a national techno-structure for its practical application in Saudi Arabia opens up.

Developing his concept of techno-structure, J. Galbraith clearly shows how many different professionals an industrial corporation needs to make a qualified decision on product release (Galbraith, (1967) 2007, p.155-159). Obviously, a qualified decision on creating a new enterprise, and even more so on creating a modern "smart" enterprise based on the use of technological achievements of the fourth industrial revolution, is even more complex. And even more qualified specialists are needed to make a well-founded choice on such a complex decision. Therefore, for technologically and economically sound solutions of this level of complexity, a corporate techno-structure may not be enough. Since the complexity of such decisions may exceed the professional capabilities of the corporate techno-structure, it may refrain from creating new technologically complex enterprises in order to avoid insufficiently informed decisions that could cause losses to the corporation. Therefore, to optimize complex decisions on the creation of "digital", comprehensively automated enterprises, a techno-structure of a higher, supra-corporate level is needed, professionally specializing in the creation of new enterprises as particularly complex goods for sale on individual orders. The center of such a supra-corporate, nationwide techno-structure in Saudi Arabia could be the National Engineering Company.

If in the USA the corporate techno-structure is subordinated to private business, then in Saudi Arabia the national techno-structure may well be subordinated to the state and implement its economic strategy in the same way as the corporate techno-structure implements the interests of big business. Through the institutional mechanism of engineering *istisna*, the Saudi state can consciously control the process of neo-industrial diversification, using the national techno-structure as an organizational tool to manage this complex transformation process, which involves the organized creation of neo-industrial businesses for custom sales.

Thus, the Saudi state is able to make the national techno-structure an effective instrument of its economic policy and use this powerful organizational tool to manage the process of neo-industrial diversification of the economy. Thanks to a strong political will, not restrained by formal American-style democracy, a controlled neo-industrial transformation in Saudi Arabia can, in principle, occur much faster than a spontaneous neo-industrial transformation in Western countries. This opens the way for a consciously controlled transition of Saudi Arabia directly to the neo-industrial model of the information society, bypassing the classical industrial stage of development. The objective conditions for such an advanced neo-industrial transformation of the Saudi economy are evident. There is also a necessary subjective condition. The presence of strong and decisive political will is evidenced by the Vision 2030 program and the successful start of its practical implementation, which has already allowed Saudi Arabia to achieve excellent economic results.

As for the Chinese experience of successful industrial development in the last four decades, this model is completely unsuitable for Saudi Arabia, since the socio-economic tasks of China and Saudi Arabia are objectively not only different, but also partly opposite. During its industrial transformation, China created labor-intensive industries capable of employing and lifting hundreds of millions of people out of poverty (Zhu, & Orlik, 2022; Sasaki, Sakata, Mukoyama, & Yoshino, 2021). On the contrary, for modern Saudi Arabia, the problem of prestigious employment is more pressing, and the creation of capital-intensive industries in Industry 4.0 can contribute to a more complete solution to it. The use of the institutional mechanism of engineering *istisna* for this purpose can also help solve this problem of prestigious employment specific to Saudi Arabia. Educated Saudi youth will have a fairly prestigious opportunity to participate in the neo-industrial techno-structure, which is designed to directly manage the economic development of the country along the path of diversification of production.

Young people in Saudi Arabia are not very keen to work in the private sector, partly because they do not want and find it humiliating to act as a labor commodity for private firms, which is bought and sold in the labor market like ordinary goods. But the opportunity to become part of a neo-industrial techno-structure that controls the creation of new enterprises as highly complex goods intended for sale to individual orders is a completely different matter. Such a neo-industrial economy may turn out to be much more attractive for it than classical industrial work. We are talking about the employment of not just labor, as in Keynes's model, but the prestigious employment of individual human capital as an element of the techno-structure, and this can stimulate more and more new investments in human capital. Such an exciting high-tech project can captivate that part of Saudi youth who are not employed in the public sector and at the same time do not seek to work in the private sector. Moreover, participation in the neo-industrial techno-structure will provide a high social status, incomparable with the position of an employee in classical industrial production, since creating and selling new high-tech enterprises is not at all like selling your labor to a private company. Therefore, while the prospect of commoditizing "labor" for wage labor in private firms does not appeal to Saudi youth, the prospect of creating and selling a very different kind of product – "smart" enterprises – may captivate them and capture their imagination.

At the same time, it is necessary to take into account the features of a new way of connecting production with consumption, based on individual orders. It promotes the development of technological customization and customerization and thereby geographically brings production closer to the consumer. Therefore, we can talk not only about a national, but also about a regional techno-structure, that is, about the creation of not only national, but also regional engineering companies. In addition, when talking about creating new prestigious jobs for educated Saudi youth, one must also fully take into account the "new" corporate techno-structure, that is, the techno-structure of the neo-industrial enterprises themselves, created by National and regional engineering companies for sale. Thus, when considering the prospects for increasing prestigious youth employment, it is necessary to fully take into account the entire unified system of neo-industrial techno-structure, which includes not only national and regional, but also the “new” corporate techno-structure closely related to them.

Currently, the discussion about the possible consequences of the fourth industrial revolution and its impact on employment continues in the world economic literature. At the same time, "optimistic" forecasts show that it will not have a catastrophic impact on the overall volume of employment. On the contrary, "pessimists" focus on the threat of mass unemployment. However, both authors practically agree that the fourth industrial revolution can change the structure of employment in the direction of the creative transformation of human activity. At the same time, there is no doubt that the industrial Internet of Things and automation of production are the technological basis for the transformation of low-prestige employment into prestigious employment associated with creative activity. The debatable issue is, first of all, whether this prestigious creative employment will be able to compensate for the displacement of people from the sphere of low-prestige and non-creative work. It is this quantitative problem that serves as the main dividing line between "optimists" and "pessimists" regarding the impact of the fourth industrial revolution on employment. As for the changes in the employment structure under the influence of automation, they are quite obvious. They are shown, for example, by forecasts The Future of Work in Europe and The Future of Work in the USA.

Table 1 presents some of the results of the Future of Work in Europe study conducted by the McKinsey Global Institute based on a detailed analysis of 1,095 local labor markets across Europe, including 285 megacities.

Table -1- Forecast of the influx of automation on the employment structure in the EU or the period until 2030

Specialties	Increase in the number of jobs	Decrease in the number of jobs	Share of employees without higher education, %
Scientific and technical workers	+4,0		≤ 29
Business occupations and lawyers	+3,9		30 – 59
Social workers	+2,9		60 – 89
Managers	+2,3		30 – 59
Education and training of labor force	+2,2		≤ 29
Culture and art workers	+1,8		30 – 59
Medical and health care workers	+1,7		≤ 29
Transport workers		- 0,6	≥ 90

Workers of the extractive industry and agriculture		- 0,7	≥ 90
Mechanics and repairers		- 0,9	60 – 89
Waiters		- 1,1	60 – 89
Construction workers		- 1,2	≥ 90
Communications workers		- 1,2	30 – 59
Retail workers		- 1,4	60 – 89
Industrial workers		- 4,5	≥ 90
Office workers		- 5,0	60 – 89

Source: McKinsey Global Institute (2020).

Studies have shown that job growth has benefited the highest-skilled workers (such as lawyers and health professionals) in all local labor markets. Projections show that activities requiring mainly physical and manual skills will decline by 18 percent by 2030 in Europe, while those requiring standard basic skills will decline by 28 percent. On the contrary, activities requiring high-tech skills will grow in all industries (The Future of Work in Europe).

Forecasts show that many of today's 235 million employed people in Europe will face at least some changes in their occupations in one way or another. Up to 21 million people may have to leave shrinking jobs. 94 million workers (about 40 percent of the 2018 workforce) may not need to change careers, but they will still need to acquire new skills because more than 20 percent of what they do today can be automated. In general, around the world, according to preliminary estimates, about half of all labor activities have technological potential for automation due to the introduction of already existing and currently demonstrated technologies (The Future of Work in Europe).

Table 2 allows you to get an idea of which professions in the USA have the highest automation potential in the future.

Table -2- Automation prospects of 10 different specialties in the USA

Specialties	The number of workers who are potentially replaced by 2030, thousand	Substitution share, %	Labor force share, %
Fast food workers	1,375	28	2,8
Retail workers	1,180	23	2,9
Office workers	1,159	34	2,0
Exchange workers	1,020	46	1,3
Accountants and auditors	921	49	1,1
Cashiers	917	24	2,3
Secretaries and administrators	824	30	1,6
Waiters	726	25	1,7
Chefs, restauranteurs	638	47	0,8
Service personnel	507	16	1,8

Source: McKinsey Global Institute (2019).

However, it should be noted that in the US, people with a high school education or less are four times more likely to be at risk of being cut by automation than people with a bachelor's degree or higher, and 14 times more vulnerable than people with a college degree (The Future of Work in America).

Thus, automation is the technological basis for the transformation of human activity in the direction of transition from boring, unskilled and low-prestige work to interesting and prestigious skilled work. In Saudi Arabia, this general trend of the fourth industrial revolution may be supplemented by the creation of a national, regional and local technostructure, which is a potential source of employment for Saudi youth. It should be taken into account that the most important specific feature of the labor market in Saudi Arabia is such a sharp bifurcation of its structure, in which foreign workers are mainly engaged in low-prestige work, while Saudi citizens, on the contrary, strive for prestigious employment. However, the lack of prestigious employment contributes to youth unemployment. Therefore, the fourth industrial revolution can help solve the problem of prestigious employment needed by young people. At the same time, the fourth industrial revolution can reduce the volume of low-prestige work performed mainly by migrants. However, it should be taken into account that neo-industrial diversification does not mean so much the technological modernization of existing enterprises as the creation of completely new "smart" industrial enterprises. The creation of such "smart" enterprises can increase prestigious employment in the techno-structure. But since we are talking specifically about new enterprises, this does not directly affect the employment of workers at previous enterprises. Only indirect competitive pressure of new enterprises on the market can indirectly contribute to the reduction of industrial employment. But this factor is not significant in this case, since neo-industrial diversification means, first of all, the creation of enterprises, especially in new industries. New enterprises do not directly compete with existing industrial enterprises and cannot have a significant impact on the employment of industrial workers. Therefore, neo-industrial transformation can cause changes in the labor market that are favorable for highly educated Saudi youth, and, on the other hand, may not have a significant impact on foreign workers. Thus, overall, the creation of smart enterprises in the process of neo-industrial diversification can have a positive impact on the labor market in Saudi Arabia.

5. Summary and Conclusions

Based on the fact that information asymmetry means actual inequality between the parties to a transaction and can become a source of unfair exchange (Sultan, 2023; Al-Masri, 2021), Islamic economics, in its pursuit of fairness, seeks to minimize uncertainty in order to weaken information asymmetry (Riduwan, R., & Danupranata G., 2020; Abdus, Gardner, & Cook, 2005). This largely explains the surprising at first glance correspondence between the institution of *istisna* and the individual way of connecting production and consumption, which is being formed in the process of the fourth industrial revolution. If previously the process of customization and customerization was predominantly institutional in nature, now it is becoming a technological process. Since, in the conditions of such technological customization and customerization, the buyer-customer knows no less about the product he needs than the seller, this actually means a technological solution to the problem of information asymmetry, primarily in relation to consumer goods. Thus, the information society of the neo-industrial type is capable of technologically overcoming the asymmetry of information, which *istisna* seeks to eliminate institutionally. Therefore, in the future, as it further unfolds, the fourth industrial revolution is capable of filling the Islamic economic institution of *istisna*, traditionally focused on overcoming information asymmetry, with adequate technological content.

However, now we see that, in principle, *istisna* may fully correspond not only to the neo-industrial method of producing consumer goods, but also to the neo-industrial method of creating special investment goods of a new type, namely, complexly automated enterprises. The institutional mechanism of engineering *istisna* allows us to extend the principle of individual orders to the creation of such "digital" enterprises. If consumer *istisna* institutionally corresponds to a new technological way of connecting production with consumers, then, on the other hand, engineering *istisna* means the creation of neo-industrial enterprises themselves for sale on individual orders. Thus, in Saudi Arabia, *istisna* can acquire a two-level character, connecting consumer and engineering *istisna* into a single neo-industrial production system, which is an adequate production basis for the new information society.

When considering the institution of *istisna* in this way, one must take into account the generally accepted understanding of uncertainty as a measure of information, which has become established in modern science. Uncertainty is considered as a situation in which there is a complete or partial lack of information about the probability of future events. In other words, uncertainty is a lack of information. Since information is the opposite of uncertainty, the tendency to overcome uncertainty is inherent in the very nature of the information society. But, on the other hand, the focus on overcoming uncertainty and eliminating information asymmetry is characteristic of Islamic economics. Thus, the desire to overcome uncertainty is common to the Islamic economy and the information society. However, they realize this desire in different ways: Islamic economics – through institutional means, information society – through technological means based on information technologies In the process of the fourth industrial revolution, information technologies begin to penetrate production and determine the way it communicates with consumers. That is why the Islamic economic institute *istisna* is not accidental, but quite naturally adequate to the process of creating a neo-industrial production basis for the information society.

Thus, the problem of uncertainty and its overcoming is one of the central ones not only for Islamic economics, but also, on the other hand, for the modern information society, which today is just beginning to form its neo-industrial production base in the process of the fourth industrial revolution. It is clear from this that the correspondence between the Islamic economic institution of *istisna* and the neo-industrial model of the information society is by no means accidental, given the focus of *istisna* on institutionally overcoming uncertainty and information asymmetry in economic relations between people. Therefore, the principles of Islamic economics, which fully takes into account the factor of uncertainty, are methodologically more relevant to the economic problems of the information society than the neoclassical mainstream of Western economic thought, which tends to replace measurable risk with genuine immeasurable uncertainty. And just as in the field of economic thought, Islamic economics is more adequate to the analysis of information problems from the standpoint of immeasurable uncertainty than the neoclassical mainstream of Western economics, so in the field of real economic policy, Saudi Arabia can intercept the historical initiative from the West in the process of controlled neo-industrial transformation.

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الآلية المؤسسية للاستصناع الهندسي وآفاقه في المملكة العربية السعودية

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المستخلص. تطرح المقالة مشكلة التنوع الصناعي الجديد في المملكة العربية السعودية باستخدام الآلية المؤسسية للاستصناع الهندسي. وتوضح المقالة أن المملكة العربية السعودية لديها جميع الشروط الموضوعية والذاتية لإنشاء نموذج صناعي جديد لمجتمع المعلومات بنجاح في عملية الثورة الصناعية الرابعة. ويُستخدَم نهج مؤسسي متوازن لتحليل هذه المشكلة، والذي يفترض وحدة وترابط التغيرات المؤسسية والتكنولوجية في عملية التنوع الصناعي الجديد في المملكة العربية السعودية . ويخلص المؤلفون إلى أن معهد الاستصناع الهندسي سيسمح للمملكة العربية السعودية بتنظيم إنشاء مؤسسات صناعية جديدة "ذكيّة" وآلية بأوامر من المستثمرين من القطاع الخاص .وبفضل هذه الآلية المؤسسية، يمكن للمملكة العربية السعودية في المنظور التاريخي أن تصبح رائدة العالم في العملية الخاضعة للرقابة للثورة الصناعية الرابعة، تمامًا كما أصبحت إنجلترا رائدة العملية العفوية للثورة الصناعية الأولى منذ أكثر من مِئتي عام.

الكلمات الدَّالة: الاستصناع الهندسي، الاقتصاد الإسلامي، المملكة العربية السعودية، الثورة الصناعية الرابعة التنوع الصناعي الجديد، مجتمع المعلومات، البنية التكنولوجية الوطنية، الإنتاج الآلي، التخصيص

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Do Board Characteristics and Innovation Impact Bank Performance? Evidence from Conventional and Islamic Banks in Indonesia

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ABSTRACT. This study aims to analyze the impact of board characteristics, innovation, and the role of the Sharia Supervisory Board (SSB) on bank performance in Indonesia, with a focus on comparing conventional and Islamic banks. Using panel data from 286 bank observations over the period 2010–2020, the study employs panel regression methods and the Generalized Method of Moments (GMM) to address potential endogeneity issues. The findings reveal that the size of the board of commissioners has a significant positive effect on the performance of Islamic banks, while gender diversity in the board of directors generally has a positive impact on overall bank performance. The educational background of board members shows complex and varied effects between conventional and Islamic banks. Innovation demonstrates a significant positive effect on the performance of Islamic banks in additional tests. Furthermore, the moderating role of the SSB in the relationship between innovation and the performance of Islamic banks is highlighted: the size of the SSB tends to weaken the influence of innovation, whereas gender diversity within the SSB strengthens it. These findings have important implications for bank management practices, the development of Islamic banking governance theory, and banking sector regulations. The study underscores the necessity of considering structural differences between conventional and Islamic banks when designing governance policies.

Keywords: Board Characteristics, Innovation, Conventional Banks, Islamic Banks, Bank Performance Indonesia

***JEL CLASSIFICATION*:** G2, G3

***KAUJIE CLASSIFICATION*:** L22, L24, L33

1. Introduction

Globalization, technological innovation, and financial market deregulation are among the key factors that have driven significant restructuring in the banking industry over the past two decades (Phan et al., 2020; Wang & Cao, 2022). According to data from the Indonesian Financial Services Authority (OJK), as of the end of 2021, the total assets of conventional banks in Indonesia amounted to approximately IDR 8,640 trillion, while the total assets of Islamic banks reached only IDR 575 trillion. However, it is important to note that the asset growth of Islamic banks has shown a positive trend in recent years. During the 2015–2020 period, the average annual asset growth of Islamic banks was 15.5%, significantly outpacing the 9.5% growth rate recorded by conventional banks.

Additionally, there are differences in asset composition between conventional and Islamic banks. Conventional banks tend to have asset compositions dominated by loans (around 55%), whereas Islamic banks are more heavily invested in investment instruments (approximately 52%). This difference is attributable to the principles of Islamic banking, which restrict the provision of interest-based loans. The governance differences between conventional and Islamic banks pose distinct challenges to the growth of each type of bank (Shibani & De Fuentes, 2017). Shahzad Bukhari et al. (2013) noted that governance is often linked to the board structure of a bank, with Islamic banks having the additional Sharia Supervisory Board (SSB), distinguishing them from conventional banks.

The characteristics of a bank's board significantly impact its performance (Abdul Gafoor et al., 2018; Bouteska, 2020; Daadaa, 2020; Quoc Trung, 2022). Finkelstein & Hambrick (1996) highlighted that the expertise, experience, and educational background of board members play a critical role in strategic decision-making that can enhance a bank's performance. Boards comprising members with relevant expertise and experience in finance, banking, risk management, and related industries can provide valuable insights into critical aspects of banking operations. Moreover, diversity in background, expertise, and perspective among board members fosters critical and creative discussions, helping to avoid groupthink (Bin Khidmat et al., 2020; Issa et al., 2021).

Board size refers to the number of members on a bank's board of directors. A sufficiently large board can ensure diverse interests are represented, enriching discussions and decision-making processes (Quoc Trung, 2022). Conversely, boards that are too small may face limitations in understanding and evaluating complex aspects of banking operations. Ghosh & Ansari (2018) found no significant impact of board size on performance, while Daadaa (2020) identified a negative relationship between board size and corporate performance. However, studies by Abdul Gafoor et al. (2018) in India and Bouteska (2020) in the Eurozone showed a significant positive relationship between board size and bank performance, as measured by Return on Assets (ROA).

The presence of women on a bank's board of directors has the potential to improve bank performance. Research indicates that gender diversity on boards can bring varied perspectives, enhance decision-making, and improve risk management. Boards that reflect gender diversity are better equipped to represent and understand the diverse needs and preferences of customers. Studies by Moreno-Gómez et al. (2018) and Tanaka (2019) demonstrated that gender inclusion positively influences corporate performance. However, Sila et al. (2016) found no significant relationship between gender diversity and firm performance.

The educational background of board members is another important factor. Boards comprising members with diverse educational backgrounds—such as in finance, economics, law, or management—can contribute to a more comprehensive analysis of economic conditions, a deeper understanding of business risks, and better strategic decision-making (Sidki et al., 2023). A combination of diverse educational perspectives enhances the board's ability to assess complex situations and make sound decisions (Papadimitri et al., 2020). Higher levels of education among board members are also associated with improved corporate performance (Cheng et al., 2010).

Boards that include members with varied expertise in finance, technology, marketing, and business can bring unique perspectives when addressing innovation challenges (Phan et al., 2020). Such diversity enables boards to offer broader insights and fresh ideas on navigating an ever-evolving landscape of innovation. The expertise and knowledge of individual board members can contribute to a more comprehensive understanding of market trends, technological advancements, and customer preferences. Martini et al. (2012) argued that diverse perspectives within a board foster a culture of innovation, facilitating effective decision-making in promoting product innovation and overall performance. Phan et al. (2020) found that innovation positively affects corporate performance, although Galia & Zenou (2012) observed a negative relationship between innovation and performance.

A fundamental difference between Islamic and conventional banks lies in their governance structures and operational principles. Islamic banks operate based on Sharia principles, while conventional banks utilize an interest-based system. This distinction is evident in the presence of the Sharia Supervisory Board (SSB) in Islamic banks, which is absent in conventional banks. The SSB is an independent body tasked with overseeing and ensuring that Islamic banks operate in compliance with Sharia principles (Grassa et al., 2023; Haddad & Souissi, 2022).

The SSB plays a crucial role in the development of products and services within Islamic banks. It is responsible for evaluating and approving every new product or service to ensure that all aspects of the bank's operations align with Sharia principles (Grassa & Matoussi, 2014). This leads to greater selectivity in product offerings by Islamic banks compared to conventional banks (Nomran et al., 2018). Furthermore, Islamic banks have broader operational objectives, not only focusing on profit but also ensuring social and economic justice in line with Islamic principles.

The presence of the SSB and the requirement to comply with Sharia principles create unique challenges for Islamic banks in terms of innovation and product development. On the one hand, the SSB plays a critical role in maintaining the integrity and Sharia compliance of the bank. On the other hand, the rigorous evaluation and approval processes can potentially slow down the pace of innovation compared to conventional banks, which have greater flexibility in product development (Shahzad Bukhari et al., 2013).

Given these structural and operational differences, it is essential to examine how board characteristics, including the SSB in Islamic banks, as well as product innovation, impact the performance of banks. This study aims to explore the relationship between board characteristics and product innovation on the performance of conventional and Islamic banks in Indonesia. Additionally, it will investigate whether innovation moderates the effect of SSB characteristics on Islamic banks, considering the potential of the SSB as a factor influencing innovation processes and, ultimately, the performance of Islamic banks in Indonesia

2. Literature Review and Hypothesis Development

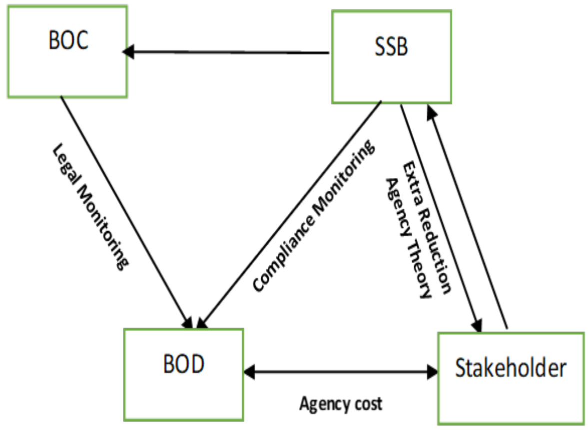
2.1 Literature Review

2.1.1 Differences in Governance Structures Between Islamic and Conventional Banks

There are significant differences between the governance structures of Islamic and conventional banks. Bhatti & Bhatti (2010) argue that the governance structure of Islamic banks follows principles similar to traditional banks but with modifications to meet Shariah requirements (Ashraf et al., 2015). One key distinction is the presence of the Sharia Supervisory Board (SSB), which serves as an additional oversight mechanism unique to Islamic banks and absent in conventional banks (Farook et al., 2011). This internal process is crucial for maintaining control (Haniffa & Hudaib, 2007), with the aim of enhancing financial performance and governance transparency in Islamic banks by addressing their distinctive characteristics and minimizing conflicts between investors and bank managers.

In Indonesia, the dual-board structure is adopted, similar to countries like Germany, the Netherlands, and Japan (Weimer & Pape, 1999). The board of commissioners oversees management activities, while the board of directors handles the day-to-day operations of the institution (Darmadi, 2013). In other words, executive functions are solely performed by the board of directors. However, Islamic banking faces distinct governance challenges, such as a more complex governance structure, particularly concerning Shariah compliance (Bukair & Rahman, 2015). The presence of the SSB differentiates Islamic banks in terms of their oversight processes, especially concerning adherence to Sharīʿah principles (Arifin et al., 2021). An overview of the governance structure of Islamic banks in Indonesia can be seen in the following Figure 1.

Figure 1. Board Structure in Islamic Banks in Indonesia



Source: Adapted from Abdelsalam et al., (2016) and Nomran & Haron, (2019)

2.1.2 The Role of the Board in Bank Governance

Internal oversight structures, such as the board of directors, are a key mechanism for mitigating agency problems (Bathala et al., 1994). The board of directors is essential in resolving agency conflicts between shareholders and management, acting as part of the internal monitoring system (Yoshikawa & Phan, 2005). From a corporate governance perspective, the board of directors serves as an internal governance mechanism, functioning as a monitoring tool to control management (agents) on behalf of shareholders (principals) (Hung, 1998). Both the Sharia Supervisory Board and the board of directors play key roles in the governance of Islamic banks (Grassa et al., 2023; Grassa & Matoussi, 2014).

2.1.3 Roles and Functions of the Sharīʿah Supervisory Board (SSB)

The SSB plays several critical roles in the development of products within Islamic banks (Nomran & Haron, 2019). It is responsible for evaluating new products and services to ensure their compliance with Shariah principles. Additionally, the SSB formulates operational guidelines for the offered products and services, ensuring alignment with Shariah principles. It also provides advice and recommendations to the management of Islamic banks to improve the quality of their products and services (Haddad & Souissi, 2022).

The SSB also supervises operations to ensure that banks comply with Shariah principles. A strong and effective SSB enables Islamic banks to develop new products and services in harmony with Shariah principles, catering to the growing demand for Islamic banking services. Furthermore, the SSB contributes to enhancing public trust in Islamic banks as secure and reliable financial institutions.

2.1.4 Differences Between the SSB and Conventional Bank Regulators

The primary difference between the SSB in Islamic banks and government regulators in conventional banks lies in the principles they oversee. The SSB ensures that all activities in Islamic banks comply with Shariah principles, such as the prohibition of interest (*ribā*), uncertainty (*gharar*), gambling (*maisir*), and other forbidden practices (Nomran et al., 2018). In contrast, government regulators in conventional banks focus on compliance with regulatory and governmental requirements, such as minimum capital requirements, risk management, and corporate governance.

The composition of the SSB in Islamic banks includes members with expertise in Islamic scholarship and practice, such as Islamic law experts, Shariah accountants, and Islamic banking practitioners (Grassa et al., 2023; Grassa & Matoussi, 2014). Conversely, government regulators in conventional banks are typically composed of individuals with backgrounds in finance and economics.

The SSB plays a vital role in the development of Islamic banking products and services, offering advice and recommendations to the board of directors on operational activities in line with Shariah principles. Meanwhile, government regulators in conventional banks are responsible for establishing regulations and requirements that conventional banks must follow in their operations. The SSB focuses on Shariah compliance and consists of individuals with expertise in Islamic scholarship and practice, while government regulators emphasize regulatory compliance and consist of individuals with financial and economic backgrounds (Khan et al., 2023).

Recent literature on the impact of board characteristics and innovation on the performance of Islamic banks reveals mixed yet significant findings. Research by Mai (2021) and Mai and Setiawan (2024) highlights that board size, gender diversity, and board independence have a significant influence on the performance and capital structure decisions of Islamic banks. Meanwhile, Awad et al. (2024) found that board independence positively affects stock performance in Islamic banks within the MENA region. Haddad (2022) emphasized the importance of financial innovation in enhancing profitability and efficiency in Islamic banks during the digital era.

Further studies by Mamatzakis et al. (2023) identified notable differences in the effects of governance practices on the performance of Islamic versus conventional banks, advising caution in the adoption of international governance practices for Islamic banks. Mukhibad et al. (2024) discovered that cognitive diversity on boards, particularly in terms of educational backgrounds and experiences, has a positive impact on the profitability of Islamic banks in Southeast Asia.

Overall, this body of literature underscores that board characteristics and innovation play crucial roles in the performance of Islamic banks. However, their influence varies depending on the operational context and environment. These findings highlight the need for tailored approaches to governance practices and innovation strategies to optimize the performance of Islamic banks.

2.2 Hypotheses Development

Board size influences bank performance

The Board of Directors serves as an internal governance mechanism that controls agency problems within a corporate system (Cerbioni & Par-bonetti, 2007). Fama & Jensen, (1983) suggest that board size can influence a company's long-term performance. There is a positive relationship between a larger board size and company performance. Numerous studies have highlighted the benefits and advantages associated with adopting a larger board of directors, which can enhance overall performance (Daadaa, 2020; Ghosh & Ansari, 2018).

H1a: Size of the Board of Directors has a positive impact on bank performance.

H1b: Size of the Board of Commissioners has a positive impact on bank performance.

Gender influences bank performance

Rosener (1995) emphasizes the role of women in top management by explaining that they are "more flexible and better able to handle ambiguity than men, and this ability to motivate team development and flexibility is an important factor for the success of modern businesses conducted in uncertain contexts." Additionally, since flexibility and ambiguity are integral parts of innovation activities, it can be assumed that gender diversity can enhance a company's innovation. Midavaine et al. (2016), Cumming & Leung (2018), and Griffin et al. (2021) found a positive relationship between board gender diversity impact bank performance.

H2a: Gender of the Board of Directors has a positive impact on bank performance.

H2b: Gender of the Board of Commissioners has a positive impact on bank performance.

Educational background influences bank performance

The labor market places a high value on education, which is defined as a person's educational history and academic career (Sidki et al., 2023). The average education level of top management team members has a favorable and significant influence (Finkelstein & Hambrick, 1996). According to (Cheng et al., 2010), in the context of China, the board chairman's university degree has a favorable relationship with seven performance measures, including profits per share (EPS) and return on assets (ROA). The inclusion of board members with experience in accounting and finance, as shown by Grassa & Matoussi (2014), has a favorable and significant effect on banks' financial performance.

H3a: Educational background of the Board of Directors has a positive impact on bank performance.

H3b: Educational background of the Board of Commissioners has a positive impact on bank performance.

Innovation influences bank performance

Bank performance can be enhanced by innovative service convenience or by increasing the value-added services provided to customers, thereby improving bank performance. Cumming & Leung, (2018); Griffin et al., (2021) and Midavaine et al., (2016) found that firm innovation has a positive impact on performance. With an increasing variety of products, companies can improve their performance. Wang & Cao (2022) found that the greater the number of innovations a company possesses, the more it enhances the company's performance.

H4: Innovation has a positive impact on bank performance.

Innovation moderates the relationship between the Shariah Supervisory Board (SSB) and bank performance

Product innovation can enhance the performance of a bank by im-proving competitiveness and efficiency. Therefore, even with a large board size, product innovation can help banks remain competitive and achieve good performance. On the other hand, if product innovation is low or ab-sent, a large board size can become a burden and hinder the bank's performance. Miller & Del Carmen Triana, (2009) suggest that innovation and corporate reputation mediate the relationship between board diversity and firm performance, and the more innovative a company is, the better its performance tends to be. The composition of the board of directors, taking into account the number of qualifications they possess, should have a positive effect on corporate innovation as it brings different perspectives from various levels of education and results in a more diverse population that can enable innovative actions. Although this effect has not been extensively researched in the literature, both Midavaine et al., (2016) found results that support our argument.

Midavaine et al., (2016) found that educational diversity leads companies to invest more in R&D, while (Xiao-qing & Jian, 2012) found that variation in educational backgrounds is positively related to technological in-novation and company performance. However, in Islamic banking, there is a Shariah Board that ensures the operational activities of Islamic banks are in accordance with Shariah principles (Khan et al., 2023). The presence of the Shariah Board has an impact on Shariah compliance in the operational activities of Islamic banks, maintains stakeholders' trust in IB activities, supports management in providing Shariah-compliant products, meets legal requirements for governance, and fulfills the religious function of Islamic banks (Garas, 2012). The presence of the Shariah Board may hinder the development of IB product innovations, thereby affecting the performance of Islamic banks.

H5a: The size of SSB weakens the influence on bank performance through innovation as a moderating variable

H5b: Gender SSB weakens the influence on bank performance through innovation as a moderating variable.

H5c: Educational background of SSB weakens the influence on bank performance through innovation as a moderating variable

3. Research Methodology

This study utilizes data from 14 Islamic banks and 14 conventional banks, covering an 11-year period from 2010 to 2020. The research sample consists of 286 observations, encompassing both Islamic and conventional banks in Indonesia. Bank performance is assessed through Return on Assets (ROA) and Return on Equity (ROE). The data was obtained from the banks' websites by examining board characteristics such as board size, board gender, and board background. Innovation is measured by the number of bank products and services.Control variables include bank age and bank size, as shown in Table 1

Table 1: Variables Measurement

Code	Variable	Measurement	Source
Dependent			
ROA	Return on Asset	Net Income / Total Assets	(Cumming & Leung, 2018; Khalil & Boulila Taktak, 2020)
ROE	Return On Equity	Net Income /Shareholder's Equity	(Nomran et al., 2018)
Independent			
BOD_SIZE	Size of board of directors	Number of board of directors	(Issa et al., 2021)
BOC_SIZE	Size of board of commissioners	Number of board of commissioners	(Bouteska, 2020)
SSB_SIZE	Size of Sharia Supervisory Board	Number of sharia supervisory board	(Khan et al., 2023)
BOD_GEN	Female board of directors	Percentage of women on the board of directors	Griffin et al., (2021)
BOC_GEN	Female board of commissioners	Percentage of women on the board of commissioners	(Abdul Gafoor et al., 2018; Quoc Trung, 2022)
SSB_GEN	Female Sharia Supervisory Board	percentage of women on the haria supervisory board	(Haddad & Souissi, 2022; Khan et al., 2023)
BOD_EDU	Educational background of Board of Directors	Percentage of Board of Directors with an economic education	Fernández-Temprano & Tejerina-Gaite, 2020
BOC_EDU	Educational background of Board of commissioners	Percentage of Board of commissioners with an	Boubakri et al. (2021)

		economic education	
SSB_EDU	Educational background of Sharia Supervisory Board	Percentage of sharia supervisory board with an sharia education	(Grassa & Matoussi, 2014; Khan et al., 2023)
INNOV	Bank innovation	Number of bank products/services per year	(Phan et al., 2020; Wang & Cao, 2022)
Control			
LN_SIZE	Total asset bank	Natural logarithm of total assets	(Buallay, 2019)
AGE	Bank age	Bank age	(Khan et al., 2023)

Source: Author's Own

The data analysis methodology involves several statistical techniques. First, descriptive statistics are used to describe the characteristics of the sample, followed by correlation analysis to detect potential multicollinearity. Subsequently, panel regression analysis is applied based on the results of the Hausman test, utilizing clustered standard errors to address heteroskedasticity and autocorrelation issues. To tackle the problem of endogeneity, the Generalized Method of Moments (GMM) is also implemented. The analysis is conducted separately for conventional banks and Islamic banks, as well as combined analysis for both types of banks. The final analysis examines the moderating effects of innovation and other related factors on Islamic banks. The regression models can be seen in the following equations.

Regression Model 1

$$ROA_{i,t} = \alpha + \beta_1 BOD\_SIZE_{i,t} + \beta_2 BOD\_GEN_{i,t} + \beta_3 BOD\_EDU_{i,t} + \beta_4\_BOC\_SIZE_{i,t} + \beta_5 BOC\_GEN_{i,t} + \beta_6 BOC\_EDU_{i,t} + \beta_7 INNOV_{i,t} + \beta_8 AGE_{i,t} + \beta_9 LN\_SIZE_{i,t} + e_{i,t} \quad (1)$$

Regression Model 2 Robustness test

$$ROE_{i,t} = \alpha + \beta_1 BOD\_SIZE_{i,t} + \beta_2 BOD\_GEN_{i,t} + \beta_3 BOD\_EDU_{i,t} + \beta_4\_BOC\_SIZE_{i,t} + \beta_5 BOC\_GEN_{i,t} + \beta_6 BOC\_EDU_{i,t} + \beta_7 INNOV_{i,t} + \beta_8 AGE_{i,t} + \beta_9 LN\_SIZE_{i,t} + e_{i,t} \quad (2)$$

Regression Model 3 Moderating Effect

$$ROA_{i,t} = \alpha + \beta_1 BOD\_SIZE_{i,t} + \beta_2 BOD\_GEN_{i,t} + \beta_3 BOD\_EDU_{i,t} + \beta_4\_BOC\_SIZE_{i,t} + \beta_5 BOC\_GEN_{i,t} + \beta_6 BOC\_EDU_{i,t} + \beta_7 INNOV_{i,t} + \beta_8 SSB\_SIZE\_INNOV +$$

4. Results

4.1 Descriptive Analysis

The descriptive statistics provide a summary of the variables in the dataset. This study was conducted by analyzing data from Islamic banks and conventional banks in Indonesia over an 11-year period, from 2010 to 2020. The research sample consisted of 286 observations, covering various aspects of financial performance, corporate governance structures, and bank innovation. The variables examined included Return on Assets (ROA) and Return on Equity (ROE) as measures of financial performance, with an average ROA of 2.3% and an average ROE of 11.2%. Corporate governance structures were represented by the size and composition of the board of directors and the board of commissioners, including aspects such as gender diversity and educational background. The average size of the board of directors was 6.888 members, while the board of commissioners had an average of 6.150 members.

Bank innovation was measured by the number of bank products/services introduced annually, with an average of 69.969 innovations. The study also included control factors such as bank size (measured using the natural logarithm of total assets) and bank age, with the average bank age in the sample being 36.899 years.

Table 2. Descriptive statistics

Variable	Obs	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	286	0.023	0.017	0.452	-0.201	0.044
ROE	286	0.112	0.102	0.636	-0.940	0.144
BOD_SIZE	286	6.888	6.5	15	3	2.903
BOD_GENDER	286	1.294	1	6	0	1.373
BOD_EDU	286	2.944	3	9	0	1.562
BOC_SIZE	286	6.150	6	13	2	2.387
BOC_GENDER	286	0.524	0	3	0	0.636
BOC_EDU	286	2.678	3	7	0	1.405
INNOV	286	69.969	52	313	6	58.489
LN_ASET	286	16.832	17.073	21.137	9.407	2.759
AGE	286	36.899	41	79	1	21.411

Notes: For an understanding of the symbols in the Descriptive statistics, please refer to Table 1 Variable measurement

Source: Author's Own

In the provided correlation table, we can observe that several pairs of variables exhibit relatively high correlation. High correlations between independent variables can indicate the presence of multicollinearity is-sues. However, it is important to note that high correlation between variables does not always imply the absence of multicollinearity, as long as the correlation values do not exceed 0.8. In the table, there are several pairs of variables that show significant correlation. For instance, BOD_SIZE and BOC_SIZE have a correlation of 0.699, while BOD_GEN and BOC_GEN have a correlation of 0.506. Additionally, LN_ASET and INNOV also demonstrate relatively high correlations with several other variables. The correlation results can be seen in table 3.

Table 3. Correlation matrix

	ROA	ROE	BOD_SIZE	BOD_GEN	BOD_EDU	BOC_SIZE	BOC_GEN	BOC_EDU	INNOV	AGE	LN_SIZE
ROA	1										
ROE	0.025	1									
BOD_SIZE	0.251	0.006	1								
BOD_GEN	0.071	0.041	0.402	1							
BOD_EDU	-0.034	-0.098	0.091	-0.148	1						
BOC_SIZE	-0.037	-0.131	0.248	0.093	0.264	1					
BOC_GEN	0.089	-0.083	0.209	0.287	-0.019	0.111	1				
BOC_EDU	-0.199	-0.131	0.197	-0.053	0.341	0.506	-0.009	1			
INNOV	0.005	0.021	0.644	0.44	0.216	0.253	0.202	0.276	1		
AGE	0.101	0.064	0.58	0.394	-0.134	-0.073	0.169	0.053	0.499	1	
LN_SIZE	0.156	0.079	0.699	0.303	-0.023	0.091	0.198	0.096	0.595	0.64	1

Notes: For an understanding of the symbols in the Descriptive statistics, please refer to Table 1 Variable Measurement

Source: Author's Own

4.2. Regression Results

Table 4. Regression results

Variable	(1) ROA CB	(2) ROA IB	(3) ROA	(4) GMM	(5) ROE
L.ROA				7.558*** (0.4424)	
BOD_SIZE	-0.119 (-0.0002)	-0.192 (-0.0015)	-1.088 (-0.0015)	-0.525 (0.0007)	-1.637 (-0.012)
BOD_GEN	-0.076 (0.0001)	0.277 (0.0035)	2.085** (0.0042)	6.53*** (0.0245)	2.093** (0.0172)
BOD_EDU	-0.059 (0.00004)	-2.514*** (-0.017)	-2.695*** (0.0039)	1.391 (0.0018)	-0.994 (-0.0048)
BOC_SIZE	-0.945 (-0.0003)	1.306 (0.006)	0.9934 (0.0017)	1.143 (0.002)	-0.523 (-0.0037)
BOC_GEND	0.729 (0.001)	-1.414 (-0.019)	-1.218 (0.0062)	-4.989*** (-0.018)	1.645 (0.0175)
BOC_EDU	-2.475** (-0.0093)	-2.119** (-0.009)	-1.4629 (-0.0026)	2.285** (0.005)	0.0159 (0.0001)
INNOV	-1.169 (-0.00002)	1.323 (0.0007)	0.2405 (-0.0001)	0.799 (-0.001)	-1.580 (-0.0002)
AGE	-4.642*** (-0.0014)	-2.537** (-0.0047)	-3.400** (-0.0026)	-3.412** (-0.002)	-5.152*** (-0.0158)
LN_ASET	-1.746* (-0.001)	-1.009 (-0.003)	-2.468** (-0.0024)	-0.095 (-0.001)	-1.461 (-0.008)
C	4.930*** (0.134)	1.982** (0.106)	5.668*** (0.176)		7.235*** (0.937)
R-2	0.737	0.405	0.385		0.492
Adjusted R-2	0.691	0.291	0.297		0.419
Prob	0.000	0.000	0.000		0.000
Hausman	0.000	0.023	0.000		0.000
Sargan				0.587	
Arl 1				0.175	
Arl 2				0.441	
Obs.	148	138	286	237	286

Notes: Please see Table 1 for the definition of each variable presented in this regression Table. *, **, and *** denotes significance in 10%, 5%, and 1% levels, respectively

Source: Author's Own

Table 4 presents the regression analysis results of the five models, providing deep insights into the influence of board characteristics, innovation, and other factors on the performance of conventional and Islamic banks in Indonesia. All models employ clustered standard errors, effectively addressing issues of heteroskedasticity and autocorrelation, thereby enhancing the reliability of the estimation results.

For conventional banks (Model 1), the educational background of the board of commissioners (BOC_EDU) has a significant negative effect on Return on Assets (ROA) at the 5% level, indicating that an increase in the proportion of commissioners with an economics background tends to reduce ROA. Bank age (AGE) exhibits a highly significant negative effect at the 1% level, suggesting that older banks are likely to have lower ROA. Bank size (LN_ASET) also shows a significant negative effect at the 10% level, implying that larger banks may face challenges in maintaining high ROA levels. This model has a relatively high explanatory power, with an R-squared value of 0.737, indicating that the independent variables explain 73.7% of the variation in ROA for conventional banks.

For Islamic banks (Model 2), the educational background of the board of directors (BOD_EDU) has a highly significant negative effect on ROA at the 1% level, while the educational background of the board of commissioners (BOC_EDU) also shows a significant negative effect at the 5% level. These findings suggest that a higher proportion of board members with an economics background tends to lower ROA in Islamic banks. Bank age (AGE) also has a significant negative effect at the 5% level, consistent with the findings for conventional banks. This model has a lower R-squared value of 0.405, indicating that the independent variables explain 40.5% of the variation in ROA for Islamic banks.

In the combined model of conventional and Islamic banks (Model 3), the gender diversity of the board of directors (BOD_GEN) has a significant positive effect on ROA at the 5% level, indicating that gender diversity within the board of directors can enhance the financial performance of banks. However, the educational background of the board of directors (BOD_EDU) has a highly significant negative effect at the 1% level. Both bank age (AGE) and bank size (LN_ASET) show significant negative effects, consistent with the findings from the previous models. This model has an R-squared value of 0.385, explaining 38.5% of the variation in ROA.

The GMM model (Model 4), employed to address endogeneity issues, yields intriguing results. The previous period's ROA (L.ROA) has a highly significant positive effect, indicating persistence in bank performance. The gender diversity of the board of directors (BOD_GEN) shows a highly significant positive effect, reinforcing findings from the combined model. However, the gender diversity of the board of commissioners (BOC_GEND) exhibits a highly significant negative effect. Interestingly, the educational background of the board of commissioners (BOC_EDU) demonstrates a significant positive effect in this model, contrasting with earlier findings. The Sargan test (p-value: 0.587) and Arellano-Bond test for autocorrelation (AR1: 0.175; AR2: 0.441) confirm the validity of the instruments and the absence of second-order autocorrelation, supporting the reliability of the GMM estimation results.

Finally, the robustness check model, using Return on Equity (ROE) as the dependent variable (Model 5), shows results largely consistent with the previous models. The gender diversity of the board of directors (BOD_GEN) has a significant positive effect on ROE at the 5% level, further supporting the finding that gender diversity within the board of directors enhances banks' financial performance. Bank age (AGE) has a highly significant negative effect, consistent across all models. This model has an R-squared value of 0.492, explaining 49.2% of the variation in ROE.

Overall, these results highlight that board characteristics, particularly gender diversity and educational background, significantly influence bank performance, though their impact may vary between conventional and Islamic banks. Factors such as bank age and size consistently exhibit a negative effect on financial performance. These findings have important implications for corporate governance policies in Indonesia's banking sector.

4.3 Moderating test

Table 5. Moderating test

Variable	(1) ROA	(2) ROA
BOD_SIZE	0.185 (0.0014)	0.429 (0.0020)
BOD_GENDER	-0.142 (-0.0017)	-1.096 (-0.0168)
BOD_EDU	-2.669*** (-0.0192)	-3.332*** (0.0209)
BOC_SIZE	2.272*** (0.0085)	3.045*** (0.0127)
BOC_GENDER	-1.648 (-0.023)	-1.883* (-0.0249)
BOC_EDU	-1.489 (-0.0071)	-2.849*** (-0.0112)
SSB_SIZE	1.812* (0.0171)	1.877* (0.1096)
SSB_GENDER	0.789 (0.0081)	-2.161** (-0.7786)
SSB_EDU	-1.795* (-0.0196)	-1.825* (-0.0870)
INNOV	1.036 (0.0007)	1.915* (0.0006)
SSB_SIZE_INNOV		-1.834* (-0.0036)
SSB_GEN_INNOV		2.151** (0.0133)
SSB_EDU_INNOV		1.36 (0.0025)
AGE	-2.336** (-0.0052)	-2.694*** (-0.0051)
LN_ASET	-1.018 (-0.0034)	-1.479 (-0.0064)
C	1.753* (0.2022)	1.679* (0.223)

R-2	0.437	0.50459
Adjusted R-2	0.288	0.37495
Prob	0.000	0.000
Hausman	0.000	0.000
Obs.	138	138

Notes: Please see Table 1 for the definition of each variable presented in this regression Table. *, **, and *** denotes significance in 10%, 5%, and 1% levels, respectively.

Source: Author's Own

Table 5 presents the results of the moderation analysis for Islamic banks, focusing on the role of the Sharia Supervisory Board (SSB) and its moderating effect on innovation, revealing several noteworthy findings. Model 1 examines the direct impact of SSB characteristics on ROA, while Model 2 incorporates the moderating effect of the SSB on the relationship between innovation and bank performance.

In Model 1, the size of the SSB (SSB_SIZE) has a significant positive effect on ROA at the 10% level (1.812), indicating that larger SSBs tend to enhance the performance of Islamic banks. However, the educational background of the SSB (SSB_EDU) shows a significant negative effect at the 10% level (-1.795), suggesting that a higher proportion of SSB members with Sharia-related educational backgrounds may have a negative impact on ROA. The gender diversity of the SSB does not show a significant effect in this model.

Model 2 explores the moderating effect of the SSB on the relationship between innovation and bank performance. The interaction between SSB size and innovation (SSB_SIZE_INNOV) has a significant negative effect at the 10% level (-1.834), indicating that larger SSBs may weaken the positive impact of innovation on ROA. Conversely, the interaction between SSB gender diversity and innovation (SSB_GEN_INNOV) shows a significant positive effect at the 5% level (2.151), implying that greater gender diversity within the SSB can strengthen the positive relationship between innovation and bank performance. The interaction between SSB educational background and innovation does not exhibit a significant effect.

Interestingly, in Model 2, innovation (INNOV) demonstrates a significant positive effect on ROA at the 10% level (1.915), while SSB gender diversity (SSB_GENDER) shows a significant negative effect at the 5% level (-2.161). This suggests that innovation generally has a positive impact on the performance of Islamic banks, but the moderating role of the SSB can influence this relationship in varying ways.

Both models show consistency in certain control variables, with bank age (AGE) consistently exhibiting a significant negative effect on ROA. Model 2 has a higher R-squared value (0.50459) compared to Model 1 (0.437), indicating that the inclusion of SSB's moderating effects enhances the explanatory power of the model.

Overall, these findings indicate that the SSB plays a moderating role in the relationship between innovation and the performance of Islamic banks, with the effects varying depending on the SSB characteristics under consideration. These results highlight the importance of accounting for the composition and characteristics of the SSB when seeking to improve the performance of Islamic banks through innovation.

5. Discussion

This study provides critical insights into the impact of board characteristics and innovation on the performance of banks in Indonesia, with a particular focus on the comparison between conventional and Islamic banks. Findings regarding board size present mixed results, consistent with prior studies such as Ghosh & Ansari (2018). While board size does not generally affect bank performance, moderation tests on Islamic banks indicate a positive impact. This could be attributed to the balance between decision-making efficiency in smaller boards and the diversity of perspectives in larger boards. Issa et al. (2024) emphasized the importance of board diversity in enhancing the efficiency and stability of banks, suggesting that optimal board composition must account for multiple factors.

Gender diversity on boards demonstrates a positive effect on bank performance, supporting findings by Tanaka (2019) and Griffin et al. (2021). Furthermore, Andrieș et al. (2024) confirmed that gender diversity on boards improves bank efficiency in emerging markets. The presence of women on boards brings different perspectives, fosters innovation, and enhances the quality of decision-making. These findings highlight the need for banks to implement inclusive recruitment policies and provide leadership development programs for female candidates to increase gender diversity at the board level.

The educational background of board members shows a negative influence on bank performance, though these results should be interpreted with caution. Mukhibad et al. (2024) found that cognitive diversity on boards, including diverse educational backgrounds, positively impacts the profitability of Islamic banks in Southeast Asia. This discrepancy could be due to the complexity of the banking industry, which requires a combination of technical expertise and practical experience. Banks should regularly assess the skillsets of their board members and offer continuous training to ensure that board competencies align with the evolving needs of the industry.

Innovation exhibits varied effects on bank performance, with a negative impact on banks overall but a positive impact on Islamic banks. Mamatzakis et al. (2023) highlighted the importance of appropriate governance practices in influencing the performance and stability of Islamic banks. These differences may arise from the higher operational complexity of banks with a wide range of innovative products, whereas Islamic banks, with a more limited product range, may be better able to focus on managing their innovations. To maximize the benefits of innovation, banks should develop innovation strategies aligned with their long-term goals and implement robust risk management processes.

Overall, this study underscores the importance of board characteristics and innovation in influencing bank performance while also revealing the complexity of these relationships. Awad et al. (2024) further confirmed the significant influence of board characteristics on stock performance in banks across the MENA region. Banks must adopt tailored approaches to determine optimal board composition and innovation strategies, taking into account their specific contexts as either conventional or Islamic banks. Regular evaluations of governance practices, increased board diversity, and careful management of innovation can help banks enhance their performance in an increasingly dynamic banking environment.

6. Conclusion

This study provides significant insights into the influence of board characteristics, innovation, and the role of the Sharia Supervisory Board (SSB) on bank performance in Indonesia, focusing on the comparison between conventional and Islamic banks. The key findings reveal that the size of the board of commissioners has a significant positive impact on the performance of Islamic banks, gender diversity in the board of directors generally has a positive effect on bank performance, and the SSB plays a significant moderating role in the relationship between innovation and the performance of Islamic banks. These findings have practical implications for bank management in optimizing the composition of the board and SSB, as well as theoretical implications for advancing the understanding of Islamic banking governance. For regulators, the results emphasize the importance of accounting for structural differences between conventional and Islamic banks when designing governance policies.

However, this study has several limitations. Its focus on the Indonesian context may limit the generalizability of the findings to other countries. The research period (2010–2020) may not fully capture the recent impacts of regulatory changes or global economic conditions. Additionally, the study does not account for external factors such as macroeconomic conditions that could influence bank performance. The measurement of innovation, limited to the number of new products or services, may also not fully capture the complexity of innovation within the banking industry.

For future research, it is recommended to expand the geographical scope, conduct longer-term longitudinal studies, and integrate external factors into the analysis. Developing more comprehensive measures of innovation is also necessary. Qualitative research could provide deeper insights into the decision-making processes within the board and SSB. Furthermore, further exploration of the moderating role of the SSB in different contexts, such as risk management or social performance of Islamic banks and examining interactions among various board characteristics in influencing bank performance could offer valuable contributions to the literature on Islamic banking governance.

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هل تؤثر خصائص مجلس الإدارة والابتكار على أداء البنوك؟
أدلة من البنوك التقليدية والإسلامية في إندونيسيا

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المستخلص: يهدف هذا البحث إلى تحليل تأثير خصائص مجلس الإدارة والابتكار ودور هيئة الرقابة الشرعية على أداء البنوك في إندونيسيا، مع التركيز على مقارنة البنوك التقليدية والبنوك الإسلامية. باستخدام بيانات مقطعية من (٢٨٦) ملاحظة مصرفية خلال الفترة ٢٠١٠-٢٠٢٠، تستخدم الدراسة طرق الانحدار اللوجي والطريقة المعممة للحظات (GMM) لمعالجة قضايا الذاتية المحتملة. بينت النتائج أن حجم مجلس المفوضين له تأثير إيجابي كبير على أداء البنوك الإسلامية، في حين أن التنوع بين الجنسين في مجلس الإدارة له تأثير إيجابي بشكل عام على الأداء المصرفي الإجمالي. تُظهر الخلفية التعليمية لأعضاء مجلس الإدارة تأثيرات معقدة ومتنوعة بين البنوك التقليدية والإسلامية. ويُظهر الابتكار تأثيرًا إيجابيًا كبيرًا على أداء البنوك الإسلامية في الاختبارات الإضافية. علاوة على ذلك، تسلط الورقة الضوء على الدور المعتدل لهيئة الرقابة الشرعية في تعزيز العلاقة بين الابتكار وأداء البنوك الإسلامية: ويؤثر حجم هيئة الرقابة الشرعية في الاتجاه نحو إضعاف تأثير الابتكار، في حين أن التنوع بين الجنسين داخل هيئة الرقابة الشرعية يعزز هذا الابتكار. وتترتب على هذه النتائج آثارًا مهمة على ممارسات إدارة البنوك، وتطوير الحوكمة، واللوائح التنظيمية للقطاع المصرفي. تؤكد الدراسة على ضرورة مراعاة الاختلافات البنيوية بين البنوك التقليدية والإسلامية عند إعداد سياسات الحوكمة.

الكلمات الدَّالة: خصائص مجلس الإدارة، الابتكار، البنوك الربوية، البنوك الإسلامية، أداء البنوك في إندونيسيا

تصنيف JEL: G2, G3

تصنيف KAUJIE: L22, L24, L33

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Impact of Audit Committees in Islamic Banks: Corporate Governance and Financial Risk Under Sharīʿah Law in Pakistan

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Abstract. To explore the impact of corporate governance especially audit committees on the financial risk of Islamic banks in Pakistan under Sharīʿah law. The study used panel data between (2018-2022) of Islamic banks in Pakistan. To facilitate the data analysis, we employed the fixed effect model in panel data regression. The study highlights that Islamic bank in Pakistan maintain a healthy financial position, with an average NPF of 3.91%, indicating strong risk management. Regression analysis confirms significant negative effects of audit committee size (ADC) and return on assets (ROA) on NPF, with coefficients of -0.199 (p = 0.0052) and -10.2036 (p = 0.0099), respectively. These findings emphasize the importance of profitability and effective audit committees in reducing financial risks. However, SSB1 and SSB2 show no significant relationships, with p-values of 0.3838 and 0.1045, respectively. The fixed-effect model, validated by the Chow test (p = 0.000), ensures the robustness of the analysis. The major limitation of the research is time and resources and the availability of the quality and quantity of data. We conclude that due to the ultimate need to reduce financial risk, auditors must play an important role in banks, including Islamic banks. Our findings suggest that Islamic banks need to ensure audit committees operate efficiently. An effective system in Islamic banks that enhances accountability and transparency will be in the collective interest of society to enhance financial risk management First, to the extent of our knowledge, there is no previous research conducted to examine the effect of the effectiveness of audit committees. Second, our study aims to provide empirical evidence on the effect of audit committee effectiveness on financial risk in Islamic banks.

Keywords: Islamic Banks, Corporate Governance, Financial Risk, Sharīʿah Law

***JEL Classification*:** G21, G32, G34, K10

***KAUJIE Classification*:** E22, E23

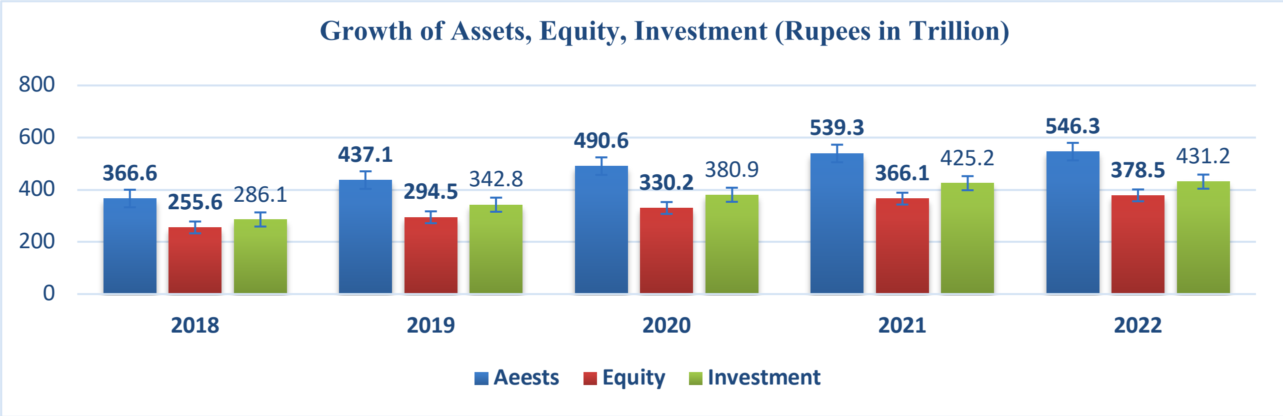
1. Introduction

Islamic banking has steadily gained prominence across Pakistan over the past few decades. It has carved a unique niche as a financial system adhering strictly to Sharīʿah law ethical standards. This article examines how Islamic banks in the country ensure sound corporate governance and prudently manage risk, as per Iqbal et al. (2023). Upholding transparency, accountability and integrity is paramount for Islamic banks to honor high governance standards. According to Khan et al. (2022), corporate governance in Islamic banking echoes Sharīʿah principles of fairness, justice and social responsibility. To cement effective oversight, Pakistani Islamic banks have instituted varied measures such as Size of the supervisory board: Charged with charting strategic direction, overseeing hazards and confirming adherence to regulations, the board involves executive and non-executive members well-versed in Islamic finance, as discussed by (Najwa et al., 2019). Sharīʿah supervisory board: Mandated to independently supervise transactions and endorse Sharīʿah -compliance, this assembly of Islamic legal specialists scrutinizes complex deals and novel commodity/service offerings, as explored by (Meslier et al., 2020).

Islamic banks have always prioritized financial risk given their responsibility to ensure long-term viability. Pakistan employs various techniques, balancing complexity and prudence. Unlike their conventional counterparts, Islamic institutions operate through profit and loss sharing with customers, incentivizing caution and mitigating moral hazards. Precluded from interest under Sharīʿah, alternatives like profit sharing, leasing and trade financing generate sustainable income. Additionally, assets always back investments to reduce default likelihood while confirming allocation according to real economic needs. However, constant evaluation remains imperative as global conditions change and diversification proves necessary for weathering uncertainty. Going forward, balancing innovation with established practices while upholding the underlying principles will help Pakistani Islamic banks succeed financially and fulfill their social objectives (Saqib et al., 2015; Rasli et al., 2017 and Utami et al., 2020).

Islamic finance institutions have significantly expanded over the past 20 years, and they now play a significant role in the international financial system (Mahdi et al., 2018; Iqbal et al., 2025). One of the banking industries' fastest-growing segments is Islamic banking. The banking services authority (FSA) has compiled the following information on Sharīʿah banking growth. Islamic banking is a growing global phenomenon with huge potential. Islamic banking has become increasingly popular in recent years, with Sharīʿah-compliant banks increasing by nearly 30% in 2018. Over the years, this growth will continue, and Shari'ah banking will play an increasingly significant role in the global financial system (GFS). To fully realize Sharīʿah banking's potential, it is imperative to comprehend its consequences.

Figure 1: Growth of assets, Equity, Investment and External funds

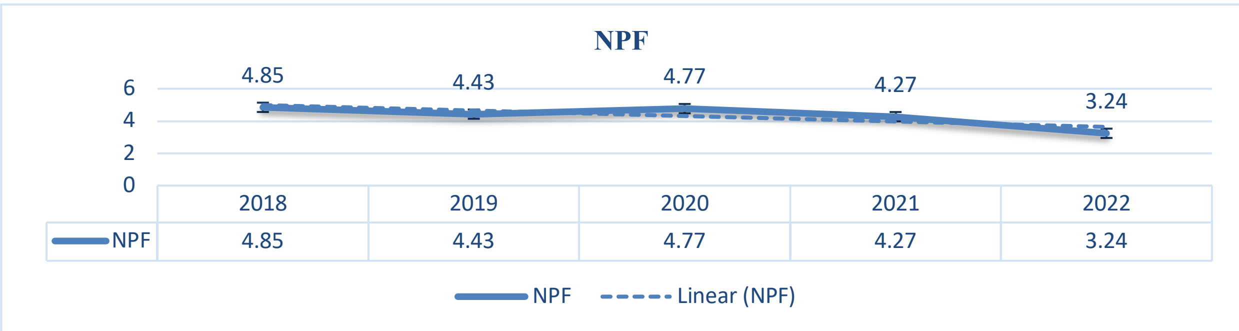


Source: **Financial services evidence 2022.**

The aforementioned data suggest that IBs in Pakistan are expected to increase their assets, equity, and investment between 2018-2022. It has become increasingly imperative for researchers to examine the risk relationship with IBs financing in Pakistan as the market divide for IBs financial services has risen to generate larger profits. Sobarsyah et al. (2020) The relationship between lending growth, investment by IBs, and financial risk in IBs is examined. Ultimately, the study of financial risk in Islamic banking is a crucial area of research that can inform policymaking and risk-management strategies. The study was conducted as a result of the economic disaster, & the results revealed that Islamic banks' commercial and operational environments had matured since the pre-crisis period between 2018 and 2022. Banks must develop regulations to ensure Islamic financial system expansion and sustainability. All in all, Islamic banks have matured significantly since the financial crisis, but further regulations are needed to sustain their growth and development.

Financial Services Authority Circular Letter No. 11/PakSBP.04/2015 and Financial Services Authority Regulation No.9/PKSBP.04/2015 require that a bank's soundness level be assessed independently and correlated with a hazard-based method (Risk-Constructed Bank Score). NPF (non-performing financing) is utilized in this study to assess the risk profile, one of the evaluations utilizing the RBBR technique. A measure called NPF quantifies how difficult banks face in obtaining finance (Rassizal et al., 2021; Iqbal et al., 2025). As a result, it is a critical component of evaluating a risk profile. NPF is a significant aspect of risk profiles. Between 2018 and 2022, Islamic banks' NPF will progress as follows:

Figure 2: based on the growth of Islamic banks' NPF between 2018 and 2022, Figure 2 can be viewed as follows.



Sources of SPS from 2018 to 2022

Based on the data, it may be concluded that Islamic bank and NPF has remained healthy over time. However, health levels have been less consistent, increasing and decreasing annually. As a result, the bank can effectively manage problematic funding. Accordingly, an NPF value of less than 6% may be considered suitable in accordance with PKSBP value 9/PKSBP.04/2015, which concerns the reliability rating of Islamic banks & Shari'ah corporate components, or PKSBP amount 5/PKSBP.04/2017, which concerns commercial banks' rating. BUS is performing well, as evidenced by its average NPF ratio of 2.10%. According to Rizal et al. (2021); Wahasusmiah et al. (2018), a bank's performance and operations are higher the lower its NPF. Consequently, BUS is well-positioned to continue its growth and development in the Sharīʿah banking industry. As an indicator of financial system stability, financial risk is often used by international organizations and policymakers (Tekathen et al., 2013). Banks and the global financial system depend on effective financial risk management. According to Greuning et al. (2003), financial risk is defined as a borrower's inability to repay the loan on the agreed-upon terms. Financial risk, according to some experts, is a bank's biggest financial risk (Campbell, 2007). Risking misappropriated funds might result in an ineffective government. In order to promote excellent corporate governance and generate value for all stakeholders, effective risk management is therefore essential (Greuning & Bratanovic, 2020). Banks need proper risk management to avoid unnecessary losses and ensure sound corporate governance.

Using agency theory, which addresses agency issues arising from conflicting interests, we can understand financial risk. In their paper, Jensen and Meckling (1976) examine agency issues, discussing profit, data irregularities, and the ensuing expenses associated with these conflict situations. There is no doubt that these costs are substantial. Therefore, some scholars believe they can be minimized through the establishment of governance structures that effectively regulate management behaviour. There is a specific place in these procedures for the commissioner's board. The board of directors is critical in a complicated industry like banking since administrators are answerable to shareholders, depositors, and regulators. There is a need for a uniform risk management policy across all complex sectors (Pathan, 2009; Iqbal et al., 2023). Thus, the board of commissioners sets risk management policies for all banking operations.

Bank governance systems include rules and internal controls. Effective implementation of a risk management strategy helps control managerial behaviour and ensure bank rules are properly followed while affecting the methods of risk management. Hence, the banking governance system appears to be the best way to decrease bank risk. In the banking industry, the board of directors is the effective control mechanism because the industry is connected with complexity. Banks should implement an efficient risk management strategy system to decrease the risk of bank failure. Companies are responsible for meeting the demands of all stakeholders. This includes shareholders, authorities, and managers. Therefore, parties are required for effective governance. To sum up, it is apparent that the banking system of governance must be properly run for banks to mitigate risk and fairly consider all stakeholders (Andres & Vallelado, 2008).

This study explores corporate governance with respect to financial risk and Pakistan Islamic banks. The following are reasons why banking should finance risk research. To begin with, financial risk is one of the criteria used to judge bank business performance. Haniifah, (2015); Iqbal et al. (2023) say high NPF levels hurt bank earnings and continuous operations. Therefore, the banking sector should invest in risk research to increase stability and profitability. Additionally, high NPF ratios have negative effects on the country's economy and banks. Abdul-Rahman et al. (2017) argue that if NPF is not well-managed numerous instances of bank collapse and financial collapse will occur. At the same time, other scholars have conducted research on the impact of board governance on financing risk. Furthermore, the NPF ratio is an effective instrument to stabilize the country's economy and the banking sector. In 2020, Rafay conducted research on corporate governance and the size of boards of directors. Aside from the NPF ratio, the independent commissioner board was the first. Islamic banks are the variable or subject of this study. The researcher asserts that the Sharīʿah Supervisory Board plays this role. Corporate governance mitigates financing risk. Therefore, the Sharīʿah Supervisory Board is a fundamental instrument in reducing financial risk in Islamic banking (Farag & Mallin, 2015).

Aslam and Haron (2021) argue that board size may influence banks risk-taking. Other studies have shown that bank risk and board size are positively related. This is because each director's experience and skill lead to a better risk management process and decreased financial risks. It is clear that the optimum size of a board of directors is required for effective risk management in banks. The audit committee is considered one of the most significant committees in banks and the banking sector as a whole. This is because of its control over bank operations and the potential to improve internal and external audits. Banks must ensure banks' long-term survival by appointing a competent audit committee. As a result of improved efficiency and effectiveness of audit committees, one of corporate governance standards, the danger of extensive business losses has fallen. In conclusion, the audit committee's role and importance are indispensable to effective financial management and risk mitigation in the banking sector (Al et al., 2019). A Sharīʿah Supervisory Board composed of Sharīʿah scholars well-versed in Fiqh Muamalat, should exist within Islamic banking institutions. The SSB is vital to the Islamic banking sector. Although they operate separately, they are selected by Board of Directors recommendations. In the end, the Sharīʿah Supervisory Board is essential in ensuring the responsible and ethical functioning of the Islamic banking sector. SSB is mainly responsible for approving financial products and services and inspecting operations so as to ensure that business practices are consistent with Sharīʿah law. This is for shareholders and stakeholders. As a result, the Sharīʿah Supervisory Board is crucial to the efficient functioning of the Islamic banking sector (Khan et al., 2022).

SSB is viewed as a complementary layer of corporate governance to reinforce the Board of Supervisors' general surveillance function (Nomran et al., 2016; Mollah et al., 2015). Therefore, SSB serves as a reliable method for corporate governance. Islamic institutions display high levels of disclosure and symptoms and consequences. At present, SSB is a valuable tool for Islamic banks to preserve compliance and reduce financial risks (Nomran et al., 2016; Rana et al., 2024). Ultimately, with increased disclosure and transparency, Islamic banks also take fewer risks, which creates investor confidence and profitability. In conclusion, SSB is a valuable instrument for Islamic banks to follow Sharīʿah law and reduce financial risks. Also, SSBs are dedicated to seeking not personal gain but basic virtues and principles, as well as fighting against growing social inequality (Mollah et al., 2017). Therefore, SSB can be said to further Islamic banking. SSB authority serves as an independent operating tool, enabling senior finance administrators to avoid financial risks. The SSB is a critical tool for Islamic banks' core business.

Consequently, the banking sector can only have stability through investment in risk research. There was a previous study that examined the relationship between board governance structure and financing risk: (Farag & Mallin 2015). However, there is hardly any research available specifically to investigate the role of Sharīʿah Supervisory Boards (SSB) in Islamic banks. This paper aims to provide research and develop empirical studies on how SSB may minimize financial risk, and bring better corporate governance through Islamic banking. Corporate governance and risk management are at the core of bank sustainability and growth, as well as survival. It is the job of the Sharīʿah Supervisory Board, as agreed by them, to ensure that Sharīʿah principles are adhered to. It reduces financial risk and encourages ethical banking practices. The paper emphasizes the importance of governance systems in reducing financial risks and making Islamic banking growth in Pakistan sustainable (Haniifah, 2015; Iqbal et al., 2023).

2. Literature Review

2.1 Agency Concept

Agency theory is a result of the conflict between ownership and control. It emphasizes that to maximize efficiency and performance in an organization there must be a clear distinction between ownership and management. The concept of agency, historically speaking, comes from ownership, which divides investors and instruments or boards of directors (Eisenhardt et al., 1989). Agency theory is a key concept in understanding how ownership and control combine to shape organizational behavior. The controlling of a corporation splits and management is accepted by both the holders (the investors) and the agents (the officials) because of this agency conflict (Hendrastuti et al., 2023). Agency theory is a central concept in understanding ownership and control dynamics shaping organizational behavior. According to Farag et al. (2015) included in corporate governance is the evolution of policies and rules that confirm responsibility, liability and neutrality. In addition, policies and rules maintain standards of equity and public obligation for investors. This approach can be taken forward into future practices. These policies and rules form the foundation of corporate governance, and must be implemented in a ethical and sustainable business environment. The system of corporate governance has played a significant role in Islamic banks' operations to withstand exogenous shocks, especially external economic tests (Berger et al., 2016). Therefore, corporate governance is central importance to the construction of a sustainable and ethical Islamic banking sector.

With their expertise and qualifications, commissionaires play a pivotal role in overseeing and advising on bank governance. In this way, they are a positive resource for the banking industry. Corporate governance is essentially a tool used by shareholders to defend their capital from management and retain return on investment. Aslam et al. (2021) commissions, because of their knowledge and experience are crucial to ensuring corporate governance works well in the banking industry. With financial risk exposures, we will look at the audit committee, the Sharīʿah Supervisory Board, and the Board of Directors. These are the three main issues under corporate governance examined in this study. In short, these three elements are essential for the proper functioning and corporate governance of the banking industry.

Table 1: Encapsulates the primary elements discussed in the context of agency theory and corporate governance in Islamic banking.

Concept	Description	References
Agency Theory	Result of conflict between ownership and control. Emphasizes the need for clear distinction between ownership (investors) and management (agents).	Eisenhardt et al. (1989)
Ownership and Control	Ownership (investors) and control (boards of directors) are divided, leading to agency conflict.	Hendrastuti et al. (2023)
Corporate Governance	Policies and rules to ensure responsibility, liability, neutrality, and maintain standards of equity and public obligation for investors.	Farag et al. (2015)
Ethical Business Environment	Corporate governance must be implemented in an ethical and sustainable manner, forming the foundation for future practices.	Berger et al. (2016)
Islamic Banks Operations	Corporate governance helps Islamic banks withstand exogenous shocks, especially external economic tests.	Berger et al. (2016)
Role of Commissionaires	Experts who oversee and advise on bank governance, ensuring effective corporate governance and protecting shareholders' capital.	Aslam et al. (2021)
Corporate Governance Tools	Shareholders use corporate governance to defend their capital and retain return on investment.	Aslam et al. (2021)
Main Issues in Corporate Governance	Audit Committee, Sharīʿah Supervisory Board, and Board of Directors are essential for proper functioning and corporate governance in the banking industry.	-

Source: Authors' Own

2.2 Financial Risk and Board of Supervisors Size (SSB)

Agency theory says a bank's decision to accept risk may be influenced by its board size. Therefore, when making risk management decisions, you must consider board size. Consequently, a number of studies have revealed there is a positive correlation between bank risk and the size of board members. In sum, financial risk is shaped by the board of director's size. Because of this, diversity and experience among directors all contribute to improved risk management and financial risk reduction (Iqbal et al., 2023 and Rasli et al., 2017). Banks realized the right to authority in 1984, when it established a board of directors and let parliament alone conduct its affairs. Banks should carefully select their board of directors and allocate resources corresponding to the degree of risk they wish to manage. As a consequence of shareholder moral hazard, a small board size is also equated with a high level of risk. This is because shareholders promote excessive risk-taking at the expense of other stakeholders. Banks should therefore maintain the right board size and allocate resources to manage risk effectively.

Pakistani banks, they found that the smaller the board size, the lower bankruptcy and overall risk of failure. Their results, taken as a whole, show that smaller boards can be much more productive than commonly thought in preventing economic crisis. Likewise, Switzer (2013) declare that larger boards will lessen the impact of unusual events, bankruptcy, systemic risk and overall risk in American banks. Thus, one can argue that larger boards save financial institutions money on bankruptcy protection and financial risk management. So based on my overview of the preceding paragraphs, the following hypothesis can be formulated:

H1: The size of Islamic bank supervisory boards (SSB) is negatively related to financial risk.

2.3 Financial Risk and Sharīʿah Supervisory Board (SSB)

In addition to being an independent unit of Islamic banks, the Sharīʿah Supervisory

Board consists of Sharīʿah scholars knowledgeable about Fiqh Muamalat, the Islamic law governing commercial transactions. Therefore, what they operate on is tantamount to the Islamic banking system's safety. The Board's mission is to provide guidance and assistance to ensure compliance with Islamic law among IBs. Although working independently, they are nominated by the BOD. Ultimately then, the Sharīʿah Supervisory Board is of significant importance in upholding the Islamic banking system rules and regulations. SSB Provides support for financial statements of products and services, archival data on these operations and actions and confirmation that Sharīʿah law is followed. There can be no exaggeration about the importance of the Sharīʿah Supervisory Board for the Islamic banking system. SSB is seen as adding another layer of corporate governance to support the responsibility of directors in supervising a company, as quoted by (Mollah et al., 2015; Nomran et al., 2016). In the end, the Sharīʿah Supervisory Board upholds ethical and professional business standards for a financial institution. On the whole, an SSB is crucial to guarantee ethical and Sharīʿah -compliant operations of IBs.

Islamic banks follow Sharīʿah principles and boast high transparency levels, incurring high financial risk. However, with careful management over a period of time, such risks can be eliminated. In light of further major breaches of these regulations, it has led to self-regulation by the Islamic banking industry and increased transparency. Finally, Islamic banks are stabilized and the overall financial system is safer. Moreover, Mollah et al. (2017) found that instead of greed and egalitarianism, SSB guides IBs in pursuing noble virtues and basic ethics. With increased transparency and disclosure Islamic banks remain stable, ethical and profitable. SSB's multi-layer governance system functions as an independent monitoring and control mechanism against unnecessary risks. This governance system assures SSB's financial stability and is risk-free. Therefore, the SSB is critically significant for Islamic banks to be profitable. Based on the above description, the hypothesis on the impact of financial risk in Islamic banks by the Sharīʿah supervisory board (SSB) is offered as follows:

H2: The Sharīʿah supervisory board (SSB) negatively impacts financial risk in Islamic banks.

2.4 Financial Risk and Audit Committee

A review of audit committee members has already been conducted by BW (Oussii et al. 2020; Pillai et al. 2017 and Iqbal et al., 2023). The intention is to offer some insight into audit committee surroundings and bank governance in general. When a team audits you, Rafay (2020) says it reinforces responsibility and openness. Audit committees play a crucial role in effective banking governance. Real estate investment trusts (The University of Chicago Press) committed serious errors and were redeemed in 1984. Agency theory posits that when a manager's selfish pursuits do not match stockholder desires, agency costs accrue (Khan, 2017). This negative sum dividend makes some shareholders' interests improve the majority. Audit committees protect shareholders' interests by creating an institutional safety net. Audit committees play an integral role in maintaining discipline and confidentiality. Corporate governance, as we understand it today and some bankers will appreciate this, simply would not exist but for the audit committee. It is this institution of representatives in an organization that unites all contracting parties together. Audit committees also act as a kind of good governance tool for a period of 10 years. Organizations with established audit committees might be operating, unsurprisingly, based on agency theory - one that was hierarchical based on the perceived need to maintain social order inside the organization. Business can improve decision making and risk management processes by having an audit committee. A more extensive audit committee can exercise more judgment about banking operations. Abdeljawed et al. (2020); Iqbal et al. (2017) and Qamar et al. (2023) If its widely distributed capabilities are considered. And so, the size of audit committees really defines school organizational effectiveness. All in all, an organization's governance structure is better off with an audit committee, it has more chance of success that way. To preserve its integrity, size and composition should be reviewed regularly. Thus, it is a must to ensure the audit committee is staffed adequately and well supported, as completing its task responsibly is largely achieved by having it properly maintained.

Abdeljawad et al.'s (2020) findings revealed that audit committees are negatively correlated with risk-taking propensities, implying that these oversight bodies must be more vigilant in their supervision and guidance relating to dangers. Likewise, Jermias et al. (2013) uncovered that hazard proclivities and audit committees are markedly negatively interrelated. Taken together, these results emphasize the necessity of the audit committee monitoring and directing risks proactively. Consequently, the following hypothesis is postulated: Namely, that audit committees reduce fiscal vulnerabilities in Islamic banking institutions through diligence and foresight. The audit committee must be cognizant of balancing monitoring risks whilst allowing the institution to prudently pursue its objectives.

H3: The audit committee (AC) negatively impacts financial risk in Islamic banks.

This paper reviews the relationship between corporate governance elements and Islamic banks' financial risk between the SSB, SSB2, and audit committees. The paper's review area is agency theories, Islamic finance, corporate governance, and financial risk. Agency theories are based on the relationship between an agent and a principal. Corporate governance processes and mechanisms involve organizational directors' selection and execution. Auditors, organizational accounting controllers, and audit committees are superior to firms' decisions. Financial risk is described as the uncertainty or effect of monetary decisions made not only in relation to the firm's shareholders but also to other stakeholders.

According to Sharīʿah law, Islamic banks adhere to banking decrees. As a result, financial risks have been affected by these funds' adherence to moral and legal standards. At the same time, the design of the process and interactions among the firms that deliver banking services, the auditors involved in the firm, and the stakeholders served have affected risk. The paper reviews Islamic banks' financial risk and the interaction between agency theories, corporate governance, and financial risks. The hypothesis of the paper examines the relationship between corporate governance elements and Islamic banks' financial risk. As a contribution to the literature and as a basis for future research or practical application, the paper is valuable.

Table 2: summarizes the key authors, their country of research, the purpose of their studies, the type of source (theoretical or empirical), and the main summary points related to agency theory, corporate governance, and financial risk in Islamic banks.

Authors	Purpose	Type Source	Summary Points
Eisenhardt et al. (1989)	Establish agency theory's foundation in organizational behavior	Theoretical	Agency theory–conflict between ownership and control in organizations; stresses separation for efficiency.
Farag et al. (2015)	Define corporate governance, its components, and its role in business ethics	Review	Dimensions aiding proper corporate governance in Islamic banks: responsibility, accountability, transparency and fairness.
Berger et al. (2016)	Examine corporate governance's role in enhancing Islamic banks' resilience to economic challenges	Empirical	Smaller boards–lower bankruptcy and financial risk in banks
Rachdi et al. (2011)	Investigate the impact of board size on financial risk in Pakistani banks	Empirical	Larger boards–better risk management capabilities
Switzer et al. (2013)	Explore the relationship between board size and risk management in American banks	Empirical	Larger boards are associated with better risk management capabilities in banks.
Mollah et al. (2015); Nomran et al. (2016)	Analyze the role of Sharīʿah Supervisory Boards in Islamic banking governance	Empirical	Sharīʿah Supervisory Boards uphold ethical and Sharīʿah compliant standards in Islamic banks.
Iqbal et al. (2023)	Discuss the importance of transparency and governance in reducing financial risks in Islamic banks	Review	Transparency and governance practices mitigate risks and enhance stability in Islamic banking.
Mollah et al. (2017)	Examine how SSBs contribute to ethical standards and risk management in Islamic banks	Empirical	SSBs act as independent controls to prevent excessive risk-taking in Islamic banks.
Oussii et al. (2020); Pillai et al. (2017); Iqbal et al. (2023)	Investigate the role of audit committees in banking governance	Empirical	Audit committees enhance accountability and transparency, crucial for effective governance.
Abdeljawad et al. (2020); Qamar et al. (2023)	Analyze the impact of audit committee size on risk management in organizations	Empirical	Larger audit committees are associated with better risk management outcomes.
Jermias et al. (2013)	Study the relationship between audit committees and risk-taking in organizations	Empirical	Effective audit committees mitigate risk-taking behaviors in organizations.
Rafay (2020); Connelly et al. (2011)	Explore the role of audit committees in enhancing organizational decision-making	Review	Audit committees improve decision-making processes by mitigating agency costs.

3. Research Methodology

In this study, statistical methods were used to conduct research. The study provided valuable insights through data analysis. According to Iqbal et al. (2023) the quantitative approach is a positivist-based research methodology used to examine certain populations or samples. Therefore, the quantitative approach was an effective research methodology for this research. Data is collected using research tools, analyzed qualitatively or statistically, and hypotheses are tested. The study's panel data came from Islamic banks' financial reports from 2018-2022. Ultimately, the quantitative approach provided a reliable set of data points to analyze the research hypotheses.

3.1 The measuring methodology for each factor is as results

Table 3: Measurement of Factors

Variables	Measurements
Financial Risk & Sharīʿah Banks	NPF – (Aslam et al., 20221; Iqbal et al., 2023).
Corporate Governance	**Measurements**
Size Supervisory Board (SSB1)	No. Supervisory Board – (Aslam et al., 2021).
Sharīʿah Supervisory Board (SSB2)	Overall SSB2 – (Arifin et al., 2021).
Audit Committee (ADC)	No. of Audit Committee – (Azhar et al., 2021).

Demonstration of results in support of the hypothesis:

$\boldsymbol{NPF}= \alpha+\beta1SSB1it+\beta2SSB2it+\beta3ADit+ROAit+e$

Source: Authors' Own

4. Results and Discussion

This study, conducted from 2018 to 2022, examined Islamic banks' financial performance and corporate governance. Descriptive statistics and regression analyses provided valuable insights into financial risks and corporate governance structures within these institutions.

Table 4: Descriptive Analysis

	(NPF)	SSB1	SSB2	ADC
Mean	3.910973	3.337779	2.361112	2.469445
Median	1.555001	1.000001	2.000001	2.000001
Maximum	11.53001	5.000001	5.000001	5.000001
Minimum	1.330001	1.000001	1.000001	2.000001
Dev-Std.	2.042111	0.481262	0.877025	0.801872
Skewness	2.070775	1.368267	2.006826	0.102192
Kurtosis	9.617899	3.730279	6.426051	3.321444
Obs*	75	75	75	75

Source: Statistics analyzed with E-Views-10 (2023)

From the descriptive statistics table above, the descriptive statistical test results are explained below. The study is, in summary, a one-tailed hypothesis. Descriptive statistics for the NPF demonstrate a range of financial risk as the maximum value is metaphorically 11.53% and the minimum value is literally 1.33%. The mean is metaphorically 3.91 and in conclusion, regarding the results, according to these results, a typical Islamic bank in Pakistan is doing satisfactorily economically, with an NPF score of 5%. The maximum is 11.53% and the minimum is 5.83%. To sum up, this study provides significant information concerning Pakistani Islamic banks' financial risks.

There are separate variables for supervisory board size and supervisory board size. For each variable, the values are as follows. A board of supervisors' value of $ =3.33 $ supervisors, $ =1 $ on a SSB1, $ =5 $ on a board of supervisors of any size. Thus, the SSB1 variable will have a range of possible values independently of the other variables. This means that the two variables can be examined independently, which represents a step forward in understanding corporate governance structures.

On the basis of the value of this variable, there should be a minimum of two board members, a maximum of six members, and an average of 2.4 members on the audit committee. Therefore, considering the variable's value, a minimum number of board members should be required. The value of the variable Sharīʿah Supervisory Board implies there must be a minimum of two members of the SSB2. There must also be a maximum of five members, and an average of 3.9.

Interpretation: An average NPF of 3.91% suggests Islamic banks in Pakistan have healthy finances. Consequently, these banks are relatively capable of managing financial risks. Interpretation: The average value of 3.34 suggests a certain degree of variability in the size of the supervisory board. Interpretation: The average value of 2.36 suggests considerable Sharīʿah compliance significance. Interpretation: The average of members of the audit committee is around 2.47 which suggests that auditing functions are significant.

4.1 Selection Test Model

The results of the panel data regression tests are below; therefore, the model can be used to predict future outcomes. Panel data are observed statistics that integrate both cross-sectional statistics and time series. Therefore, it is imperative to note that the panel data regression test is very useful, and roots the most definitive model to ascertain future outcomes. Cross-sectional and time series data indicate several data pieces are available. Panel regression includes three models: the common effect model, fixed effect model, and random effect model. The model results include, model selection results from Chow test, Hausman, and LM test:

Table 5: Tests of LM, Chow, and Hausman

Model Selection	Test of Chow	Test of Hausman	Test of L-M
Common-Effect-Model	-	-	0.000
Fixed-Effect-Model	0.000	-	-
Random-Effect-Model	-	0.854	-
Choice of greatest model	*F-EM of respect of probability* 0.000 < 0.5*		

Source: Statistics analyzed through E-Views-10 2023

The Chow experiment shows H0 should be rejected since the FEM p-value of 0.000 < 0.005. Therefore, an employee should conclude that the FEM gives results. As shown by the results, a fixed-effect model was used. From this information, a fixed-effect model is the most appropriate model. One should apply a standard assumption test to test FEM results. Therefore, using Chow assessment results, an EFM should be chosen for statistical completion. According to Chow test p-value of 0.000, it shows that the fixed-effect model is the most appropriate model, and thus, a supplier should reject the null hypothesis in favor of FEM.

4.2 Results of Multicollinearity Test

Table 6: Test of Multicollinearity

Variables	(NPF)	SSB1	SSB2	ADC
(NPF)	1.0001	-	-	-
SSB1	-0.095	1.0001	-	-
SSB2	0.1516	0.2779	1.0001	-
ADC	-0.232	0.2263	-0.0162	1.0001
ROA	-0.221	0.0538	-0.0877	0.2037

Source: Statistics analyzed through E-View-10 2023

From the table findings, it is clear that there is no multicollinearity in this model for Islamic banks, the Board of Supervisors, Sharīʿah Supervisory Boards, and Audit

Committees. This is because for each of the variables, the correlation value is lower than 0.8. These results imply that each of the substantive variables, as well as the independent variables and the dependent variables have only moderately strong relationships. In conclusion, this result means that the independent variables and the dependent variables are not related in any way. The R>s generally indicates no multicollinearity among the variables.

Table 7: under indicates the findings of panel data regression test

Variables	Coefficients	Error-Std.	Statistic-t	Prob.
Constant	39.47386	14.25163	2.913331	0.0054
SSB1	-0.120888	0.147690	-0.977894	0.3838
SSB2	0.409977	0.284761	1.650636	0.1045
ADC	-0.199454	0.057994	-2.918731	0.0052
ROA	-10203638	0.449976	-2.675495	0.0099
Squared-R				*0.573660*
Squared-R Adjust				*0.459475*
Statistic-F				*5.023562*
Statistic-F Prob.				*0.000004*

Source: Data Analyzed

The regression analysis indicates significant negative impacts of audit committee size (ADC) and ROA on NPF, with p-values of 0.0052 and 0.0099 respectively. SSB1 and SSB2 do not show significant relationships.

4.3 Discussion

4.3.1 Supervisory Board Size (SSB1) and Financial Risk

This study finds that the size of the Supervisory Board (SSB1) does not have a significant impact on financial risk in Islamic banks, as indicated by a coefficient of -0.120 and a p-value of 0.3838. The small size of supervisory boards in Islamic banks limits their ability to oversee financial management and mitigate risks effectively. Descriptive statistics reveal that the average size of SSB1 is 3.34 members, which suggests insufficient diversity and expertise to address the complexities of financial risk management. Alipour et al. (2019) argue that larger boards are more effective at monitoring management, making informed decisions, and controlling assets, ultimately reducing business risks. Although some research, such as Marinova et al. (2016), suggests that board size may not directly influence financial risk-taking, the results of this study indicate that the current supervisory board size in Islamic banks may not be sufficient to address financial risks effectively. The hypothesis (H1) that supervisory board size negatively influences financial risk is not supported, but increasing board size could strengthen oversight functions. Future research should explore the relationship between board size, diversity, and decision-making quality to determine whether larger supervisory boards can improve risk management outcomes.

4.3.2 Shari'ah Supervisory Board (SSB2) and Financial Risk

The findings also show no significant relationship between the Sharīʿah Supervisory Board (SSB2) and financial risk, as demonstrated by a coefficient of 0.409 and a p-value of 0.1045. The average size of SSB2, according to descriptive statistics, is 2.36 members, which is relatively small for fulfilling the critical role of ensuring compliance with Sharīʿah principles. The primary responsibility of SSB2 is to oversee Sharīʿah -compliant banking practices rather than directly engaging in risk management. This aligns with Mollah et al. (2017), who described SSB2 as a compliance-focused governance mechanism rather than one that directly impacts financial risk. While SSB2 ensures transparency and compliance, its role in mitigating financial risks remains limited. Nomran et al. (2012) suggest that SSB2 can reduce financial risks by providing an additional layer of governance, but this study's findings do not support such a relationship. Instead, it highlights the need for future research to examine the potential interactions between SSB2's compliance role and its impact on financial risk. The hypothesis (H2) that SSB2 negatively affects financial risk is not supported by this study. However, strengthening SSB2's capacity and increasing its size may enhance its governance role.

4.3.3 Audit Committee (ADC) and Financial Risk

The audit committee (ADC) emerges as a critical governance element for reducing financial risk in Islamic banks. Regression results show a significant negative relationship between ADC size and financial risk, with a coefficient of -0.199 and a p-value of 0.0052. Descriptive statistics reveal that the average size of the audit committee is 2.47 members, indicating room for improvement in size and capacity. Larger audit committees can provide better oversight, greater expertise, and a more diverse set of perspectives, which enhance their ability to mitigate risks. Abdeljawad et al. (2020) and Jermias et al. (2013) found that larger audit committees are associated with reduced risk-taking and stronger governance practices. This study corroborates these findings, supporting the hypothesis (H3) that audit committees negatively influence financial risk. Moreover, audit committees act as a safeguard against financial mismanagement, fraud, and agency problems. Increasing the size and capacity of audit committees could further strengthen financial stability in Islamic banks.

The findings indicate that while SSB1 and SSB2 have limited impact on financial risks, audit committees play a significant role in mitigating these risks. Increasing the size and diversity of both supervisory boards and audit committees may enhance their effectiveness in financial risk management. These results align with the hypotheses and suggest that corporate governance elements must be optimized to address the evolving challenges in Islamic banking. Future research should further investigate the interplay of governance structures and their impact on financial risk reduction.

5. Conclusion

This study highlights the financial performance and governance structures of Islamic banks in Pakistan from 2018 to 2022, providing critical insights into financial risk management. The average non-performing financing (NPF) score of 3.91% indicates a stable financial standing, demonstrating the banks' capacity to manage financial risks effectively. Regression analysis shows that audit committee size (ADC) and return on assets (ROA) significantly and negatively influence NPF, with coefficients of -0.199 (p-value = 0.0052) and -10.2036 (p-value = 0.0099), respectively. This underscores the pivotal role of profitability and audit committee effectiveness in reducing financial risks.

Conversely, the supervisory board size (SSB1) and Sharīʿah Supervisory Board (SSB2) variables do not exhibit statistically significant relationships with NPF, with p-values of 0.3838 and 0.1045, respectively. These findings suggest that while these governance components are integral to overall bank operations, their current structures may require further refinement to enhance their impact on financial risk.

Descriptive statistics expose variability across governance structures, with an average of 3.34 members on supervisory boards (SSB1), 2.36 members on Sharīʿah Supervisory Boards (SSB2), and 2.47 members on audit committees (ADC). The fixed-effect model, determined as the most suitable based on the Chow test (p-value = 0.000), validates the robustness of the analysis. The absence of multicollinearity among variables (correlation values < 0.8) further strengthens the reliability of the findings.

While the study provides valuable insights, its reliance on a limited set of governance proxies (SSB1, SSB2, ADC) and financial indicators highlights the need for future research. Expanding the scope to include independent supervisory boards, risk committees, and ownership structures could provide a more comprehensive understanding of governance and risk management in Islamic banking, contributing to enhanced financial stability and operational effectiveness.

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تأثير لجان التدقيق في البنوك الإسلامية:
حوكمة الشركات والمخاطر المالية في إطار الالتزام الشرعي في باكستان

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المستخلص. لاستكشاف تأثير حوكمة الشركات خاصة لجان التدقيق على المخاطر المالية في البنوك الإسلامية في باكستان الخاضعة لأحكام الشريعة الإسلامية. استخدمت الدراسة بيانات اللوحة خلال الفترة (٢٠١٨-٢٠٢٢) للبنوك الإسلامية في باكستان. لتسهيل تحليل البيانات، استخدمت الدراسة نموذج التأثير الثابت في انحدار بيانات اللوحة. تسلط الدراسة الضوء على أن البنك الإسلامي في باكستان يحافظ على وضع مالي مناسب، بمتوسط صافي رأس مال متعثر يبلغ ٣,٩١٪، مما يشير إلى أن هناك إدارة قوية للمخاطر. يؤكد تحليل الانحدار على التأثيرات السلبية الكبيرة لحجم لجنة التدقيق (*ADC*) والعائد على الأصول (*ROA*) على صافي رأس المال المتعثر، بمعاملات -٠,١٩٩ (ص = ٠,٠٠٥٢) و-١٠,٢٠٣٦ (ص = ٠,٠٠٩٩) على التوالي. تؤكد هذه النتائج على أهمية الربحية ودور لجان التدقيق الفعال في الحد من المخاطر المالية. ومع ذلك، لا يظهر *SSB1* و*SSB2* أي علاقات مهمة، بقيم ***p*** تبلغ ٠,٣٨٣٨ و٠,١٠٤٥ على التوالي. ويضمن نموذج التأثير الثابت، الذي تم التحقق من صحته بواسطة اختبار تشاو (ص = ٠,٠٠٠)، قوة التحليل. إن القيود الرئيسية التي تواجه البحث هي الوقت والموارد وتوافر جودة وكمية البيانات. ويُستنتج مما سبق أنه بسبب الحاجة القصوى إلى الحد من المخاطر المالية، يجب أن يقوم المدققون بدورٍ مهمٍ في البنوك بشقيها الإسلامي والتقليدي. تشير نتائجنا إلى أن البنوك الإسلامية بحاجة إلى ضمان عمل لجان التدقيق بكفاءة. إن وجود نظام فعال في البنوك الإسلامية يعزز المساءلة والشفافية وتعزيز إدارة المخاطر المالية بشكل فعال.

الكلمات الدَّالة: البنوك الإسلامية، حوكمة الشركات، المخاطر المالية، الشريعة الإسلامية

تصنيف JEL: K10, G34, G32, G21

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ESG Disclosure and Financial Stability of Islamic and Conventional Banks

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ABSTRACT. The recurrence of banking and financial crises has revealed the complexity and vulnerability of the conventional financial and banking system. In this paper, we empirically investigate the impact of Environmental, Social, and Governance disclosure (ESG) on banking stability, as well as the individual effect of each dimension of ESG, with particular attention to the moderating role of capital structure. Using a mixed sample composed of 18 Islamic banks and 22 conventional banks from 2014 to 2022, the results indicate a positive and significant effect of ESG, measured by the ESG score, on banking stability. Among the dimensions of the ESG score, only environmental and governance practices have shown a significant positive link with banking stability. However, the social dimension did not have a significant effect on this variable. Additionally, our results suggest that the Islamic character further enhances the positive relationship between ESG and financial stability due to ethical foundations. Furthermore, we find that the financial stability of Islamic and conventional banks primarily depends on capital structure, specifically the adequacy of equity, and credit risk management. Our study sheds light on the essential role of capital structure in moderating the benefits of ESG disclosure, an effect that has not been extensively examined in previous studies.

Key words: ESG, Financial stability, Islamic, Conventional, Moderating, Capital structure

JEL CLASSIFICATION: G21, G3, B23, C33

KAUJIE CLASSIFICATION:́ A7, H2, H57, L25, B16

Introduction

The last few decades have seen numerous changes and events that have highlighted the flaws of the classical financial system, excluding ethics and moral values from the economic and financial spheres and prioritizing wealth maximization at any cost for companies. With the rise in social, environmental, and financial problems, it became essential to revisit the rules governing the role of companies in their environment. Since then, governments, businesses, academics, and society have all attempted to improve the relationship between business and stakeholders. Discussions began by trying to find solutions on how companies can operate in more ethical and transparent areas (Wu & Hu, 2019). For this reason, the concept of corporate social responsibility (ESG) has garnered growing interest from firms, governments, legislators, civil societies, as well as researchers. Evolving through several phases since its inception at the end of the 19th century, ESG is now an integral part of contemporary business. It has indeed become a major priority for companies, their stakeholders, and the financial community (Chollet and Sindiwi, 2018).

In the banking sector, ESG also plays a crucial role. Historically, banks have been viewed as public fiduciary institutions; thus, expectations have arisen regarding their high professionalism and socially responsible behavior (Matuszak et al, 2019). They also play a significant role in shaping the sustainable development of countries, influencing social well-being and contributing to economic development. However, before the 2007/2008 crisis, banks were not heavily involved in ESG strategies (Novokmet and Rogošić, 2016). Their interest in ESG increased after the crisis, as it led to a loss of confidence and credibility towards banks (Fijałkowska et al, 2017). For this reason, banks have become obligated to follow this trend and disclose their ESG practices in annual reports to restore their credibility and reassure their stakeholders.

Financial stability is certainly a permanent concern for governments and academics. Bank stability is particularly crucial for the stability of other sectors (Berger et al, 2009) and is essential for the stability of any financial system in the world. Financial system regulators understand that a loss of confidence in the banking system can have devastating consequences for the entire financial system. For this reason, banking stability has always been one of the main objectives of the regulatory and supervisory policy of regulators (Ozili, 2019). Academic research has also been interested in the subject of financial stability in general and banking stability, particularly after the 2008 crisis. Therefore, this research has focused on determining the factors that can influence banking stability as well as the means to help avoid the crisis imbalance and instability of the banking sector.

The interest of this paper lies in studying the relationship between two essential subjects for the conventional and Islamic banking sector: ESG and financial stability. Our study is an extension of the literature on the financial effects of ESG. The central issue of this study is to investigate the impact of global and specific ESG dimensions (environmental, social, governance, and economic) on the financial stability of Islamic and conventional banks, with particular attention to the moderating effect of capital structure. This paper adds to the existing literature in several ways. In this study, we tried to link the two concepts of ESG and banking stability given their growing importance. Our main objective was to address a subject rarely studied in the literature, which is the impact of ESG on the financial stability of conventional and Islamic banks. The motivation behind choosing this topic lies in the urgent need to assess how ESG practices can influence the financial resilience of banking institutions, particularly in a context where economic and environmental crises are increasingly frequent. Furthermore, the MENA region was selected due to its unique banking landscape, where Islamic banks, which operate according to ethical principles, coexist with conventional banks, which allows for an enriching comparison of the impacts of ESG scores on financial stability. The contribution of this research stands out from other empirical studies by its comparative approach, which examines not only Islamic and conventional banks, but also the cultural and economic specificities of the MENA region. By integrating in-depth analyses of ESG scores and their relationship with financial stability, this study offers new perspectives on how financial institutions can navigate a changing environment, while meeting sustainability requirements. Thus, it contributes to the existing literature by providing practical recommendations for banks and regulators, aimed at strengthening financial stability through responsible practices.

The remainder of this paper is organized as follows: Section 2 presents the literature review and the hypothesis development. Section 3 deals with the methodological aspects, namely the sample and the models. Section 4 presents the main empirical results and the discussion. Finally, the conclusions are presented.

1. Literature review and hypotheses development

The banking sector, both Islamic and conventional, always seeks to maintain a satisfactory level of solvency in order to continue their function of financial intermediation normally. Going bankrupt has disastrous consequences not only for the banks but also for the entire economy. This causes price instability, loss of confidence in the system, and the risk that depositors will lose part of their savings. For this reason, banks always seek to control the factors affecting their health and stability. The relationship between ESG and financial stability has been infrequently discussed in the literature. Gong and Ho (2018) examine this issue based on a sample of Chinese companies for the period 2009-2015. The results indicate that companies with stronger ESG performance tend to be more stable. This result is consistent with the argument that ESG is a powerful tool for managing risk. However, this positive association between ESG and stability is significant only in highly competitive sectors, suggesting that competition in the product market is a modest incentive for managers to invest in ESG activities in the interests of stakeholders. Orazalin et al (2019) conducted research addressing the impact of sustainability indicators, namely the environmental, social, and economic aspects, on the stability of 45 major oil and gas companies listed on the Russian trading stock exchange over the period 2012-2016. Empirical results show that companies improve their sustainability performance indicators in order to manage risk and improve financial stability. Similarly, Atif and Ali (2021). studied whether environmental, social, and governance (ESG) disclosure is related to default risk. Using a sample of U.S. nonfinancial institutions from 2006 to 2017, they found that ESG disclosure is positively related to Merton default distance and is negatively related to credit default swap spread, suggesting that firms with higher ESG disclosure have lower default risk. Indeed, in the same context, Di Tommaso and Thornton (2020) examined whether European banks' environmental, social, and governance (ESG) scores impact their risk-taking behavior and bank value. They found that high ESG scores are associated with a modest reduction in risk-taking for both high- and low-risk banks, and that the impact depends on board characteristics.

In ASEAN countries Setiarini et al., (2023) examined the influence of determinants of ESG practices on risk-taking and firm life cycle. They used a panel regression based on a sample of 2373 observations from 2004 to 2022. Their results showed that prospector strategy orientation encourages a greater increase in ESG practices compared to defender strategy orientation and that increasing risk-taking by firms will reduce ESG practices.

Platonova et al. (2016), in the context of the Middle East, took 24 Islamic banks that are members of the GCC as samples. Their study focuses on the impact of ESG approached by six dimensions (mission and vision, commitment to employees, products and services, commitment to society, commitment to donors, and zakat: donations and volunteering) on financial performance. These authors join the previous ones in confirming the positive relationship between these two variables.

1.1. The impact of ESG on banking stability

Sun and Cui (2014) explored the relationship between ESG and default risk. The dataset contains 829 observations from 303 companies between 2008 and 2010. The results confirm that ESG has a significant effect on reducing the risk of default. They show that ESG increases business cash flow, reduces revenue volatility, creates value for businesses, and generates strong assets that protect businesses against defaults. Chang et al. (2013) also examined this relationship. For a sample of 85 Taiwanese listed companies and for a period from 2007 to 2010, they showed that companies adopting a good level of ESG have a very low probability of default in the short term. Rizwan et al. (2017) examined the risk-mitigating effects of engaging in ESG activities using data from 1,119 US non-financial companies between 2000 and 2012. The authors find evidence that companies with higher ESG activity scores have a lower probability of default. However, the credit risk effect of ESG is more pronounced with activities linked to the main stakeholders (employee relations, product quality, diversity, and governance). Engagement in secondary (institutional) ESG activities (related to the environment and the community) is not significant in this relationship. This study provides strong evidence that engaging and disclosing ESG-related activities reduces credit risk, suggesting that management and investors can use socially responsible behavior as a pricing factor.

For the banking sector, Scholtens and Van't Klooster (2019) studied the effect of ESG on the risk of individual bank failure and systemic risk. Their sample includes European banks for the period 2002/2016. They show that higher sustainability scores of banks are significantly associated with lower default risk. They also find that outperformance in sustainability reduces banks' contribution to systemic risk. It therefore appears that the sustainability performance of banks can have repercussions on the financial system. This implies that sustainability is important for banks and their supervisors. Considering sustainability can enhance banking risk management and prudential policy decision-making and provide guidance on how to finance a transition to an economic system that will effectively internalize externalities. Different research has shown that higher ESG scores are associated with more prudent and sustainable banking activities, which helps reduce overall risk. Moreover, this effect should be stronger when negative events occur, especially during crisis years: the benefits for companies of ESG engagement emerge strongly when unexpected drops in confidence occur. Consistent with recent findings on non-financial firms (Lins, Servaes, and Tamayo 2017), we demonstrate the positive role played by ESG scores in enhancing market confidence and bank stability in times of financial turmoil. Indeed, our predictions are based on the theory of moral capital, which considers ESG as an insurance strategy for maximizing business value by mitigating conflicts between stakeholders in the event of a crisis (Bouslah, Kryzanowski, and M' Zali 2018). Indeed, we can conclude that higher ESG scores may be associated with more prudent and sustainable banking activities, reducing overall risk. This allows us to propose the following hypothesis:

H1: *ESG has a positive effect on banking stability*

1.2. The effect of individual dimensions of ESG on performance and risk

Studies examining ESG and its effects on performance, risks, and other issues typically use an aggregate score that includes all dimensions of ESG. However, it is important to highlight the multidimensional nature of ESG and disaggregate it into sub-dimensions to better understand the relationship studied (Platonova et al., 2018). For this reason, some studies consider the effect of each dimension separately, while others focus on just one dimension. In their study on the impact of sustainability indicators on financial stability, Orazalin (2019) investigated the effect of each dimension on stability. Several researchers (e.g., Mahoney and Roberts 2007; Makni et al., 2009; Waddock and Graves 1997; Platonova et al., 2018, and Belasri et al. 2020) have emphasized the importance of individual components of the total social performance index when examining the impact of ESG on financial performance, suggesting that "interesting and explanatory information is lost" when an aggregate measure of corporate social performance is used (Johnson and Greening 1999).

Ramzan et al. (2021) stated that financial stability has been extensively discussed in the financial literature as a macroeconomic indicator of a country's financial performance. Chollet and Sandwidi (2018) explored the financial stability of the banking sector by examining the relationship between ESG and financial risk, finding that a company's positive social performance reduces its financial risk. Similarly, Jin et al. (2017) studied the relationship between social capital and bank stability, using a social capital index as a proxy measure of social capital, and found that banks with more social capital are less likely to fail and experience fewer financial difficulties.

To our knowledge, there are no published studies on this subject in a broader ESG context emphasizing the stability or risk-taking of banks. In conclusion, financial stability has been a significant topic in the financial literature, with studies exploring its relationship with ESG, social capital, and other factors. These studies suggest that positive social performance and social capital can contribute to reducing financial risk and enhancing overall economic performance. This study aims to investigate the relationship between banks' social factors and their ESG activities.

1.2.1 The environmental dimension

Previous studies suggest that companies with high environmental performance are more profitable and less risky than peer companies with low environmental performance (Spicer, 1978; Mahoney and Roberts, 2007). Makni et al. (2009) tested the relationship between ESG and the financial performance of Canadian public enterprises using measures of ESG from the Canadian Social Investment Database. Their empirical results show no statistically significant relationship between the aggregate measure of ESG and financial performance. On the other hand, they indicate the existence of a significant relation between the individual dimensions, in particular the environmental dimension (and the employees), and the financial performance. Mahoney and Roberts (2007) discussed the same relationship for Canadian firms over the period 1997–2000. The results also indicate an insignificant relationship between the combined measure of ESG and financial performance, but with regard to individual measures of ESG, Mahoney and Roberts (2007) reported that environmental measures significantly affect financial performance.

Regarding risk, Orlitzky and Benjamin (2001) suggest that, compared to other dimensions of ESG, the environmental dimension, in particular in the United States, has a weak (although negative) correlation with business risk. However, several studies show that environmental responsibility has a considerable effect on risk. Indeed, companies that are committed to the environment, implementing effective measures, and informing the public of their achievements can reduce risks (Sharfman and Fernando, 2008). Salama et al. (2011) examined the relationship between corporate environmental performance and corporate risk in the UK context between 1994 and 2006.

This study proposes the following hypothesis to study the relationship between banks' SFs and their ESG activities. From which we can derive the following hypothesis:

H1a: T*he environmental dimension of ESG has a positive effect on banking stability.*

1.2.2 The social dimension

The social dimension can positively impact financial performance. Makni et al. (2009) have shown a positive effect of the "employees" dimension on financial performance. Hannon and Milkovich (1996) used an event study methodology to examine whether advertisements for human resources reputation in the business press (such as companies cited as best for women) affect the stock prices of these companies. They found partial support for the claim that favorable signals from human resources reputation have a positive effect on stock prices. Social issues, as an integral part of a company's public relations, are visible and should have a strong causal relationship to business risk (Orlitzky and Benjamin, 2001).

Various empirical studies show that companies with strong social performance reduce their risk (Chollet and Sindiwi, 2018). Verwijmeren & Derwall (2010) conducted a study of 3000 American companies during the period 2001-2005 and found that companies with a strong record of accomplishment in employee well-being significantly reduce the likelihood of bankruptcy by operating with lower debt rates. They also observed that companies with better employee histories have better credit scores, indicating that good human resource practices significantly reduce the risk of bankruptcy. Oikonomou et al. (2012) also found a negative relationship between the systematic risk of companies and their social performance. Additionally, Cholet and Sindiwi (2018) demonstrated that good social performance reduces the financial risk of companies. Orazalin et al. (2019) found that the social dimension has a significant positive effect on the stability of companies. Hence, we derive the following hypothesis:

H1b: *The social dimension of ESG has a positive effect on banking stability*

1.2.3 The governance dimensions

The governance dimension is often overlooked in some empirical studies, such as those conducted by El Ghoul (2011) and Oikonomou et al. (2012), because some authors do not view good governance practices as an indicator of socially responsible behavior. In contrast, John et al. (2008) examined the governance dimension and concluded that there are arguments for both positive and negative associations between the governance scores of American companies and financial risk.

However, Bouslah et al. (2013) discovered a positive relationship between the strength of corporate governance and business risk (both total and idiosyncratic) using 16,599 business-year observations from 1991-2007. Cholet and Sindiwi (2018) noted that due to a lack of empirical evidence, the question remains open, but they believe that corporate governance is a relevant dimension for investors. Their empirical analysis demonstrated that good governance practices significantly reduce risk. This leads to the following hypothesis:

H1c: *The governance dimension of ESG has a positive effect on banking stability.*

1.3. The Moderating Role of the Capital Structure

The recent financial crisis significantly tarnished the reputation of banks, highlighting the fragility of their business models based on high-risk levels, low reserves, and harmful practices for stakeholders. Restoring trust and reputation is a key motivator for the banking sector to incorporate Corporate Social Responsibility (ESG) into their value-creating strategies and activities (Laugel and Laszlo, 2009). The Basel II Accords (2004) aimed to strengthen banking regulations to theoretically reduce risks by tightening loan conditions and analyzing repayment methods for financed projects. The Basel III reform, influenced by the FSB (Financial Stability Board) and the G20, introduces liquidity and leverage ratios, counter-cyclical measures, and revises risk coverage, yet overlooks the analysis of non-financial risks.

Moudud-Ul-Huq et al. (2021) found a positive relationship between market power and financial stability in Islamic banks in MENA countries, highlighting Islamic banks' stability compared to other ownership structures. They recommended improving non-performing loan management to reduce credit risk and increase profitability in the MENA region. Stakeholders should adjust risk management strategies based on ownership structures, with a focus on Islamic banks due to their superior stability. They suggested that ESG reports provide long-term forecasts to creditors, enabling companies to maintain higher leverage and proposed the following hypothesis:

H2: *The moderating effect of capital structure has a significant influence on theESG-relationship financial stability.*

2. Data, Variable Measurements and Methodology

2.1. Data

In this study, we utilized data from 42 banks in the MENA region, Indonesia, and Malaysia. The sample consists of 17 Islamic banks and 25 conventional banks, as indicated in Table 1. Data from the years 2014 to 2022 were gathered from the DataStream database, and macroeconomic data was sourced from the World Bank website.

Table 1: Distribution and sample categorization

Countries	Conventional banks	Islamic banks
Saudi Arabia	3	2
Kuwait	2	2
Oman	2	3
United Emirates	2	4
Bahrain	3	2
Egypt	1	2
Morocco	1	1
Jordan	1	1
Turkey	5	1

Source: Author’s elaboration

2.2. Variable definitions

2.2.1. Dependent Variable: Banking Stability

The Altman Z-score is a formula used to determine if a company is at risk of bankruptcy. It considers profitability, leverage, liquidity, solvency, and activity ratios. A Z-score near 0 indicates potential bankruptcy, while a Z-score near 3 shows strong financial health. This method is preferred over analyzing a single ratio as it combines various factors like assets, earnings, and market value. Creditors and lenders commonly use this method to assess the risk of lending money to customers and borrowers.

$$\textbf{Z-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 0.99E$$

The letters in the formula represent the following ratios:

A = Working Capital / Total Assets (Measures the relative amount of liquid assets)

B = Retained Earnings / Total Assets (Determines cumulative profitability)

C = Earnings Before Interest and Taxes / Total Assets (Measures earnings before the effects of taxes and leverage)

D = Market Value of Equity / Book Value of Total Liabilities (Incorporates the effects of a decline in the market value of a company's stock)

E = Sales / Total Assets (Measures asset turnover)

In fact, the table 1 summarizes the different variables used in this study

Table 2 : Variables measures

Variables	Abreviation	Measure	References
		Dependent variable	
Financial stability	**Z-score**	**Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 0.99E**	Altman
		Independent variables	
Corporate social responsibility	**ESG Score**	The ESG score is calculated by weighting the three dimensions: social, environmental, and governance.	Chollet and Sindiwi, 2018; Migliavacca et al., 2019
		Moderating variable	
Capital structure	**EA**	The ratio of equity to total assets	
		Control variables	
Size	**Size**	The logarithm of total bank assets	Jo and Na (2012) Belsari et al. (2020)
Liquidity risk	**TL/TD**	The total loans/total deposits ratio	Migliavacca et al. (2020)
Credit risk	**LLP/NPL**	The ratio of loan loss provisions to non-performing loans	Ben Salah and Boujelbène (2018) and Migliavacca et al. (2020).
Islamic	**Islamic**	A binary variable; it takes the value 1 if the bank is Islamic and 0 if the bank is conventional	Noman et al., (2015)
Concentration ratio	**HHI**	Sum of squares of market shares of all banks.	Wibowo (2016)
Inflation	**Inflation**	The general increase in the prices of goods and services over a given period.	Jokipii and Monnin (2013)
GDP	**GDP**	the GDP growth rate	Rupeika-Apoga et al. (2018).

Source: Author’s elaboration

2.3. Model specifications and statistic method

To assess the impact of global ESG and each individual dimension: environmental, social, corporate governance and economic, we estimate respectively the following models:

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ ESGScore_{it} + \beta 2\ Size_{it} + \beta 3\ TL / TD_{it} + \beta 4\ E / A_{it} + \beta 5\ LLP / NPL_{it} + \beta 6\ IHH_{it} + \beta 7\ Islamic_{it} + \beta 8\ GDP_{it} + \beta 9\ INF_{it} + \varepsilon_{it} \quad (1)$$

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ environmental_{it} + \beta 2\ Size_{it} + \beta 3\ TL / TD_{it} + \beta 4\ E / A_{it} + \beta 5\ LLP / NPL_{it} + \beta 6\ IHH_{it} + \beta 7\ Islamic_{it} + \beta 8\ GDP_{it} + \beta 9\ INF_{it} + \varepsilon_{it} \quad (2)$$

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ Social_{it} + \beta 2\ Size_{it} + \beta 3\ TL / TD_{it} + \beta 4\ E / A_{it} + \beta 5\ LLP / NPL_{it} + + \beta 6\ IHH_{it} + \beta 7\ Islamic_{it} + \beta 8\ GDP_{it} + \beta 9\ INF_{it} + \varepsilon_{it} \quad (3)$$

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ GOV_{it} + \beta 2\ Size_{it} + \beta 3\ TL / TD_{it} + \beta 4\ E / A_{it} + \beta 5\ LLP / NPL_{it} + \beta 6\ IHH_{it} + \beta 7\ Islamic_{it} + \beta 8\ GDP_{it} + \beta 9\ INF_{it} + \varepsilon_{it} \quad (4)$$

To study the moderating effect of capital structure on the ESG- banking stability, we estimate the following regressions:

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ ESGScore_{it} + \beta 2\ E / A_{it} + \beta 3 ESG\ Score{*}E/A_{it} + \beta 4\ Size_{it} + \beta 5\ TL / TD_{it} + \beta 6\ E / A_{it} + \beta 7\ LLP / NPL_{it} + \beta 8\ IHH_{it} + \beta 9\ Islamic_{it} + \beta 10\ GDP_{it} + \beta 11\ INF_{it} + \varepsilon_{it} \quad (1)$$

$$Z\text{-}Score = \beta 0 + \beta 1\ environmental_{it} + \beta 2\ E / A_{it} + \beta 3\ environmental{*}E/A_{it} + \beta 4\ Size_{it} + \beta 5\ TL / TD_{it} + \beta 6\ E / A_{it} + \beta 7\ LLP / NPL_{it} + \beta 8\ IHH_{it} + \beta 9\ Islamic_{it} + \beta 10\ GDP_{it} + \beta 11\ INF_{it} + \varepsilon_{it} \quad (2)$$

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ Social_{it} + \beta 2\ E / A_{it} + \beta 3\ Social{*}E/A_{it} + \beta 4\ Size_{it} + \beta 5\ TL / TD_{it} + \beta 6\ E / A_{it} + \beta 7\ LLP / NPL_{it} + \beta 8\ IHH_{it} + \beta 9\ Islamic_{it} + \beta 10\ GDP_{it} + \beta 11\ INF_{it} + \varepsilon_{it} \quad (3)$$

$$Z\text{-}Score_{it} = \beta 0 + \beta 1\ GOV_{it} + \beta 2\ E / A_{it} + \beta 3\ GOV{*}E/A_{it} + \beta 4\ Size_{it} + \beta 5\ TL / TD_{it} + \beta 6\ E / A_{it} + \beta 7\ LLP / NPL_{it} + \beta 8\ IHH_{it} + \beta 9\ Islamic_{it} + \beta 10\ GDP_{it} + \beta 11\ INF_{it} + \varepsilon_{it} \quad (4)$$

With, Z-Score is the measure of banking stability, ESG Score is the global ESG responsibility, $E/A_{it:}$ capital structure, Size: the size of banks, TL/TD is the total loans / total deposits ratio, LLP/NPL (loan loss provision / non-performing loans): provision for loan losses / non-performing loans); IHH: concentration of bank; Islamic: binary variable; 1 if the bank is Islamic, 0 otherwise; GDPis the GDPgrowth rate; Inf is the rate of inflation.

Indeed, we utilized panel data, also known as cross-referenced data, which includes the two previous dimensions and reports the values of the considered variables recorded for a set or panel of individuals over a series of periods Petru-Ovidiu, M. (2015).There are two models that we can distinguish: a fixed effects model and a random effects model. To choose between the two models, we conducted the Hausman test, which is a specification test of the individual effects that helps determine if the coefficients of the two estimates (fixed and random effects) are statistically different and follow a Chi-square distribution with k-1 degrees of freedom (Hausman, 1978).

According to the Hausman test, random effects models are preferable to fixed effects models since the probability is greater than 5%. Therefore, we will use the estimates from the random effects models to test all the hypotheses. We used the Breusch Pagan test to examine if the square of the residuals can be explained by the model variables. The results obtained reject the null hypothesis of homoscedasticity, indicating that the variance of the residuals is heteroscedastic.

4. Estimation and Discussion of Results

4.1. Descriptive analysis of the sample

Table 3 presents descriptive statistics for variables in the study. The Z-Score variable, measuring banking stability, has an average of 88.82582 and a standard deviation of 103.6845. The higher the value of the z-score, the lower the risk of default for the bank. Generally, the z-score values are high, indicating that the banks in our sample do not suffer from an instability problem. This can be explained by the relatively short study period (5 years), during which the banks did not experience significant volatility, especially since it was not a period of crisis.

The ESG score values show an average of 55.4%, indicating an acceptable level of ESG commitment. However, the standard deviation is relatively large, at 16.63595. In terms of the dimensions of ESG, the averages for the environmental and social dimensions are 52.67885, and 53.9431 respectively. Their standard deviations are 31.39977, and 29.56893, suggesting that while the overall level of ESG enforcement is high, banks are not equally committed to environmental, and social requirements. The governance dimension has an average of 35.46805, lower than the environmental and social dimensions, with a significant standard deviation of 24.19801. This result suggests that the banks in our sample are generally less concerned with this dimension compared to the other dimensions.

Table 3 : Descriptive statistics

Variables	Mean	Std. Dev.	Min	Max
Z-score	88.82582	103.6845	20.25053	690.9758
Esgscore	55.40065	16.63595	18.21	89.74
Social	53.9431	29.56893	5.64	94.32
Environnemental	52.67885	31.39977	9.73	95.04
Governance	35.46805	24.19801	1.75	96.45
EA	.118555	.0269138	.0692768	.2278467
Size	8.317425	1.541106	6.216116	12.11119
TL/TD	1.059166	.2283031	.4980539	1.823419
LLP/NPL	.2415541	.2918938	-.1079691	1.503413
IHH	32.1796	18.87896	9.78	107.61
Islamic	.4	.4909903	0	1
GDP	11.4664	.4440023	10.49312	12.01794
Inflation	3.699382	3.893159	-0.8769134	29.50193

Source: Author’s elaboration

To test for the presence of multicollinearity, we conducted a pairwise Pearson correlation test between all variables used. According to the results in Table 4, the majority of correlations between variables within the same model are strictly less than 0.7.

Table 4 : Pearson correlation matrix

	Zscore	ESG *score*	Social	ENV	Gov	Size	E/A	TL/TD	LLP/NPL	IHH	Islamic	GDP	Inflation
Zscore	1.0000												
ESG score	0.0535 1.0000	1.0000											
Social	-0.0406* 0.0000	0.7718* 0.0000	1.0000										
ENV	-0.0595* 0.0000	0.8440* 0.0000	0.8781* 0.0000	1.0000									
Gov	0.0057* 0.0000	0.5257* 0.0000	0.6026* 0.0000	0.6200* 0.0000	1.0000								
Size	0.1395* 0.0000	0.4287* 0.0000	0.4263* 0.0000	0.3363* 0.0002	0.2851* 0.0067	1.0000							
E/A	0.4008* 0.0000	0.0480* 0.0000	0.0576* 0.0000	0.0687 1.0000	0.2207 0.2133	0.3673* 0.0000	1.0000						
TL/TD	-0.0990* 0.0000	-0.082* 0.0000	-0.0167* 0.0000	-0.0178* 0.0000	-0.1534 1.0000	-0.0689 1.0000	-0.0969 1.0000	1.0000					
LLP/NPL	0.1978 0.2996	0.3005* 0.0062	0.2936 0.0000	0.2936* 0.0093	0.1975 0.8940	0.6599* 0.0000	0.5011* 0.0000	0.1230 1.0000	1.0000				
IHH	0.2356 0.1293	0.4165* 0.0232	0.3547* 0.0012	0.4568* 0.0193	0.1585 0.8940	0.7269* 0.0052	0.4256* 0.0235	0.235* 0.0543	0.365* 0.0312	1.0000			
Islamic	-0.0882 1.0000	-0.1311 1.0000	-0.0536 1.0000	-0.1072 1.0000	0.0264 1.0000	0.0290 1.0000	-0.1595 1.0000	-0.0567 1.0000	-0.1959 0.6571	0.2553 0.2356	1.0000		
GDP	-0.1349 1.0000	0.3024* 0.0021	0.3456* 0.0001	0.2767* 0.0106	0.2036 0.4505	0.3770* 0.0000	-0.1101 1.0000	-0.0724 1.0000	0.2534* 0.0425	0.1658* 0.0356	0.0476 1.0000	1.0000	
Inf	-0.1610 0.9372	0.3955* 0.0000	0.4474* 0.0000	0.4345* 0.0000	0.1549 1.0000	0.2638* 0.0121	-0.1277 1.0000	0.0921 1.0000	0.2477 0.0766	0.3569 0.0524	-0.2390* 0.0493	0.3211* 0.0002	1.000

***, **,* statistical significance at 1%, 5% and 10% levels respectively.

Source: Stata output

To verify the absence of multicollinearity among the independent variables in our empirical study, it would be helpful to create a correlation matrix. These measures are important for avoiding biased results in our regression model and preventing distortion of the estimates (Senaviratna and Cooray, (2019)). The results from our table (4) show the correlation matrix, indicating no significant multicollinearity issue as the correlation values between the independent variables do not exceed the threshold of 0.7 based on the Pearson test.

5. Results Discussion

Table 5: The Effect of ESG on Financial Stability

	M1		M2		M3		M4	
Zscore	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
ESGScore	0.2590277	0.017**						
Environnemental			0.1227532	0.030**				
Social					0.0303425	0.664		
Governance							0.18858	0.012**
Size	4.997511	0.077*	5.424485	0.056*	11.49238	0.012**	7.290115	0.098*
EA	533.3972	0.000***	527.797	0.000***	555.8508	0.000***	535.3938	0.000***
Size	4.997511	0.077*	5.424485	0.056*	11.49238	0.012**	7.290115	0.098*
TL/TD	0.727325	0.553	3.556518	0.574	5.528274	0.568	5.010796	0.578
LLP/NPL	-15.76894	0.009***	-14.17795	0.019**	-13.95525	0.025**	-12.64564	0.033**
Islamic	17.06333	0.025**	16.86808	0.031**	17.85964	0.008***	16.52388	0.041**
LIQ	0.0192697	0.011**	.0338852	0.015**	.0376759	0.078*	.0284013	0.077*
GDP	10.24055	0.535	10.90297	0.516	5.491962	0.750	2.660241	0.869
Inflation	-0.0831359	0.818	-0.1117077	0.758	-0.1745855	0.638	-0.1939664	0.583
IHH	0.0192697	0.011**	.0338852	0.015**	.0376759	0.078*	.0284013	0.077*
R2	0.5122		0.5033		0.4851		0.5230	
Fisher	123.17		118.58		109.11		128.83	
	0.000***		0.000***		0.000***		0.000***	

***, **,* statistical significance at 1%, 5% and 10% levels respectively.

Source: Stata output

The table 5 presents the results of four econometric models (M1 to M4) analyzing the impact of ESG scores on financial stability, measured by the Z-score. Each model includes different explanatory variables, and the coefficients and their statistical significances are provided.

In model M1, the coefficient of the ESG score is 0.2590277 with a p-value of 0.017, indicating positive and significant impact on financial stability confirming our first hypothesis. This suggests that an improvement in the ESG score is associated with better financial stability of firms. This relationship is supported by recent studies that show that firms with better ESG practices tend to have more robust financial performance, which can reduce their perceived risk by investors. This result aligns with stakeholder theory, which emphasizes that compliance with ESG requirements is crucial for a company's sustainability, rejecting the traditional view of firms. It also supports studies by Gang and Ho (2018) and Orazalin et al. (2019) that showed a positive impact of CSR on company stability. Our results further validate the importance of CSR practices in risk management (Ayadi et al., 2015; Harjoto and Laksmana, 2018) and risk reduction (Orlitsky and Benjamin, 2001; Wu and Hu, 2019; Truong and Kim, 2019; Scholtens and Van't Klooster, 2019). This finding can be explained by CSR acting as a remedy for banks post the 2008 crisis. Trust and reputation are crucial for maintaining stability and sustainability in the banking sector, and CSR helps restore confidence and improve the bank's image (Novokmet and Rogošić, 2016). A good reputation enhances a bank's performance, competitiveness, and investor appeal, protecting against return volatility and ensuring financial stability. Banks with high ESG levels tend to prioritize stakeholder interests, including depositors and borrowers, leading to increased customer satisfaction, deposits, borrower diligence, and reduced credit and liquidity risks. Additionally, ESG practices attract investors, contributing to profitability and preventing insolvency issues. The Size variable has a coefficient of 4.997511 with a p-value of 0.077, indicating a significance at 10%. This suggests that larger firms benefit from better financial stability, probably due to their ability to diversify their activities and manage risks more effectively. The capital structure (EA) variable is highly significant ($p < 0.001$) with a coefficient of 533.3972, confirming that profitability is a key determinant of financial stability. Indeed, our result demonstrate that the Islamic variable has a coefficient of 17.06333 with a p-value of 0.025, indicating a positive and significant impact on financial stability. This suggests that Islamic banks, which adhere to ethical and financial principles in line with Islamic law, may benefit from better perceptions from investors, enhancing their financial stability. This trend is supported by recent research showing that Islamic firms often attract ethically conscious investors, which can improve their financial resilience. Indeed, the Islamic variable has a coefficient of 17.06333 with a p-value of 0.025, indicating a positive and significant impact on financial stability. This suggests that Islamic firms, which adhere to ethical and financial principles in accordance with Islamic law, may benefit from better perceptions from investors, which enhances their financial stability. This trend is supported by recent research showing that Islamic firms often attract ethically conscious investors, which can improve their financial resilience. Our results demonstrate that the R^2 is 0.5122, which means that 51.22% of the variation in financial stability can be explained by the variables included in the model. This indicates a moderate level of explanation of the data by the model. The Fisher test has a value of 123.17 with a p-value of 0.000, which indicates that the model is overall significant. This means that the variables in the model significantly explain the variance in the dependent variable.

The result of second model M2 shows that the coefficient for the environmental dimension is 0.1227532 with a p-value of 0.030, indicating a positive and significant impact. This reinforces the idea that firms that invest in environmental initiatives can improve their financial stability. Recent research has shown that firms with good environmental performance are often perceived more favorably by investors, which can translate into lower capital costs. This finding supports studies that highlight the environmental component's role in improving financial performance (Mahoney and Roberts, 2007; Makni et al., 2009) and reducing risk (Salama et al., 2014; Orlitzky and Benjamin, 2001). The Size variable remains significant with a coefficient of 5.424485 (p = 0.056), indicating that firm size is an important factor for financial stability. The variable LLP/NPL (Loan Loss Provisions/Non-Performing Loans) has a coefficient of -14.17795 (p = 0.019), indicating that high levels of non-performing loans are associated with lower financial stability, corroborating the results of previous studies that highlight the importance of receivables management. The coefficient for the Islamic variable is 16.86808 with a p-value of 0.031, also confirming a positive and significant impact. This reinforces the idea that Islamic firms can benefit from increased trust status, which can contribute to their financial stability. A recent study found that Islamic firms that adopt sustainable practices can improve their attractiveness to investors. The R^2 for is 0.5033, indicating that 50.33% of the variation in financial stability is explained by the variables in the model. The Fisher test has a value of 118.58 with a p-value of 0.000, also meaning that this model is overall significant.

In model M3, the social dimension has a coefficient of 0.0303425 with a p-value of 0.664, indicating that it does not have a significant impact on financial stability in this context. This could suggest that social initiatives, although important, have not yet been integrated in a way that directly influences investor perception or financial performance. Our result are contradicting to previous studies highlighting its impact on performance (Makni et al., 2019) and risk reduction (Chollet and Sindiwi, 2018). Therefore, hypothesis H1b cannot be consistently supported. Social requirements may not be profitable for financial institutions due to additional costs or less profitable project choices. However, these practices can positively influence risk management, reputation, and performance. The social dimension's effect remains unclear, especially in a predominantly Islamic bank sample where specific social activities like zakat play a significant role. The variable Size continues to display a significant coefficient of 11.49238 (p = 0.012), highlighting the importance of size in financial stability. The coefficient for LLP/NPL remains negative and significant at -13.95525 (p = 0.025), confirming that managing non-performing loans is crucial to maintain financial stability. In Model M3, the coefficient of the Islamic variable is 17.85964 with a p-value of 0.008, indicating a positive and significant impact. This suggests that Islamic firms continue to exhibit strong financial stability, reinforcing the idea that practices consistent with Islamic law can generate increased investor confidence. This is supported by research indicating that Islamic firms with good sustainability performance can attract financing on more favorable terms. The R^2 for is 0.4851, meaning that 48.51% of the variation in financial stability is explained by the variables in the model. This indicates a slightly lower explanatory power compared to previous models. Indeed, our result show that the Fisher test shows a value of 109.11 with a p-value of 0.000, confirming that the model is overall significant.

Finally, Model M4 shows that the coefficient for the governance dimension is 0.18858 with a p-value of 0.012, indicating a positive and significant impact, confirming hypothesis H1c.. This highlights the importance of good corporate governance for financial stability, which is supported by studies showing that effective boards can lead to better strategic decisions and reduced risks. Good governance practices reduce risks significantly, making it relevant for investors and supervisors. Governance quality ensures shareholder satisfaction, long-term financial performance, and reduces conflicts of interest, attracting more investors and protecting against risks. Although governance's positive effect on banking stability is not statistically significant, it remains crucial for bank stability. The Size variable displays a coefficient of 7.290115 (p = 0.098), indicating a significance close to the 10% threshold. The LLP/NPL variable has a coefficient of -12.64564 (p = 0.033), confirming its negative impact on financial stability. This highlights the importance of prudent receivables management to maintain strong financial stability. The results demonstrate that the Islamic variable has a coefficient of 16.52388 with a p-value of 0.041, indicating a positive and significant impact on financial stability. This highlights the continuity of the results, showing that Islamic companies maintain good financial performance. This trend is also supported by research that shows that ethics and compliance play a crucial role in investors' perception of companies. The R^2 for model M4 is 0.5230, indicating that 52.30% of the variation in financial stability is explained by the variables in the model. Indeed, the Fisher test has a value of 128.83 with a p-value of 0.000, indicating that this model is also globally significant.

These results show that ESG scores, especially environmental and governance dimensions have a significant impact on the financial stability of firms. Variables such as firm size and profitability are also key determinants of financial stability. These results are in line with recent literature that highlights the growing importance of sustainable practices in the business world. Overall, the Islamic variable shows a positive and significant impact on financial stability across all models. The R^2 values and Fisher test results indicate that the models are overall significant and explain a reasonable proportion of the variance in financial stability. These results reinforce the idea that Islamic banks may benefit from a strong reputation and increased investor confidence, which contributes to their financial stability.

Table 6: Moderating effect of capital structure between CSR and financial stability

Zscore	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
ESG Score	0.7064489	0.057*						
Environnemental			0.2004537	0.081*				
Social					0.2550236	0.227		
Governance							0.6850889	0.022**
EA	735.8582	0.000***	566.8218	0.000***	445.8313	0.000***	706.6678	0.000***
EA*ESG	3.51613	0.000***						
EA*ENV			0.7229571	0.000***				
EA*SOC					2.186293	0.000***		
EA*GOV							4.201619	0.000***

Size	5.794927	0.092*	5.813158	0.003***	11.78945	0.069*	7.084448	0.086*
TL/TD	0.7633167	0.050*	4.38865	0.021**	6.434716	0.010**	8.910843	0.049**
LLP/NPL	-16.58365	0.005***	-14.90139	0.013**	-14.28435	0.019**	-16.14626	0.006***
Islamic	0.527184	0.029**	1.572945	0.093*	1.63509	0.048**	2.732469	0.034**
LIQ	0.0305451	0.053*	0.0351622	0.098*	0.0254598	0.025**	0.036754	0.0*58
GDP	10.58039	0.483	11.67307	0.451	6.133142	0.696	5.822922	0.691
Inflation	-0.0487226	0.896	-0.1208556	0.749	-0.0810148	0.829	-0.1613842	0.662
R2	0.5173		0.5015		0.4960		0.5400	
Fisher	128.21		119.50		113.44		140.89	
	0.000***		0.000***		0.000***		0.000***	

***, **,* statistical significance at 1%, 5% and 10% levels respectively.
Source: Stata output

In the table 6, we observe the moderating effects of capital structure between corporate social responsibility (CSR) and financial stability across several models. Each model presents coefficients and significance levels that indicate the importance of the variables in the analysis.

IN the first model, the ESG score shows a positive coefficient of 0.7064489 with a significance at 10% (P>|z| = 0.057), suggesting that improved ESG performance is associated with better financial stability. The interaction between capital employed (EA) and ESG score is also significant, with a coefficient of 3.51613, indicating that capital structure reinforces the positive impact of CSR on financial stability. The R^2 of 0.5173 indicates that the model explains about 51.73% of the variance in financial stability, while the Fisher test (128.21) shows that the model is overall significant. In the second model, environmental impact (ENV) has a coefficient of 0.2004537 with a significance at 10% (P>|z| = 0.081). The interaction between capital employed and environmental impact is significant (0.7229571), suggesting that capital structure positively moderates the relationship between environmental impact and financial stability. The R^2 of 0.5015 and the Fisher test (119.50) confirm the robustness of the model. The third model examines social impact (SOC), which is not significant (P>|z| = 0.227), but the interaction between capital employed and social impact is significant (2.186293), indicating a moderating effect. The R^2 of 0.4960 shows that the model explains almost 50% of the variance, while the Fisher test (113.44) indicates an overall significance. Finally, the fourth model focuses on governance (GOV), which presents a significant coefficient of 0.6850889 (P>|z| = 0.022). The interaction between capital employed and governance is also significant (4.201619), highlighting that capital structure reinforces the positive effect of governance on financial stability.

The R^2 of 0.54 and the Fisher test (140.89) show that this model is the best performing in terms of explaining the variance. Indeed, we can say that our results verify the importance of capital structure as a moderator in the relationship between CSR and financial stability, with significant implications for banks seeking to improve their financial performance through CSR initiatives.

Robustness Check using GMM method

The Generalized Method of Moments (GMM) model is of significant importance in the estimation of economic models, particularly due to its flexibility and efficiency in dealing with endogeneity and heteroscedasticity issues. One of the main advantages of the GMM is its ability to use both data moments and instruments, which allows to obtain unbiased estimators even in the presence of explanatory variables correlated with the error. Moreover, the GMM is particularly suitable for panel data, where it can account for unobserved individual effects and time variations. This method also promotes increased robustness against violations of classical assumptions, such as homoscedasticity, by allowing for adjustments in the estimates

Table 6: The effect of ESG on financial stability using GMM model

	M1		M2		M3		M4	
Zscore	**Coefficient**	**P>|z|**	**Coefficient**	**P>|z|**	**Coefficient**	**P>|z|**	**Coefficient**	**P>|z|**
ZscoreL1.	1.031102	0.000***	1.019564	0.000***	1.015087	0.000***	1.025534	0.000***
ESG Score	.176087	0.066*						
Environnemental			.0164762	0.069*				
Social					.0268365	0.683		
Governance							0.0458173	0.014**
EA	391.7983	0.000***	379.9959	0.000***	375.5656	0.000***	388.6912	0.000***
Size	5.658597	0.051*	4.6647436	0.048**	3.654754	0.077*	5.092519	0.074*
TL/TD	1.997211	0.844	-1.826871	0.855	-3.401342	0.739	-1.324436	0.895
LLP/NPL	-3.288665	0.030**	-2.578805	0.021**	-2.484186	0.032**	-2.706156	0.006***
Islamic	5.128194	0.08**	5.582071	0.068*	5.247732	0.090*	4.676864	0.056*
IHH	.1120134	0.021**	.1246003	0.009***	.6199385	0.064*	.6920568	0.044**
GDP	2.94795	0.852	3.961964	0.801	2.939501	0.851	5.685762	0.723

***, **,* statistical significance at 1%, 5% and 10% levels respectively.

Source: Stata output

The table 6 presents various models that examine the impact of ESG performance on financial stability using GMM model, as measured by the Z-score. In the first model, the coefficient of the lagged Z-score (ZscoreL1) is 1.031102, significant at 1%, indicating a strong persistence of financial stability from one period to the next. Additionally, the ESG score has a coefficient of 0.176087, significant at 10%, suggesting that improved ESG performance is linked to better financial stability, although this relationship is marginally significant. Capital employed (EA) is also highly significant with a coefficient of 391.7983, emphasizing its crucial role in financial stability. In the second model, ZscoreL1 remains significant with a coefficient of 1.019564, while the environmental impact shows a coefficient of 0.0164762, significant at 10%, indicating that environmental initiatives can contribute to financial stability. Firm size (Size) has a coefficient of 4.6647436, significant at 5%, implying that larger firms tend to be more financially stable. In the third model, although ZscoreL1 remains significant, social impact is not significant, suggesting that social initiatives may not directly impact financial stability in this context. However, capital employed and size remain important factors. Finally, in the fourth model, ZscoreL1 remains significant with a coefficient of 1.025534, and governance has a coefficient of 0.0458173, significant at 5%, indicating that good governance practices are associated with better financial stability.

These results highlight the significance of ESG performance, particularly in the environmental and governance dimensions, as well as the crucial roles of capital employed and firm size in financial stability. This suggests that firms that adopt strong ESG practices and maintain a robust capital structure are better positioned to ensure their financial stability. The results obtained in the presented models confirm the conclusions previously found in the static model, thus reinforcing the idea that ESG performances play a significant role in the financial stability of companies. Indeed, as in the static analysis, the coefficient of the lagged Z-score remains significant, highlighting the persistence of financial stability. Moreover, the positive coefficients associated with the ESG score and its environmental and governance dimensions corroborate previous observations, indicating that strong ESG practices contribute to better financial resilience. Capital employed continues to prove crucial, as does company size, which recalls previous results. Thus, this consistency between the models underlines the importance of integrating robust ESG strategies and effective management of the capital structure to ensure long-term financial stability. These confirmations also reinforce the validity of the conclusions drawn from previous analyses, providing a more solid perspective on the relationships between CSR, capital structure and financial performance.

Table 7: Moderating effect of capital structure between ESG score and financial stability using GMM model

Zscore	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|	Coefficient	P>|z|
ZscoreL1.	1.031394	0.000***	1.020966	0.000***	1.011593	0.000**	1.025597	0.000**
ESG Score	0.2684935	0.070*						
Environnemental			0.0477739	0.082*				
Social					0.2975785	0.134		
Governance							0.0564774	0.082*
EA	347.5774	0.000***	368.3779	0.000***	479.919	0.000***	385.2627	0.000***
EA*ESG	0.7623379	0.007***						
EA*ENV			0.2294444	0.005***				
EA*SOC					1.949374	0.002***		
EA*GOV							0.0877992	0.006***
Size	5.523747	0.038**	4.142264	0.048**	3.502599	0.088*	5.127684	0.081*
TL/TD	0.304066	0.976	-1.455714	0.887	-6.515885	0.530	-1.283897	0.899
LLP/NPL	2.728441	0.014**	2.653866	0.012**	3.35458	0.515	2.673216	0.613
Islamic	4.720742	0.048**	5.629664	0.069*	4.4393	0.066*	4.686486	0.058*
LIQ	0.6046875	0.075*	0.6780597	0.047**	.5584893	0.096	0.6982598	0.051*
GDP	0.4467521	0.978	4.243765	0.789	1.293759	0.934	5.856688	0.721
Inflation	-0.1163093	0.017**	-0.1266804	0.011**	-0.114015	0.018	-0.1266407	0.010**

***, **,* statistical significance at 1%, 5% and 10% levels respectively.
Source: Stata output

The table presents various models examining the moderating effect of ESG performance on financial stability, as measured by the Z-score. In the first model, the coefficient of the lagged Z-score (ZscoreL1) is 1.031394, significant at 1%, indicating a strong persistence of financial stability from one period to another. The ESG score has a coefficient of 0.2684935, significant at 10% (P>|z| = 0.070), suggesting that improved ESG performance is associated with better financial stability, although this relationship is marginally significant. Capital employed (EA) is highly significant with a coefficient of 347.5774, highlighting its crucial role in financial stability. Additionally, the interaction between committed capital and ESG score (EA*ESG) shows a coefficient of 0.7623379, significant at 1% (P>|z| = 0.007), indicating that committed capital positively moderates the effect of ESG score on financial stability.

In the second model, ZscoreL1 remains significant with a coefficient of 1.020966. Environmental impact (ENV) shows a coefficient of 0.0477739, significant at 10% (P>|z| = 0.082), suggesting that environmental initiatives can also contribute to financial stability, especially when combined with high committed capital, as indicated by the coefficient of the EA*ENV interaction at 0.2294444, significant at 1% (P>|z| = 0.005). Firm size (Size) has a coefficient of 4.142264, significant at 5%, which reinforces the idea that larger firms are generally more financially stable.

In the third model, ZscoreL1 remains significant, while social impact (SOC) has a coefficient of 0.2975785, but is not significant (P>|z| = 0.134). However, the interaction between capital employed and social impact (EA*SOC) is significant with a coefficient of 1.949374 (P>|z| = 0.002), indicating that capital employed plays an important moderating role in the effect of social initiatives on financial stability. This suggests that firms that invest in social initiatives while maintaining strong capital employed may benefit from greater financial stability.

Finally, in the fourth model, ZscoreL1 remains significant with a coefficient of 1.025597, and governance (GOV) presents a coefficient of 0.0564774, significant at 10% (P>|z| = 0.082). The interaction between committed capital and governance (EA*GOV) is also significant with a coefficient of 0.0877992 (P>|z| = 0.006), highlighting that good governance practices, when supported by committed capital, are associated with better financial stability.

These results confirm previous findings on the importance of ESG performance and committed capital in the financial stability of banks. Fisher tests and R^2 values, although not provided in the table, would be crucial to assess the robustness of each model and the overall significance of the observed relationships. Recent studies also confirm that integrating ESG criteria into corporate strategy can improve financial performance and resilience to economic crises, reinforcing the importance of an integrated approach that considers both the financial and social dimensions of corporate performance.

6. Conclusion

In this paper, we empirically investigate the impact of ESG on banking stability, as well as the individual effect of each dimension of ESG (social, environmental, and governance), with particular attention to the moderating role of capital structure. To do this, we chose a mixed sample composed of 18 Islamic banks and 22 conventional banks from 2014 to 2022. Using a hypothetico-deductive approach and a multiple linear regression method, we tested five empirical models. In this study, we aimed to link the concepts of ESG and banking stability, given their growing importance. Our main objective was to address a subject rarely studied in the literature, which is the impact of ESG on the financial stability of conventional and Islamic banks. Specifically, we studied the impact of environmental, social, governance, and economic dimensions on the stability of banks. The results indicate a positive and significant effect of ESG measured by the ESG score on banking stability. For the dimensions of the ESG score, only environmental and governance practices showed a significant positive link with banking stability. However, the social dimensions did not have a significant effect on this variable.

Our results indicate that Islamic banks are more stable than their conventional counterparts, showing that the Islamic character further favors the positive relationship between ESG and financial stability due to the ethical foundations of Islamic finance. We also found that the financial stability of Islamic and conventional banks in our sample mainly depends on favorable capital structure, particularly the adequacy of equity, and the good management of credit risk represented by the proper management of provisions. Our study sheds light on the essential role of capital structure in moderating the benefits of ESG disclosure, a factor that has not been thoroughly examined in previous studies.

Our results also indicate that ESG (Environmental, Social and Governance) score assessment plays a crucial role in the financial stability of banks, whether Islamic or conventional, in MENA countries. Indeed, banks with good ESG scores are perceived as less risky, which attracts sustainability-conscious investors and builds customer confidence. To maximize these benefits, it is therefore recommended that banks integrate ESG criteria into their governance and operations. This may include adopting responsible lending policies, implementing environmental and social risk management practices, and promoting diversity within their management teams. In addition, developing transparent ESG reporting will enable banks to effectively communicate their performance to their stakeholders. At the same time, regulators should establish incentive frameworks to encourage banks to improve their ESG scores, such as regulatory capital reductions for those that make significant commitments in this area. By adopting such an approach, banks will not only improve their reputation and attractiveness, but also strengthen their long-term financial stability, thereby adapting to the growing expectations of investors and customers in terms of sustainability.

Future studies are encouraged to include a larger sample to increase the generalizability of results and to cover a longer period. Researchers are also encouraged to explore this topic using different ESG measures. Additionally, investigating this subject with a purely Islamic sample, particularly by using a ESG measure specific to Islamic banks that considers the unique characteristics of this sector, would be very interesting.

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الإفصاح البيئي والاجتماعي والحوكمة والاستقرار المالي للبنوك الإسلامية والتقليدية

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المستخلص. كشف تكرار وقوع الأزمات المصرفية والمالية عن تعقيد وضعف النظام المالي والمصرفي التقليدي. في هذه الورقة، نحقق تجريبياً في تأثير الإفصاح البيئي والاجتماعي والحوكمة على استقرار البنوك، فضلًا عن التأثير الفردي لكل بُعد من أبعاد الإفصاح البيئي والاجتماعي والحوكمة، مع التركيز بشكل خاص على الدور الأساسي لهيكل رأس المال. باستخدام عينة مختلطة تتألف من (١٨) مصرفًا إسلاميًا و (٢٢) مصرفًا تقليديًا خلال الفترة ٢٠١٤ إلى عام ٢٠٢٢. تشير النتائج إلى تأثير إيجابي ومهم للإفصاح البيئي والاجتماعي والحوكمة، الذي يقاس بدرجة الإفصاح البيئي والاجتماعي والحوكمة، على استقرار البنوك. ومن بين أبعاد درجة الإفصاح البيئي والاجتماعي والحوكمة، أظهرت الممارسات البيئية والحوكمة فقط ارتباطًا إيجابيًا كبيرًا باستقرار البنوك. ومع ذلك، لم يكن للبعد الاجتماعي تأثير كبير على هذا المتغير. بالإضافة إلى ذلك، تشير نتائج الدراسة إلى أن الطابع الإسلامي يعزز العلاقة الإيجابية بين الإفصاح البيئي والاجتماعي والحوكمة والاستقرار المالي بسبب الأسس الأخلاقية. علاوة على ذلك، فأن الاستقرار المالي للبنوك الإسلامية والتقليدية يعتمد في المقام الأول على هيكل رأس المال، وتحديدًا كفاية حقوق الملكية وإدارة مخاطر الائتمان. تسلط هذه الدراسة الضوء على الدور الأساسي لهيكل رأس المال في تعديل فوائد الإفصاح عن البيانات البيئية والاجتماعية والحوكمة، وهو التأثير الذي لم يتم فحصه على نطاق واسع في الدراسات السابقة.

الكلمات الدَّالة: الإفصاح البيئي والاجتماعي والحوكمة، الاستقرار المالي، البنوك الإسلامية، البنوك التقليدية، الاعتدال، هيكلة رأس المال

تصنيف JEL: C33, B23, G3, G21

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Blockchain Technology for Efficient Zakat Management in India: An Exploratory Study

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ABSTRACT This review explores how blockchain technology can revolutionize *Zakāh* management in India, addressing persistent transparency and trust issues. *Zakāh*, a core Islamic practice aimed at reducing socioeconomic inequality, often falls short of its potential due to inefficiencies and a lack of accountability in the current system. By analyzing secondary sources, this study highlights how blockchain and smart contracts can transform *Zakāh* collection and distribution. The proposed model promises greater transparency, trust among donors, and more efficient fund allocation, which could boost formal contributions and significantly reduce poverty in the Indian *Muslim* community. A critical insight is the lack of research on blockchain's role in *Zakāh* distribution and its societal impact in India. Additionally, outdated data on *Zakāh* funds underscores the need for modernization. The study synthesizes existing knowledge through a systematic review while addressing ethical concerns and methodological limitations. Adopting a qualitative approach, it provides a fresh perspective on blockchain's potential to enhance *Zakāh* systems and offers a practical framework for policymakers and religious leaders to implement meaningful changes.

***KEYWORDS*:** *Zakāh*, Indian *Muslim* community, Efficient distribution, poverty, blockchain technology ***JEL Classification*:** D31, I30, I32, L30, L31, O33, O35, P46
KAUJIE Classification: C55, E0, E1, E12, E14, E15, H41, N4, N5

1. Introduction

Zakāh, the third pillar of Islam, has a profound socio-economic impact, requiring an annual 2.5% contribution from an individual's savings (Shaikh, 2019). In India, the largest *Zakāh* contributions occur during Ramadan, a month of fasting and prayer believed to offer greater spiritual rewards. Reflecting societal needs and poverty levels, *Zakāh* collections have seen significant growth. According to Abdul Jabbar Siddiqui, Secretary of *Zakāh* Center India (ZCI), Indian *Muslim*s contribute approximately ₹20,000 crores to ₹70,000 crores annually (IndiaTomorrow, 2022). By mandating that a portion of one's assets be donated to charity, *Zakāh* promotes social equity and underscores *Islam's* commitment to social responsibility. The Holy *Qur'ān* emphasizes the importance of *Zakāh* in alleviating poverty, distributing wealth, and contributing to economic management within the *Muslim* community. Given India's substantial *Muslim* population and pressing socio-economic needs, efficient *Zakāh* management is crucial. Non-governmental organizations (NGOs), including numerous *Zakāh* institutions, play a pivotal role in overseeing its administration in India. Globally, the World Bank and the Islamic Development Bank Institute (IsDBI) estimate annual *Zakāh* funds at $550-$600 billion, with official institutions managing only $10-$15 billion per year (ESCWA, 2021; Widadio, 2019). The Islamic Philanthropy 2021 Annual Report highlights a 12.5% increase in *Zakāh* contributions in 2020, resulting in a 59% rise in recipients (ESCWA, 2021). These statistics underscore the urgent need for efficient *Zakāh* administration and allocation systems to optimize resource utilization.

In India, *Zakāh* collection and distribution reveal notable financial impacts and organizational efforts. *Zakāh* Center India reported collecting ₹2 crores last year, with projections reaching ₹20 crores this year. These funds are directed towards poverty alleviation, skill development, and education (Jamaat-e-Islami Hind, 2023). The All-India Council of *Muslim* Economic Upliftment (AICMEU) reports total *Zakāh* disbursements amounting to ₹14,094.43 crores, with 25%-30% collected by individuals and the remainder by organizations (AICMEU, n.d.). The funds are allocated as follows: ₹4,228.29 crores to individuals in need, ₹7,047.15 crores to madrasas for education and administration, and approximately ₹1,409.43 crores each to religious and social charity organizations (AICMEU, n.d.). AICMEU further recommends allocating 10% of *Zakāh* funds for investment to enhance long-term impact (AICMEU, n.d.). Meanwhile, the Association of *Muslim* Professionals (AMP) reports an 8,210.58% increase in *Zakāh* collection and an 8,335.96% increase in disbursement between 2013 and 2022, reflecting improved fund utilization and strategic management.

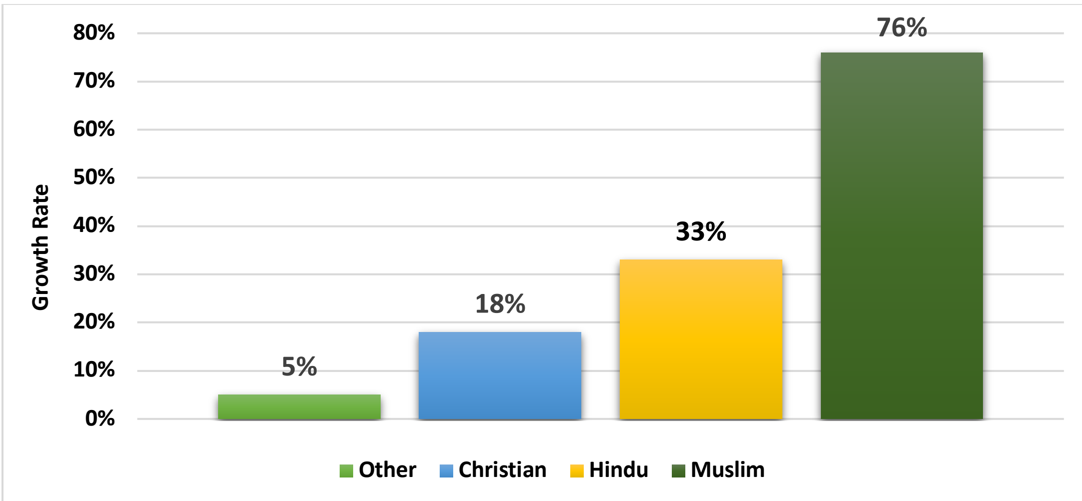
Estimating India's total annual *Zakāh* collection presents challenges due to its decentralized and informal nature. Estimates range from ₹20,000 crores to ₹70,000 crores annually (India Tomorrow, 2022), with some projections suggesting systematic collection could yield up to ₹25,000 crores (ICIF, 2021). Individual estimates exceed ₹150 crores (Javed, 2022). The lack of a centralized authority for *Zakāh* collection and distribution leads to variability in these figures. Nonetheless, data consistently indicate that significant *Zakāh* funds are collected and distributed annually, highlighting their importance in India's charitable and social development. However, the distribution of *Zakāh* in India faces obstacles due to the absence of a centralized system, raising concerns about fund utilization. Many individuals prefer direct donations to relatives or local communities rather than through formal organizations, creating a discrepancy between actual and potential collections (Shaikh, 2019). Inefficiencies and transparency issues further widen this gap. Limited awareness and education about *Zakāh* 's obligatory nature and the implications of not paying *Zakāh* also contribute to low collection rates and inefficient fund utilization (Alam & Uddin Ahmed, 2020). Additionally, without a centralized system, ensuring that *Zakāh* funds reach the truly needy remains a challenge (Ashiq & Mushtaq, 2020).

The Sachar Committee Report reveals that a significant portion of Indian *Muslim*s face economic hardship, with 31% living below the poverty line. Recent data show a rise in unemployment among Indian *Muslim*s, increasing from 2.4% in 2022-23 to 3.2% in 2023-24 (Wani & Dhasmana, 2024). Blockchain technology presents a potential solution for enhancing *Zakāh* management by providing a secure, decentralized, and transparent system for fund collection and distribution. This approach could significantly improve socio-economic outcomes. According to the National *Zakāh* Survey Report by the Association of *Muslim* Professionals, 38% of Indian *Muslim*s prefer giving *Zakāh* to less fortunate relatives, while only 16% contribute to NGOs or community organizations (AMP, 2020). Encouragingly, 77% of respondents believe that collective donations could significantly benefit India's *Muslim* community (AMP, 2020). This highlights the need for organized *Zakāh* administration. To achieve efficient management, the implementation of Standard Operating Procedures, ISO certifications, and monthly work plans with achievable targets and realistic timeframes is essential (PUSKAS BAZNAS, 2021). Inefficiencies in *Zakāh* distribution are attributed to unreliable factors and flawed methods (Zainal et al., 2016), suggesting that adopting these approaches would improve management efficiency in India.

India's growing digital innovation and expanding e-commerce landscape underscore its active role in global technological advancements. With increasing internet usage, India is becoming more virtually engaged in this dynamic sphere. As globalization advances, aligning *Zakāh* practices with modern technologies is essential (Jayaswal, 2023). Blockchain, a revolutionary technology, enhances security and transparency by preventing unauthorized data manipulation. Using Distributed Ledger Technology (DLT) based on cryptography, distributed ledgers, and peer-to-peer mechanisms, blockchain ensures secure data and transaction storage for future reference.

1.1 Growing *Islamic* Population and Poverty Rates

Figure 1: Population growth in India by religion



Source: Statista, 2023a

Zakāh -related issues are closely linked to India's expanding *Muslim* population and persistent poverty levels. *Muslim*s currently constitute 14.2 percent (approximately 200 million) of India's total population (ICIF, 2021; Statista, 2023b). Data presented in Figure 1 suggests that the *Muslim* population in India could grow by approximately 76% by 2050 (Statista, 2023a). However, persistent poverty within the *Muslim* community remains a significant concern. According to the National Sample Survey's 55th round and the 2006 India Social Development Report, about 35% of urban *Muslim*s and 31% of rural *Muslim*s live below the poverty line, compared to just 10.1% of urban Hindus and 11.7% of rural Hindus (Alam & Ahmed, 2020). The 2006 Sachar Committee Report further highlights the limited access of India's *Muslim* population to bank credit, which exacerbates their financial exclusion and hinders socio-economic progress. As India continues to grapple with rising poverty, developing an effective *Zakāh* Management Mechanism is critical to addressing the challenges faced by the growing *Muslim* population (Rajinder Sachar, 2006).

This review study aims to explore the potential integration of blockchain technology into *Zakāh* management and distribution. Blockchain technology could play a crucial role in addressing public trust issues that often arise from the mismanagement of *Zakāh* funds (Ikhsan, 2023). Integrating blockchain technology with *Zakāh* management systems in digital India could help prevent fund misappropriation or misuse, given the country's increasing reliance on internet-based financial transactions. This review also examines how such integration could facilitate the financing of microbusinesses through *Zakāh* funds, thereby addressing the socio-economic challenges facing India's *Muslim* population. The growing *Muslim* population and escalating poverty rates in India underscore the urgent need for an efficient *Zakāh* Management System. However, current challenges related to transparency and effectiveness have created skepticism among *Zakāh* contributors (Obaidullah & Shirazi, 2017). *Zakāh* institutions in India face several issues, including financial mismanagement, neglect of *Zakāh* payers in fund allocation, and the use of outdated systems that limit accountability (Alam & Ahmed, 2020; Sabahuddin, 2014). The absence of accurate data on disadvantaged community members further hampers fair distribution, while the misdirection of funds to madrasas rather than intended beneficiaries erodes public trust (Alam & Uddin Ahmed, 2020; Shaikh, 2019; Sabahuddin, 2014).

These issues significantly impact *Zakāh* contributions, leading to non-compliance among payers and a preference for direct fund distribution (Ghani et al., 2018; Alam & Uddin Ahmed, 2020). The resulting mistrust undermines the long-term viability and effectiveness of *Zakāh* institutions in addressing poverty and socio-economic challenges (Muhammad et al., 2016). Nevertheless, blockchain technology offers a potential solution by enhancing transparency, traceability, and security. Evidence from studies conducted in Malaysia and during the Covid-19 pandemic suggests that blockchain-based systems can rebuild trust and improve *Zakāh* administration (Nur et al., 2023; Rangone & Busolli, 2021).

2. Literature Review

2.1 AMP's *Zakāh* Fund: Empowering Indian *Muslim*s through Education and Self-Employment

Zakāh is an annual obligation for *Muslim*s to donate a portion of their wealth to charity. Eligible individuals are required to have wealth exceeding the equivalent of 75 grams of gold, after accounting for liabilities. In India, *Muslim*s contribute 2.5% of their income or assets as *Zakāh* (Shaikh, 2019). The Indian government does not provide a centralized system for *Zakāh* distribution, as it is considered a personal duty of the *Muslim* community. Instead, various NGOs and organizations manage the distribution of *Zakāh* within these communities (Alam & Uddin Ahmed, 2020). One such organization is AMP, a national-level institution that allocates *Zakāh* funds to several initiatives, prioritizing higher education, followed by support for self-employment and entrepreneurship, as well as the care and upbringing of orphans. Table 1 below illustrates AMP’s performance across India over the past nine years.

Table 1: Performance of “Association of *Muslim* Professionals” in *Zakāh* collection and utilization

Figures/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fund Collected	2,06,000	7,99,000	20,65,040	38,79,750	43,25,776	69,62,803	89,96,082	94,89,394	1,17,70,670	1,7,099,800
Fund Distributed	2,00,000	7,75,773	20,60,000	38,66,000	43,07,150	69,42,300	89,69,695	94,67,308	1,17,73,512	1,70,71,914
Balance	6,000	23,227	5,040	13,750	18,626	20,503	26,387	22,086	2,842	27,886
Higher Education	1,00,000	4,00,773	10,60,000	10,30,000	15,57,150	2383500	31,87,897	56,86,543	71,46,672	88,90,166
Self Employment	1,00,000	3,75,000	10,00,000	12,65,000	14,25,000	2500000	30,04,500	26,39,492	27,41,900	36,51,097
Orphans Scholarship	-	-	-	5,73,000	10,25,000	2018800	9,32,298	11,14,210	45,84,940	32,02,152
Feed the Poor and Needy	-	-	-	-	-	-	-	20,81,521	14,98,600	2,98,057
Specific Donations	-	-	-	9,98,000	3,00,000	40000	18,45,000	27,063	-	10,30,442
Higher Education	10	41	106	103	112	167	255	570	685	1,262
Self-Employment	5	18	42	50	71	89	150	117	106	257
Orphans Scholarship	-	-	-	120	174	324	246	163	382	495
Feed the Poor and Needy	-	-	-	-	-	-	-	2,082	14,899	299
Specific Donations	-	-	-	11	1	1	108	7	-	10
Total Beneficiaries	15	59	152	284	358	581	759	857	1,173	2,024

Source: AMP, 2023

An analysis of *Zakāh* collection and distribution by the Association of *Muslim* Professionals (AMP) in India reveals a significant upward trend and substantial benefits for the social progress of the *Muslim* community. AMP's *Zakāh* collection grew considerably between 2016 and 2018, with affluent *Muslim* groups contributing generously to social development programs. A significant portion of the funds was allocated to higher education and self-employment initiatives, reflecting a focus on long-term community empowerment. AMP also expanded its *Zakāh* distribution strategy to include support for orphans, IIT scholarships, and targeted donations, demonstrating a comprehensive approach to community welfare (Muneeza & Nadwi, 2019).

From 2013 to 2022, the AMP *Zakāh* Fund (AZF) experienced remarkable growth, enabling support for advanced education, orphan schooling, small business ventures, and skills training for disadvantaged women. During the COVID-19 pandemic, the fund was crucial in providing medical assistance. AMP's 2023 strategic plan aims to expand its national outreach, emphasizing higher education grants, self-employment support, and holistic educational aid for orphans (AMP, 2023). This continued dedication to transforming *Zakāh* recipients into contributors underscores AMP's commitment to sustainable community development and uplifting underprivileged *Muslim*s across India.

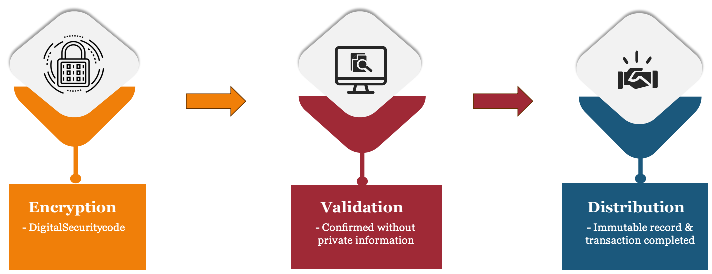
2.2 The Importance of *Zakāh* for Social Development

In *Muslim* societies, *Zakāh* is a community-driven initiative to enhance social welfare. With a *Muslim* population of approximately 200 million in India (ICIF, 2021; Statista, 2023b), the distribution of *Zakāh* poses significant challenges but remains essential for fostering social development. *Zakāh* plays a vital role in supporting higher education, self-employment, and small businesses within impoverished *Muslim* communities. It also provides critical assistance to orphans, improving their access to education and employability.

Moreover, *Zakāh* addresses low employment rates among economically disadvantaged *Muslim*s by enabling income generation through self-employment and small business ventures. As an act of "purity" attained through wealth donation, *Zakāh* reduces the disparity between rich and poor, mitigates social conflicts, and enhances societal security (Mirza, 2021). Its impact on India's social progress is evident in various domains, including employability, education, and economic empowerment. Numerous NGOs across India are actively working to ensure the equitable distribution of *Zakāh*, fostering the well-being of *Muslim* communities nationwide.

2.3 Role of blockchain in transactions

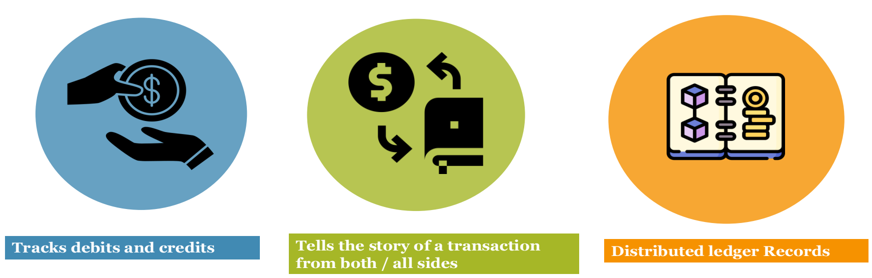
Figure 2: Steps in blockchain transactions



Source: Rejeb, 2020

Blockchain technology is a groundbreaking innovation that ensures the security of personal data for Internet users. As modern transaction technologies continue to advance, the prevalence of cybercrime has also grown. Blockchain helps safeguard data against cyberattacks through a three-step process: encryption, validation, and distribution. First, a digital security code is generated to maintain user data privacy. This code is then validated anonymously within the blockchain network. Once the validation is complete, funds are distributed, and transactions are securely recorded (Rejeb, 2020). By implementing this process, blockchain technology significantly reduces the risk of cybercrime and data breaches, thereby fostering greater trust among users.

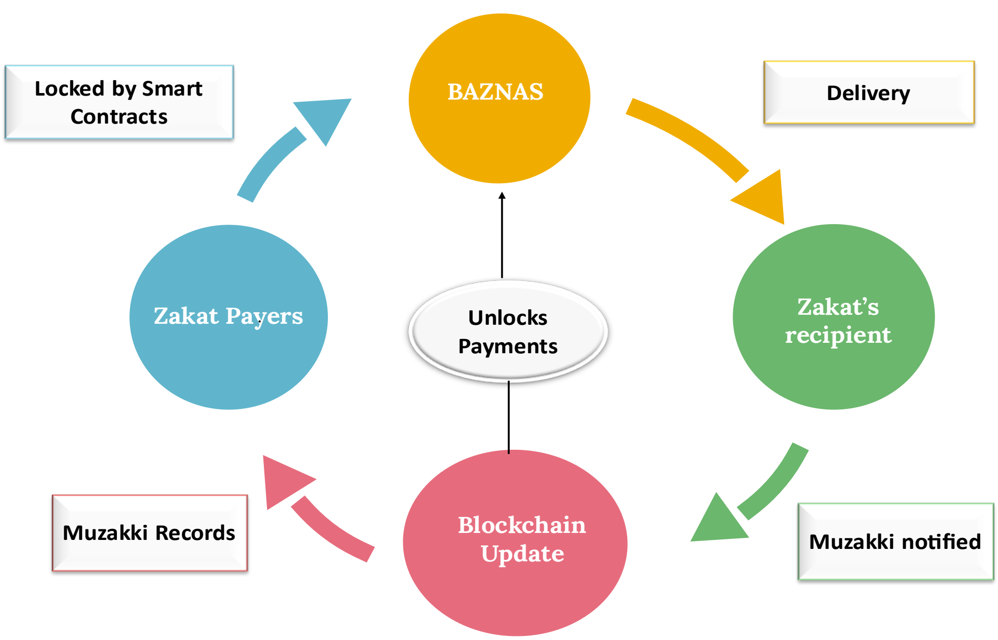
Figure 3: Significant role of blockchain in transactions



Source: Hamdani, 2020

Beyond enhancing security, blockchain technology plays a pivotal role in online transactions by tracking debits and credits, facilitating messaging, and maintaining distributed ledger records (Hamdani, 2020). It accurately monitors account transactions, provides real-time updates to all parties, and ensures error-free processing. Distributed ledger technology records transactions in a way that makes hacking attempts ineffective. Moreover, using blockchain technology in transactions offers additional advantages, such as reducing processing time. This enables faster transaction processing compared to traditional methods, which can be particularly valuable during times of crisis, such as a pandemic. It can be argued that blockchain technology is crucial in modern transaction processes. Relying on other technologies for transactions can be insecure, whereas the adoption of blockchain technology significantly enhances the security of credits and debits.

Figure 4: Framework of blockchain-based *Zakāh* distribution

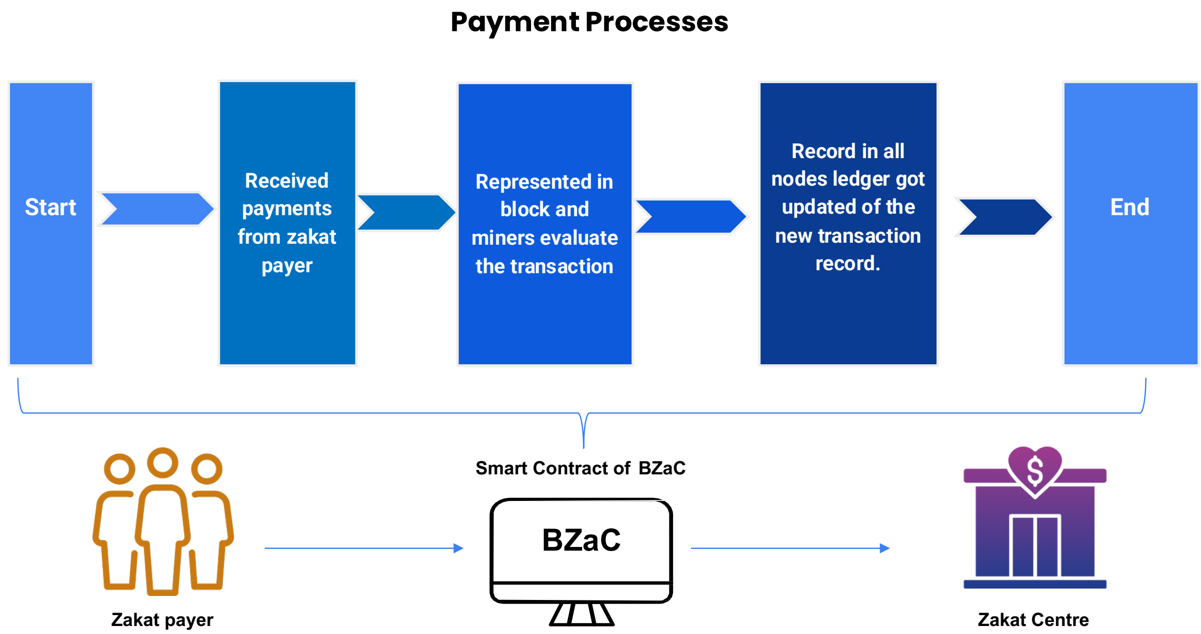


Source: Zulfikri et al., 2021

Artificial Intelligence (AI), Machine Learning (ML), and big data have revolutionized *Zakāh* distribution, replacing traditional human-operated systems with advanced automation. However, these technologies also introduce cybersecurity risks, making it essential to prioritize secure mechanisms for *Zakāh* transactions. Blockchain technology emerges as the most reliable solution for mitigating these risks.

Figure 4 illustrates a blockchain-based framework for *Zakāh* distribution, comprising four key stages: the *Zakāh* payer, the recipient, Baznas (Badan Amil *Zakāh* Nasional), and the transaction update process facilitated by blockchain (Zulfikri et al., 2021). In this system, *Zakāh* payers initiate payments secured by smart contracts managed by Baznas. The collected *Zakāh* is then distributed to recipients, with *Muzakee* serving as a notification platform to inform payers of completed transactions. Each transaction is securely recorded on the blockchain, ensuring transparency and accountability. Additionally, all transactions are encrypted to safeguard sensitive information and enhance trust among stakeholders.

Figure 5: Payment process of *Zakāh* through blockchain technology



Source: Khatiman et al., 2021

Figure 5 illustrates the payment process involving *Zakāh* payers, smart contracts, and the subsequent collection by *Zakāh* centers, which constitute the foundational steps of the entire system. The smart contract process includes receiving payments from *Zakāh* payers, representing transactions in blocks, performing minor evaluations, and updating all ledgers to record the transactions (Khatiman et al., 2021). Dr. Ziyaad Mahomed, Associate Dean of Executive Education and E-Learning at The International Center for Education in Islamic Finance (INCEIF), alongside his team, is developing an Islamic social financing app leveraging blockchain technology. According to Dr. Ziyaad (Noordin, 2018), the app enables users to select between *ṣadaqah* or *Zakāh*, specify their preferred Islamic school of thought, choose a project to support, and securely complete their payment. Once the *Zakāh* payment is recorded on a blockchain node, payers receive confirmation and updates on fund utilization. This level of transparency ensures confidence that their *Zakāh* contributions reach the intended beneficiaries. Developed in collaboration with Aid Tech and the International Federation of Red Cross and Red Crescent Societies, the app significantly enhances transparency and instills confidence among contributors (Muneeza & Nadwi, 2019).

While Artificial Intelligence (AI) and big data are promising tools for improving *Zakāh* distribution, the integration of blockchain technology alongside these innovations is essential to ensure the security of sensitive information.

2.4 India's National Strategy on Blockchain: A Vision for a Transparent and Secure Digital Future

India's "National Strategy on Blockchain," updated in December 2021 by the Ministry of Electronics and Information Technology (MeitY), outlines a comprehensive vision to establish India as a global leader in blockchain technology. The strategy emphasizes the development of a shared blockchain infrastructure aimed at delivering secure and transparent digital services, with a focus on e-governance applications. The document addresses key technological aspects, such as interoperability and security, while advocating for legal and policy studies on blockchain regulation. It includes Strengths, Weaknesses, Opportunities, and Challenges (SWOC) analysis, an adoption roadmap, and detailed discussions on both international and national blockchain scenarios. Based on public consultations, the strategy highlights the need for research, security, standardization, and legal frameworks. A major initiative under this strategy is the India Chain project, which aims to establish a national blockchain infrastructure for deployment across various sectors. Pilot projects by the National Institution for Transforming India (NITI Aayog) have already been conducted in areas such as pharmaceutical supply chain management, fertilizer subsidy disbursement, university certificate verification, and land record management. These efforts demonstrate India's commitment to leveraging blockchain technology to enhance efficiency and transparency across diverse economic sectors (Kumar et al., 2020; MeitY, 2021).

2.5 Technological Tools for *Zakāh* Distribution in India

A variety of modern technologies have been employed to streamline *Zakāh* distribution in India, including mobile applications, vending machines, web-based payment systems, telecommunication services, blockchain applications, artificial intelligence, and big data analytics. One notable innovation is the Rice ATM, which functions like a traditional bank ATM but dispenses rice for underprivileged *Muslim*s. These machines can store up to 1,000 kg of rice and serve approximately 1,000 recipients in India (Muneeza & Nadwi, 2019). Additionally, mobile devices have enabled users to access applications and websites for seamless *Zakāh* transactions, while tech-savvy individuals can utilize official *Zakāh* organization websites to make contributions. This diverse technological landscape offers innovative and efficient methods to improve *Zakāh* distribution systems in India.

2.6 Literature Gap

While numerous studies have explored the use of blockchain technology in global *Zakāh* institutions, its impact on *Zakāh* distribution and social development in India remains largely unexamined, highlighting a significant research gap. Furthermore, assessing national *Zakāh* funds in India poses challenges due to limited data. Dr. Rahmatullah, Managing Director of the AICMEU (All India Council of *Muslim* Economic Upliftment), estimated India's *Zakāh* contributions to be around INR 100,000 million, based on government and independent data on per capita income and charity contributions. With the increase in per capita income, *Zakāh* contributions are likely to have grown significantly, potentially rivaling the Brihan Mumbai Municipal Corporation's annual budget of approximately INR 370,000 million (Rahman, 2017; Alam & Ahmed, 2020).

Table 2: Systematic review table

Source	Methodology	Key findings
Salleh et al., 2022	Secondary sources gather qualitative and relevant data on digital technology in *Zakāh* management.	● Digital technologies like AI, blockchain, IoT, automation, and augmented reality enhance *Zakāh* security, efficiency, and transparency. ● These financial technologies address and resolve *Zakāh* -related issues.
Ahmed and Zakaria, 2021	Secondary sources provide diverse perspectives on blockchain technology in *Zakāh* distribution.	● *Zakāh* targets poverty eradication via wealth contributions. ● Blockchain overcomes traditional banking and crowdfunding challenges. ● Key blockchain features: decentralized data, anti-tampering, distributed ledger, anti-forgery, immutability. ● Additional features: flexibility, orchestration, transparency, efficiency, low cost, sustainability.
Zulfikri et al. 2022	The study reviews literature on blockchain's effect on *Zakāh* recipients' trust using secondary sources.	● Blockchain enhances security and service quality in *Zakāh* institutions ● Improves trust and satisfaction among fund collectors ● Creates secure, tamper-proof, legal identities ("trust stamp") for individuals
Elasrag, 2019	This study uses secondary qualitative data to explore blockchain in *Islamic* finance and its challenges.	● Blockchain can be used for intricate financing and *Sharīʿah*-compliant transactions in *Islamic* financial institutions ● Offers traceability and provenance ● Ensures security through permissioned networks with digital ledgers
Rabbani et al. 2020	This study reviews 133 *Islamic* fintech research papers from various academic databases.	● Blockchain detects fraud, minimizing failure risks ● Unalterable transactions enhance personal data security ● Improves overall security in *Zakāh* distribution

Alam and Ahmed, 2020	This study uses secondary methods to collect data on *Zakāh* practices and *Muslim* population in India.	• Religious institutions manage 40-50% of *Zakāh* collection and distribution in India • *Islamic* organizations like "*Jamaat-e-Islami*" contribute to the process • Specialized organizations focus on *Zakāh* within Indian *Muslim* communities
Laldin and Djafri, 2019	This study examines *Islamic* finance's digital trends using secondary data, focusing on blockchain.	• Modern tech offers efficient account opening and tailored solutions in *Islamic* finance • Blockchain enables decentralized document management without third parties • Insufficient blockchain knowledge in *Zakāh* distribution is a major challenge
Herasymenko And Bachynska 2021	The study created and tested an Ethereum-based decentralized app using various blockchain tools.	Ethereum smart contracts enable secure, transparent non-profit transactions "Charitable Fund" and "Request" contracts manage sponsor requests efficiently High initial costs but reduces risk of fund misuse for larger funds Study's results can aid software for generating required reports
Khairi et al.2023	Qualitative study using literature reviews, interviews, waterfall model, and controlled DRS.	• Peer-to-peer system enhances secure, transparent *Zakāh* distribution • Potential to boost confidence in Malaysian *Zakāh* institutions • *Zakāh* collection system developed with waterfall model • System includes web frontend and secure backend for traceable transactions

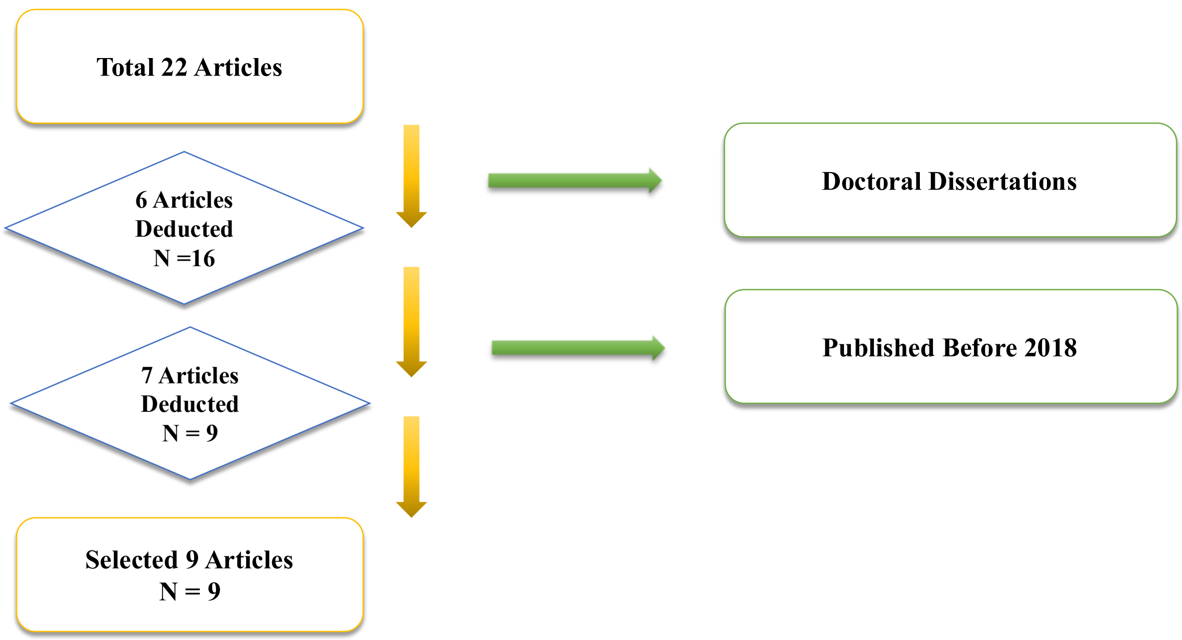
Source: Author's Own

3. Research Methodology

The proposed research is exploratory and doctrinal, aiming to investigate the role of *Zakāh* in fostering social development among Indian *Muslim*s. It emphasizes the principles of *Zakāh* and its broader societal impact. The study reviews existing literature on the application of blockchain technology in *Zakāh* fund management and identifies critical research gaps in this area.

Furthermore, the research explores blockchain's potential to enhance financial transactions and streamline *Zakāh* distribution in India. It proposes a model leveraging smart contracts to revolutionize *Zakāh* management. This model is designed to improve transparency, efficiency, and trust, thereby optimizing fund distribution and increasing public willingness to contribute through institutional channels. Numerous scholarly articles and journals underscore the significant global applications of blockchain technology in similar contexts. Consequently, secondary sources were utilized for data collection. Several articles were analyzed to elucidate the key concepts of *Zakāh* and blockchain technology. Specifically, nine scholarly articles were selected, and relevant data were extracted for analysis. To systematically present the findings, a table containing annotated bibliographies was created, providing a clear overview of the data from these articles. This systematic review, detailed in Table 2, serves as an effective method for interpreting information from various authors' perspectives (Churuangsuk et al., 2018).

Figure 6: Flowchart



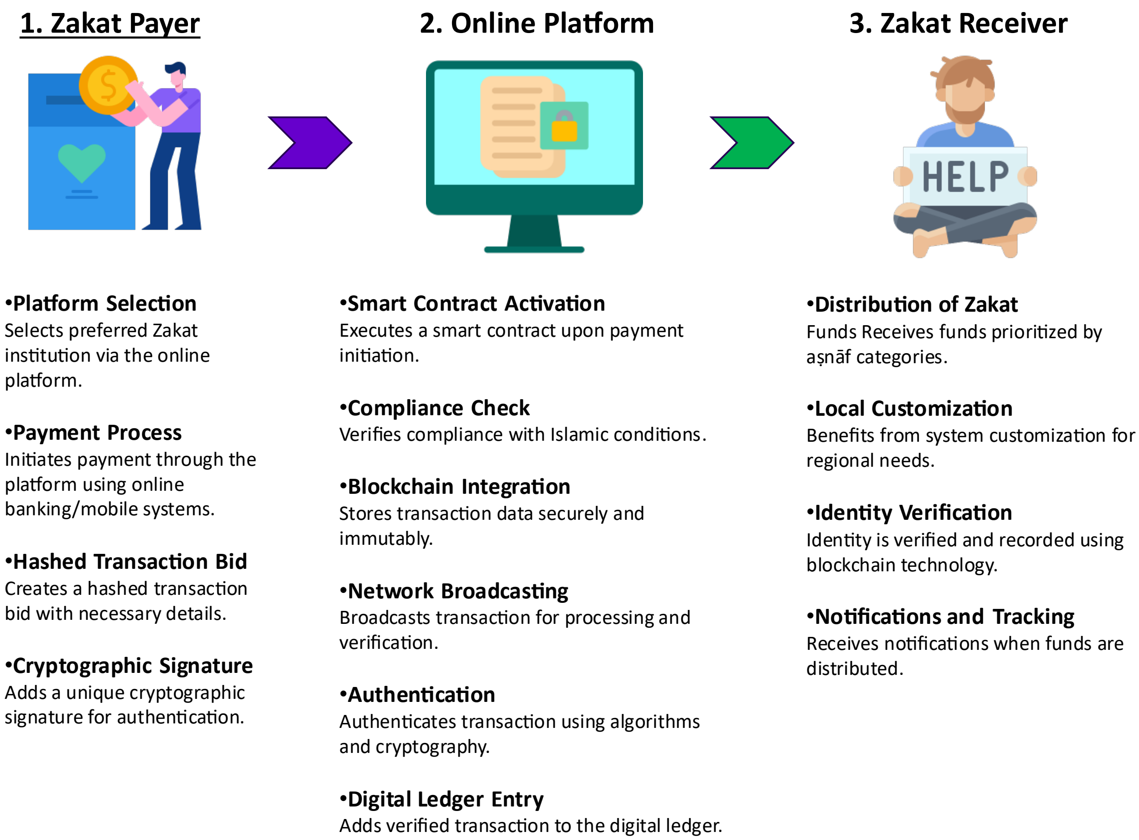
Source: Author's Own

As illustrated in Figure 6, the selection criteria for articles involved purposive sampling, focusing on journals and articles published after 2018. All selected articles addressed the application of blockchain technology in *Zakāh* distribution in India, with doctoral dissertations explicitly excluded. Out of an initial pool of 22 articles, 6 were excluded for being dissertations, and 7 were omitted for being published prior to 2018. The selection process is visually depicted in a flowchart. Ultimately, 9 articles were chosen (Salleh et al., 2022; Ahmed and Zakaria, 2021; Zulfikri et al., 2022; Elasrag, 2019; Rabbani et al., 2020; Alam and Ahmed, 2020; Laldin and

Djafri, 2019; Herasymenko and Bachynska, 2021; Khairi et al., 2023). Relevant data on the research topic were extracted from these articles for analysis.

4. Result and discussion

Figure 7 Proposed Indian *Zakāh* Management through Blockchain Technology Model



Source: Author's Own

4.1 Enhancing Transparency, Security, and Efficiency of Indian *Zakāh* model

Key Participants

The proposed Indian *Zakāh* management model (Figure 11) leverages blockchain technology to enhance the efficiency, transparency, and security of *Zakāh* transactions. This model identifies three primary participants: *Muzakki* (donors), *Zakāh* institutions and *Mustahiqeens* (beneficiaries). *Muzakki* refers to individuals or entities contributing *Zakāh* funds, while *Zakāh* institutions are organizations with the managerial and entrepreneurial expertise to administer and distribute these funds effectively. *Mustahiqeens* are the eligible recipients, comprising eight community groups prioritized for economic and social upliftment.

Platform and Process Flow

The process begins with the initiation of a *Zakāh* transaction. Donors can select their preferred *Zakāh* institutions through a dedicated online platform that aggregates various institutions across India. The donor then initiates the payment through this platform, which is integrated with online banking and mobile payment systems widely used in India. A hashed transaction bid is generated, including essential details such as the date, sender and receiver information, asset type, and the amount of *Zakāh* remitted. Each transaction is assigned a unique cryptographic signature for authentication. A critical aspect of the model is the execution of smart contracts, which are triggered upon payment initiation. These contracts specify the payer's details, type of *Zakāh*, and compliance with Islamic principles. Verification of Islamic compliance ensures that all obligatory conditions are met before proceeding, thereby maintaining adherence to *Sharīʿah* laws.

Blockchain Framework Components

The integration of blockchain technology is central to this model, providing a secure, transparent, and efficient framework for managing *Zakāh* funds. The blockchain architecture comprises three distinct layers:

1. **Data Layer**: Stores transaction and event records, ensuring all transactions are securely recorded, immutable, and transparently available for review.

2. **Access Control Layer**: Allows users to perform independent data queries and receive timely reports, enhancing accountability and transparency.

3. **Trust Layer**: Facilitates global participation, dispute resolution, and transaction monitoring through decentralized management, thereby fostering trust among all participants.

Broadcasting and Authentication of *Zakāh* Transactions

Zakāh transactions are disseminated and verified through network broadcasting, where the proposed transaction is transmitted to a network of computers for processing and authentication. This process involves various stakeholders, including *Zakāh* authorities, mosques, charitable organizations, and financial institutions. The network authenticates the transaction using advanced algorithms and cryptographic methods, ensuring validity, privacy, and security while adhering to *Zakāh* regulations.

Adding to the Digital Ledger

Once authenticated, the transaction is added to a decentralized, distributed ledger, creating a transparent and immutable record of all *Zakāh* transactions. This digital ledger functions as a secure and decentralized database, preserving the integrity and accuracy of the data.

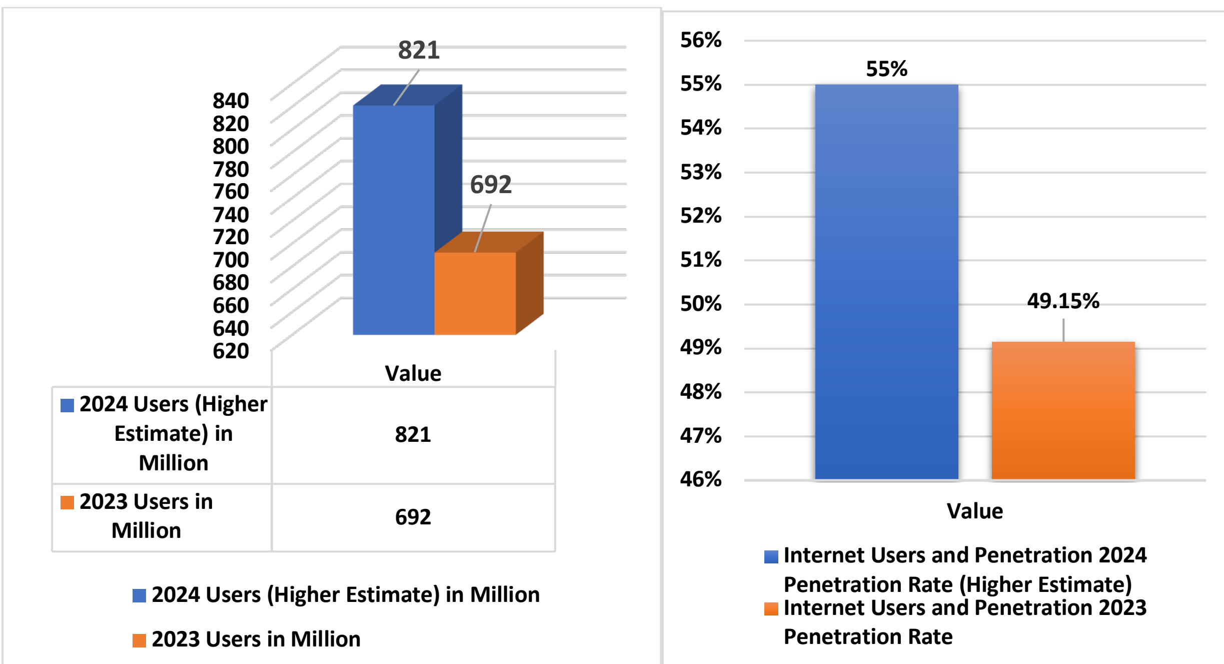
Distribution and Monitoring

Funds are allocated to designated aṣnāf categories (e.g., the impoverished, indigent, or indebted) based on local priorities to promote social equity. The system is adaptable, allowing for customization to address specific socio-economic challenges in different regions of India. Transactions are secured using proof of work, ensuring payment integrity. Funds are segregated and accessible exclusively by authorized entities, preventing misappropriation. The system continuously monitors transactions, enabling interventions in cases of anomalous or unethical activities.

Record Keeping and Additional Features

Zakāh payers receive detailed documentation of their contributions and the subsequent allocation of funds, enhancing accountability and enabling traceability of *Zakāh* 's impact on the community. Transparent records aim to build public confidence in the *Zakāh* management process. Blockchain technology authenticates and records the identities of both contributors and recipients, safeguarding the integrity of the data. Donors can monitor their contributions and receive notifications when funds are disbursed to beneficiaries. This integrated model combines the capabilities of blockchain technology and smart contracts with a user-centric platform to facilitate secure, transparent, and efficient *Zakāh* fund management in India. By employing these technologies, the model seeks to enhance trust, accountability, and the overall effectiveness of the *Zakāh* distribution system.

Figure 8 and 9 Internet Users and Penetration in India



Source: Kemp, 2023; Kemp, 2024.

This review study explores the integration of traditional Islamic *Zakāh* practices with digital technologies in India, focusing on platforms for *Zakāh* collection, management, and distribution. India's digital infrastructure has experienced substantial growth, with internet users increasing from 692 million to 821 million between 2023 and 2024, maintaining a 55% penetration rate (Kemp, 2023; Kemp, 2024). Mobile internet speeds have surged by 418%, and fixed internet speeds improved by 19.4% during the same period (Behera, 2024; Kemp, 2023; Kemp, 2024). Active cellular mobile connections now exceed 1.12 billion, with 96.6% of internet users accessing the internet through mobile devices (Kemp, 2023; Behera, 2024; Kemp, 2024). Ranked 13th globally in broadband affordability, India offers an average monthly cost of USD 9.73 (Cable.co.uk, 2024). The number of smartphone users is projected to surpass 1.1 billion by 2025, with smartphone penetration expected to reach nearly 71% by the end of 2023 (Agarwal, 2023). This rapid expansion is driven by affordable devices, the rollout of 5G technology, and the increasing availability of digital services (The Times of India, 2024; Murthy, 2022). Notably, smartphone ownership has risen significantly among older individuals in rural areas, signaling broader digital inclusion and increasing incomes (Parbat, 2024).

4.2 A Technological Approach to Strengthening *Zakāh* Practices: Addressing Inefficiencies and Building Trust Through Blockchain

The proliferation of digital technologies, particularly post-COVID-19, has greatly enhanced service efficiency and quality. However, the increased reliance on online transactions has introduced risks such as data breaches. In the context of *Zakāh* distribution, emerging digital tools including IoT, augmented reality, artificial intelligence, big data analytics, and blockchain offer solutions to ensure secure and efficient financial transactions (Mohamed Salleh et al., 2022). Blockchain technology, with its decentralized data management, anti-tampering mechanisms, distributed ledgers, and transparency, provides heightened security for online transactions (Ibrahim Ahmed & Zakaria, 2021). It not only safeguards personal data but also fosters trust between *Zakāh* institutions and contributors by ensuring data integrity and compliance with legal standards (Zulfikri et al., 2022). Additionally, blockchain facilitates fraud detection by making transactions traceable and reducing the likelihood of transaction failures (Rabbani et al., 2020).

Effective *Zakāh* practices have been shown to contribute to the socio-economic development of India's *Muslim* community. Currently, approximately 40–50% of *Zakāh 's* revenue is collected and distributed by religious schools, primarily supporting educational scholarships and self-employment initiatives (Alam & Ahmed, 2020). A systematic review (Zaman, 2011) categorizes *Zakāh* distribution methods into three main approaches, detailed in Table 2. However, inefficiencies persist. Many fictitious organizations exploit *Zakāh* funds (Zaman, 2011), while some *Madrasas* use commission-based collectors, who reportedly retain 60–80% of the collected amount, often selling receipt books at fixed prices to pocket additional proceeds. These practices result in improper collection, remittance, and utilization of *Zakāh* funds. Donors rarely monitor how their contributions are used. Alarmingly, only 10–15% of eligible Indian *Muslim*s pay *Zakāh*. Traditional small donations of flour, cloth, or a few hundred rupees perpetuate dependency and fail to address systemic issues (Alam & Ahmed, 2020).

Digital technologies can transform *Zakāh* distribution by improving efficiency and reducing costs through digital payment systems. Alam and Ahmed (2020) propose the implementation of a mosque card system to better organize *Zakāh* fund distribution in India. Blockchain technology, in particular, has significant potential within Islamic finance, enabling educational support and small business development for *Muslim* communities (Mohd Akram Laldin & Fares Djafri, 2019). Blockchain-backed systems, such as the "Web Backend Application," play a critical role in integrating graphical user interfaces (GUI) with blockchain platforms to manage system logic and operations (Khairi et al., 2023). By reducing administrative costs and minimizing the risks of fund misappropriation, blockchain can significantly enhance public trust in charitable organizations. However, as Herasymenko & Bachynska (2021) note, challenges such as high Ethereum transaction fees and limited expertise in smart contract development pose barriers to widespread adoption. Despite these hurdles, digital technologies offer promising solutions to modernize *Zakāh* management in Islamic finance and charitable sectors.

4.3 Digital Infrastructure and Blockchain Adoption for *Zakāh* Management in India: A Transformative Landscape

This review provides critical insights into India's rapidly evolving digital landscape and its implications for adopting blockchain technology in *Zakāh* management. With internet users increasing from 692 million to 821 million between 2023 and 2024, and a penetration rate of 55% (Kemp, 2023; Kemp, 2024), the potential for digital *Zakāh* platforms is significant. Improved internet accessibility paves the way for blockchain-based *Zakāh* systems, enabling wider participation in digital financial services.

A 418% improvement in mobile internet speeds (Behera, 2024; Kemp, 2023; Kemp, 2024) is essential for blockchain adoption, ensuring real-time processing of transparent transactions. Enhanced connectivity addresses technical challenges that often hinder blockchain development in India. The rise of active cellular mobile connections to 1.12 billion, with 96.6% of users accessing the internet via mobile devices (Kemp, 2023; Behera, 2024; Kemp, 2024), underscores the need for mobile-centric blockchain solutions. Affordable broadband, with an average monthly cost of USD 9.73, ranked 13th globally (Cable.co.uk, 2024), further supports the adoption of digital *Zakāh* systems. Smartphone penetration, expected to exceed 1.1 billion users by 2025 and reach 71% by 2023 (Agarwal, 2023), presents a unique opportunity for smartphones to serve as personal wallets for blockchain-based *Zakāh* transactions.

The increasing adoption of smartphones among older populations in rural regions (Parbat, 2024) suggests blockchain-powered *Zakāh* systems could reach underserved communities, promoting equitable resource distribution in line with Islamic principles. India's expanding digital infrastructure, fueled by affordable devices, 5G technology, and diverse digital services (The Times of India, 2024; Murthy, 2022), offers an ideal environment for integrating blockchain into *Zakāh* management. However, challenges such as improving digital literacy, developing user-friendly interfaces, and addressing security concerns must be addressed to fully realize blockchain's potential in *Zakāh* administration.

Blockchain technology has the capacity to enhance transparency, security, and efficiency in *Zakāh* distribution by eliminating intermediaries, fostering donor trust, and ensuring proper fund utilization. The narrowing gender gap in smartphone ownership and growing digital literacy through initiatives like Digital India and the National Digital Literacy Mission (NDLM) further support blockchain adoption in *Zakāh* management (Girdonia, 2023). These efforts aim to make at least one member of 6 crore households digitally literate, creating a strong foundation for advanced technologies in *Zakāh* administration. The extensive mobile internet access (96.6%) and 117 billion Unified Payments Interface (UPI) transactions in 2023 (The Economic Times, 2024) highlight India's shift towards digital financial services. The nation's affordable broadband, ranked 13th globally, ensures widespread digital access, crucial for applying blockchain technology in *Zakāh* systems.

The World Food Programme (WFP) has demonstrated blockchain's transformative potential by distributing over $1 million in aid to 10,000 Syrian refugees through 100,000 transactions (World Food Programme, n.d.-b). Similarly, blockchain could revolutionize India's *Zakāh* system by increasing trust, minimizing fraud, and enabling targeted aid distribution, thereby maximizing the impact of charitable contributions.

5. Conclusion

This study highlights the potential of blockchain technology to modernize traditional Islamic *Zakāh* practices within India's expanding digital ecosystem. By integrating blockchain, *Zakāh* management can become more transparent, secure, and efficient, addressing prevalent issues such as fraud and mismanagement. A blockchain-based model involving *Muzakki* (donors), *Zakāh* institutions, and *Mustahiqeens* (beneficiaries) can streamline transactions while ensuring compliance with *Islamic* principles through smart contracts. Blockchain's secure, immutable ledger fosters trust and reduces fraud. India's growing internet accessibility, robust mobile connectivity, and initiatives like Digital India create a favorable environment for blockchain integration. Collaborative efforts among stakeholders are vital for successful implementation. By modernizing *Zakāh* practices, blockchain can enhance transparency, efficiency, and impact, increasing charitable contributions, promoting social equity, and advancing the socio-economic development of India's *Muslim* community through improved education, healthcare, and self-employment opportunities.

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تقنية سلاسل الكتل لإدارة الزكاة بكفاءة في الهند: دراسة استكشافية

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طالب في مرحلة الماجستير، قسم علوم وتطبيقات الاقتصاد الإسلامي

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المستخلص. تستكشف هذه الدراسة إمكانات تقنية سلاسل الكتل (*blockchain*) لتحسين إدارة الزكاة في الهند، من خلال تحقيق الشفافية ومعالجة قضايا الثقة في النظام القائم. والزكاة هي الركن الثالث من أركان الإسلام فُرضت لتعمل على التقليل من الفوارق الاجتماعية والاقتصادية بين فئات المجتمع الإسلامي، ولتحقيق الغاية من الزكاة في الزمن المعاصر لا بدّ من توافر نظم تحقق الشفافية والمصداقية. تعتمد الدراسة على المنهج العَقَدي، حيث تراجع المصادر الفرعية لاستكشاف كيفية تحوّل إدارة الزكاة باستخدام سلاسل الكتل والعقود الذكية. يسعى النموذج المقترح إلى تعزيز الشفافية وبناء الثقة بين الأطراف المشاركة والمستفيدة، كما يعمل على تحسين توزيع الأموال؛ مما قد يزيد من تأدية الزكاة عبر القنوات الرسمية. الأمر الذي يؤدي إلى كفاءة أكبر في توزيع الزكاة على مستحقيها، وتقليل الفقر داخل المجتمع المسلم في دولة الهند. ومن النتائج التي تم التوصّل إليها وجود فجوة في الدراسات التي تتعلق بدور سلسلة الكتل في توزيع الزكاة وتأثيرها الاجتماعي في الهند. كما تسلط الدراسة الضوء على الحاجة إلى تحديث البيانات المتعلقة بأموال الزكاة؛ حيث إن الإحصاءات الحالية قديمة. وباستخدام مراجعة منهجية للأدبيات (*SLR*)، تجمع الدراسة الأدبيات الموجودة وتناقش البيانات مع التركيز على القضايا الأخلاقية وقيود أخذ العيّنات. ومن خلال استخدام المنهج البنائي والتفسيري، تقدم الدراسة رؤى نوعية حول كيفية تحسين كفاءة وموثوقية نظام توزيع الزكاة باستخدام سلسلة الكتل. ولا تثري هذه الدراسة الخطاب الأكاديمي فحسب؛ بل تقدم أيضًا إطارًا عمليًا لصنّاع السياسات والقادة الدينيين في الهند.

الكلمات الدَّالة: الزكاة، المجتمع المسلم الهندي، التوزيع الفعّال، الفقر، تقنية سلاسل الكتل.

تصنيف JEL: D31, I30, I32, L30, L31, O33, O35, P46

تصنيف KAUJIE: C55, E0, E1, E12, E14, E15, H41, N4, N5

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Ḥalāl Tourism Trend: A Systematic Literature Review

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Abstract. This research aims to systematically review and map the research topics and themes related to Ḥalāl tourism. A total of 333 articles were reviewed from the Scopus database using the Systematic Literature Review (SLR) method and the VOSviewer application. The results showed that there were 159 Ḥalāl tourism researchers, with 59 research clusters and the highest number of documents held by a researcher being 12. Indonesia emerged as the leading country in Ḥalāl tourism research, with 132 research documents. This is due to the country's focus on developing its Ḥalāl tourism potential, which is supported by its 742 languages and 17,100 islands, making it the country with the largest archipelago. Indonesia also has the highest Muslim population worldwide, with 88% of its total population being Muslims and 12% of Muslims worldwide being in Indonesia. The study categorized the findings into three groups, namely cluster based on topic cluster based on discussion time, and cluster based on dominant and non-dominant topics. For Topic Clusters, research related to Ḥalāl tourism consists of 6 main clusters, namely Market, Islamic Tourism, Value, Ḥalāl Tourism Destination, Intention, and Dimension. In terms of Topic Discussion Time, the newest topics consist of COVID-19, Ḥalāl Tourism Policy, Intention, Value, Ḥalāl Tourism Destination, Trust, and Loyalty. Meanwhile, the most discussed topics consist of Market, Islamic Tourism, Opportunity, Potential, and Islam. The final finding is the dominant and non-dominant discussion topics (Density Visualization). The dominant categories of discussion topics consist of Value and Market, Quality, Intention, and Standard. Meanwhile, the non-dominant categories are topics about COVID-19, Ḥalāl service, Ḥalāl tourism products, and prices. The results of this research serve as a reference for the development of ḥalāl tourism. The data in this research is still limited to secondary data sourced from the Scopus database. Future research needs to conduct a Comparative Study between Regions.

***Keywords**:* Ḥalāl, Tourism, Systematic Literature Review, VOSviewer, Scopus.

JEL CLASSIFICATION: L83, Z32, D64

KAUJIE CLASSIFICATION: O0, F12, N0, V11

Introduction

The Ḥalāl Tourism Trend is a global phenomenon that concerns not only Islamic countries but also non-Islamic countries (Peristiwo, 2020). It is an industry that is based on Islamic law, providing infrastructure for Muslim tourists to carry out their religious practices while traveling (Battour & Ismail, 2016). The main aim is to fulfill the basic needs of Muslim tourists based on Sharīʿah principles during their trips. The development of Ḥalāl tourism has become a global trend due to people's growing interest in more unconventional tourism options, the increasing Muslim population worldwide, and greater awareness of religious practices (Muhammad., 2017). Furthermore, countries' efforts to provide ḥalāl tourism cannot be overlooked as it has a positive impact on a country's economy (Antoni et al., 2019). Nowadays, finding ḥalāl tourist destinations is easy and readily available, especially in Muslim-majority countries.

Numerous studies have been carried out to explore various aspects of Ḥalāl tourism. A study by Hermintoyo (2021) revealed that the rise in the number of Muslim travelers every year presents an opportunity as well as a challenge for the tourism industry to develop Ḥalāl tourism (Hermintoyo et al., 2021). Meanwhile, Santoso (2022) emphasized the importance of adopting a sustainable regulatory model that incorporates local wisdom and community plurality for the development of Ḥalāl tourism, in response to the positive regulatory developments in various regions of Indonesia (Santoso et al., 2022). Another research by Yustica (2022) conducted in Japan highlights the country's seriousness in catering to the needs of Muslim tourists. Japan has taken several measures such as providing ḥalāl food, prayer facilities, and Muslim-friendly accommodations, which is expected to have a positive impact on the country's economy (Yustica & Widiandari, 2022).

Although there have been numerous studies on Ḥalāl tourism, not many of them have adopted the Systematic Literature Review (SLR) approach with the VOSviewer application. Some of the research focuses on the grounded theory framework (Sofyan et al., 2022), meta-synthesis and thematic analysis (Abhari et al., 2022)), PRISMA techniques, applied thematic analysis, and bibliographic documentary review within a hermeneutic-interpretive framework (Rasul, 2019), and extensive systematic review (Al-Ansi et al., 2022). Consequently, current research has not fully explored ḥalāl tourism topics. Thus, using the VOSviewer application allows researchers to gain a deeper understanding of the development of topics and themes in ḥalāl tourism that previous researchers did not highlight, through clear and comprehensible visualization.

While interest in ḥalāl tourism research continues to grow, comprehensive studies on the evolution of the topic in academic literature remain limited. This study aims to fill this gap by applying the Systematic Literature Review (SLR) method using the VOSviewer application.

Therefore, the primary focus of this research is to review Ḥalāl tourism using the SLR approach, which is aided by the VOSviewer application. SLR is a systematic review methodology that provides a comprehensive overview of research topics and themes.

The objective of this research is to investigate how the topic and theme of Ḥalāl Tourism has evolved over the past decade. A Systematic Literature Review (SLR) using the VOSviewer application was employed as the research method. The research focuses on several categories including researcher (Author), country (Countries), topic cluster (Network Visualization), topic discussion time (Overlay Visualization), and dominant topic (Density Visualization). This study will provide valuable insights to researchers who specialize in Ḥalāl Tourism and can also serve as a reference for the development of Ḥalāl Tourism.

1. Literature Review

1.1. The Significance of Ḥalāl Tourism Throughout History

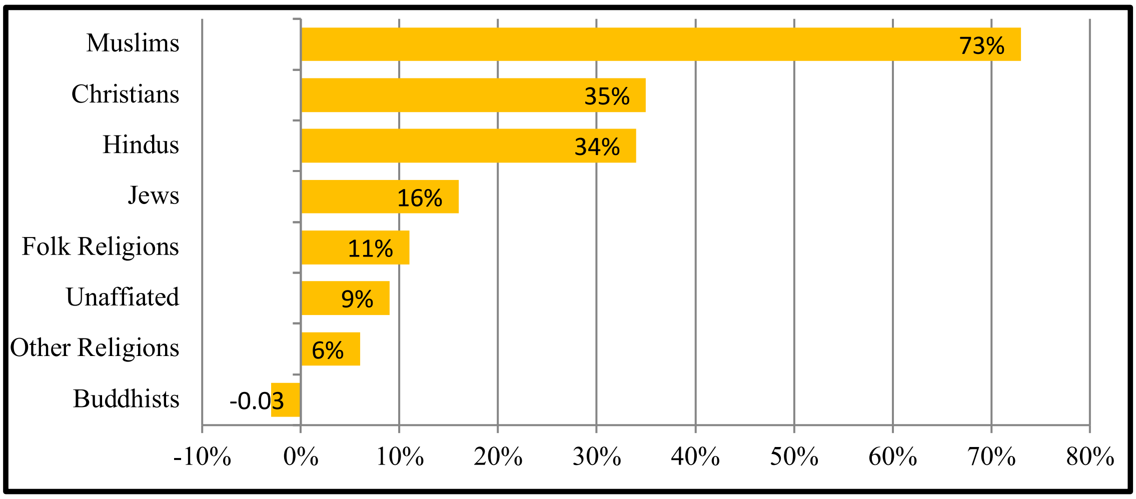
Tourism is a popular activity among people all around the world. It provides new experiences and refreshes the mind. Some people consider tourism as an important aspect of their lives and plan their time, costs, and routes carefully to ensure a high-quality experience. However, not all tourism providers cater to the needs of every group. The Muslim community, for instance, finds it difficult to access their spiritual needs during their travels, making it challenging for them to enjoy quality tourism. On this basis, it is deemed necessary to provide tourism services while still paying attention to the spiritual needs of visitors through the concept of ḥalāl tourism. Tourists who go on ḥalāl tourism have goals and targets. The aim is to increase spirituality by entertaining. Meanwhile, the target is to fulfill desires and pleasures and foster religious awareness (Surur Fadhil, 2020). Based on history, the emergence of ḥalāl tourism began in the 2000s, which was triggered by the development of the ḥalāl industry, which moved towards people's lifestyles, including the tourism sector. This is supported by the large growth of the Muslim population and their high purchasing power (Muhammad., 2017). The purchasing power of the Muslim community is caused by the high economic growth of several countries in Asia and MENA (Middle East and North Africa), including Indonesia, Singapore, Turkey, Saudi Arabia, and others. And they have a tendency to choose ḥalāl tourism. In the minds of Islamic leaders, ḥalāl tourism has experienced development, as evidenced by the holding of a Sharīʿah tourism conference initiated by member countries of the Organization of the Islamic Conference (OIC), which was located in Jakarta in 2014. At that time, ḥalāl tourism received 13 recommendations for follow-up. for the development of the industry. After that, in 2015, the concept of ḥalāl tourism began to be used after the World Ḥalāl Tourism Summit, which was held in Abu Dhabi (Surur, 2020). Two years after that, 130 countries were participating in the world ḥalāl tourism industry.

1.2. The Nature and Potential of Ḥalāl Tourism

Traveling through ḥalāl tourism in Islam has the aim of being a means of worshiping Allah through kauniah verses in accordance with Allah's commands in Surah Al-Ankabut (29) verse 20. By seeing the beauty of His natural creation, it is hoped that scientific insight and faith will grow stronger within oneself. Apart from being a means of worship, ḥalāl tourism also encourages the creation of productive muamalah activities. Ḥalāl tourism, as an alternative business industry with extraordinary prospects, is driving the country's economy.

Ḥalāl tourism has very promising market prospects. The development of ḥalāl tourism cannot be separated from the extraordinary market potential of this industry. Based on a report from the Pew Research Center entitled The Future of World Religions: Population Growth Projections, 2010–2050, it is estimated that by 2060, the Muslim population will increase by 70 percent of the total population (Figure 1). There were 1.75 billion Muslim residents in 2015, and this will increase to 3 billion in 2060 (*Pew Research Center*, 2023). Apart from that, based on GMTI data, in 2026, Muslim tourists will reach 230 million, who will enjoy the world's best ḥalāl tourist destinations. This situation will have an impact on shopping growth, which will continue to increase to USD 300 billion.

Figure 1. World Population Growth 2010–2060



Source: Pew Research Center, 2015

1.3. Ḥalāl Tourism: Contributions, Challenges and Strategies

Ḥalāl tourism services have been gaining a lot of global attention recently. By promoting the regional potential as a tourist attraction, countries can earn foreign exchange without neglecting the basic needs of tourists. In the Islamic context, Hall (2022) revealed that travel is an important element in Islamic spirituality that continues to develop in modern life, adapting it to current developments as seen from the concept of ḥalāl tourism (Hall et al., 2022). The concept of ḥalāl tourism in Islam aims to integrate spiritual and worldly aspects through modern ḥalāl tourism consumption. This approach to tourism is not limited to Muslim-majority countries, as even non-Muslim countries can benefit from adopting Islamic tourism concepts. It can complement conventional tourism concepts and help create a favorable tourism climate in those countries. As stated by Marlinda (2022) with a research location in South Korea, the idea of ḥalāl tourism in this country is considered attractive, especially among tourism industry players and the South Korean government (Marlinda et al., 2022). Sánchez González (2017) also revealed that the country of Peru welcomed the concept of ḥalāl tourism as a strategy in the tourism sector (Sánchez González, 2017), and the country of Portugal considered that the exploration of ḥalāl tourism would provide benefits for cities in that country (Liberato et al., 2022). Lifestyle through global ḥalāl tourism aims to introduce the concept of life from an Islamic perspective that is universal without limitations to certain groups. According to Boediman's (2017) research, the ḥalāl lifestyle, which has recently gained popularity, is not meant to restrict or impose on specific groups but rather serves as a means of reintroducing the Islamic perspective as mentioned in the study. Instead, it is a way of reintroducing the Islamic perspective mentioned in the Quran (Boediman, 2017). The application of Islamic concepts in various parts of the world through ḥalāl tourism has directly broadcast the good values of the Islamic religion. Islamic concepts expressed in tourism can globalize Islamic concepts, especially in various economic sectors (Biancone & Secinaro, 2021).

Malaysia is among the nations that have made the greatest strides in ḥalāl travel worldwide. This progress encourages adjustments to the hotel sector in the form of ḥalāl practices to support the ḥalāl tourism industry in the country. This step will provide economic benefits for hoteliers by continuing to innovate to maintain hotel competitiveness. However, according to Karia and Fauzi (2022), to maintain competition for Sharīʿah hotels to support ḥalāl tourism, steps are needed to improve ḥalāl resources and their ability to achieve a competitive advantage for hotels (Karia & Fauzi, 2019). Even though there have been improvements in the hotel sector, the presence of ḥalāl tourism has had a positive impact on Malaysia's economic growth sector and has stimulated several other economic sectors. Maximizing economic growth through ḥalāl tourism cannot always be realized well, depending on how the management innovates in the form of services based on quality and market needs. As experienced by the Middle Eastern country of the UAE, the contribution of ḥalāl tourism to GDP is still very low, only 12% (Al-Hammadi et al., 2019). Difficulties are also experienced by Iran, which hopes to become the center of world ḥalāl tourism but lacks innovation in this sector (Chianeh et al., 2019). Apart from innovation in the form of quality services based on market needs, there are strategic steps in maximizing the potential of ḥalāl tourism, according to Idris (2022), namely marketing, consumer behavior, ḥalāl tourism products and services, and business processes (Idris et al., 2022). This strategy must continue to be monitored for development

Apart from strategies and maintaining innovation so that ḥalāl tourism has an economic impact, as stated above, the quality of ḥalāl tourism determines the sustainability of ḥalāl tourism in the service provider country. The government should prioritize both the quantity and quality of ḥalāl tourism. (Sumaiya & Abdullah, 2022). Quality determines tourist interest. We can see Hanafiah's (2022) research on how the quality of ḥalāl tourism products in Turkey influences tourist visit motivation (Hanafiah, 2022) and how low-quality ḥalāl certification in the Philippines is not effective in attracting Muslim tourists (CUEVAS et al., 2022). Ḥalāl tourism is a type of tourism that is focused on providing ḥalāl products and services. It is aimed at fulfilling the spiritual dimension or inner well-being of Muslim travelers. This type of tourism not only benefits the travelers but also has a positive impact on the economy of the country where it is practiced (Vargas-Sanchez et al., 2020).

Ḥalāl tourism contributes significantly to the global tourism industry by creating economic opportunities and expanding Muslim-friendly destinations. However, challenges such as differences in ḥalāl standards, limited infrastructure in non-Muslim destinations, and negative perceptions of Muslim travelers still exist. To address these issues, collaboration between governments, the industry, and ḥalāl certification bodies is needed, along with innovation in marketing and technology. An inclusive and sustainable approach is also essential for ḥalāl tourism to grow without triggering polarization.

Based on the description above, the author concludes that ḥalāl tourism services have two major contributions. First, ḥalāl tourism is becoming increasingly popular in both Muslim and non-Muslim nations throughout the world. Ḥalāl tourism is considered part of a tourism strategy. Secondly, ḥalāl tourism can drive the country's economy and has extraordinary potential. Countries that organize ḥalāl tourism can have a positive impact on economic growth as long as they maintain its sustainability. The quality of ḥalāl products is the key to tourists' interest in enjoying travel through ḥalāl tourism services.

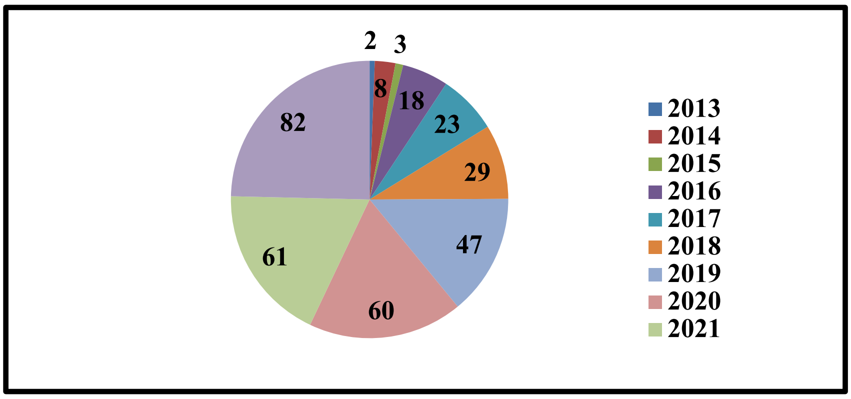
There is hope that ḥalāl tourism services can maximize their contribution to the host country. Therefore, the role of researchers is crucial in the development of world ḥalāl tourism, especially in determining strategies and facing global challenges.

2. Research Methods

This study utilizes the Systematic Literature Review (SLR) method, a review paper approach that systematically explains research topics and themes. This method was selected due to the research study's focus on exploring the development of ḥalāl tourism topics and themes over the last decade and mapping them out to answer research questions. Several previous studies have applied this method (Rasul, 2019); (Alhammad, 2022); Idris et al., 2022; Tumewang, 2023). This research employs a systematic literature review using VOSviewer to analyze various topics through data visualization (Handoko, 2020). By using this method, the SLR analysis can provide the most representative summary of the article data being studied. This method enables researchers to identify topics related to countries, researchers, topic clusters, as well as dominant and non-dominant researchers (Handoko, 2020).

For the data analysis stage, the researchers utilized bibliometric analysis with the VOSviewer application. They collected literature results from the Scopus database using the keyword "Ḥalāl Tourism" followed by source selection. The next step is a selection based on the period from 2013 to 2022. Outside of this period we consider that it does not reflect the relevance and contemporaneity of the topic. A total of 333 documents were obtained, spread over the last 10 years (Figure 2).

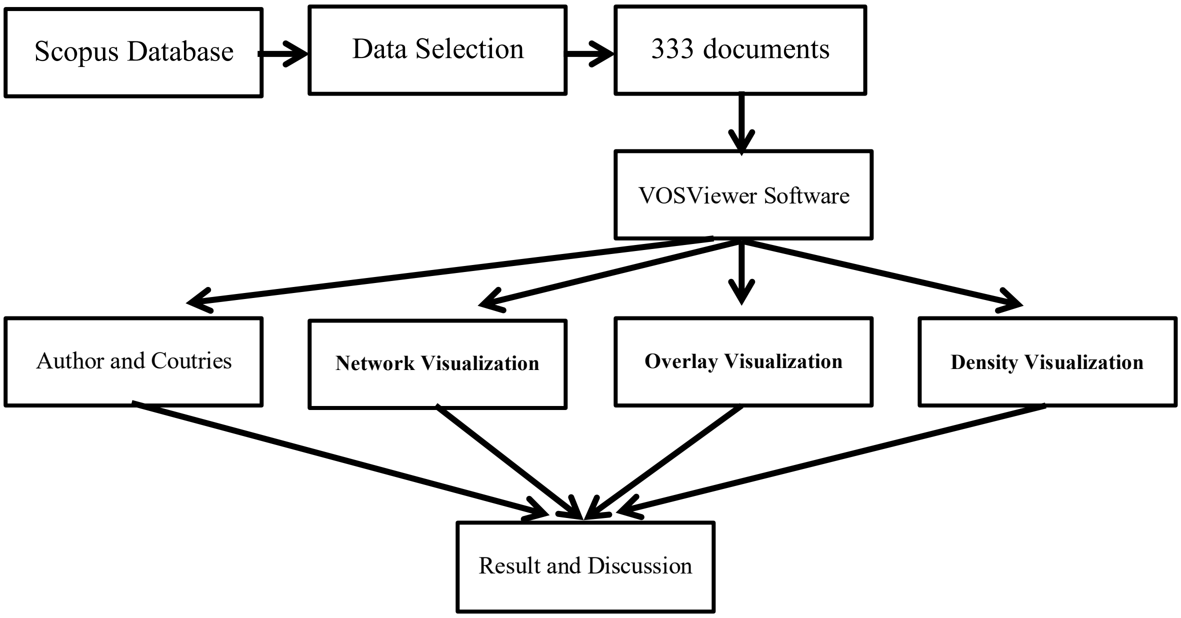
Figure 2. Distribution of Ḥalāl Tourism Articles



Source: Database Scopus

The documents were exported in RIS and CSV format and segregated into groups - Research Group, Country, Topic Cluster, Topic Discussion Time, and Dominant and Non-Dominant Topics - for easy analysis. Following the data processing, a discussion and deliberation took place on the results obtained (Figure 3). In VOSviewer, information on research groups and countries is obtained by analyzing CSV data in five steps. The type of data is set by selecting 'create a map based on bibliographic data', the data source is chosen as 'read data from bibliographic database files', then 'Scopus' is selected under 'select files', followed by uploading the CSV file. The type of analysis is set to 'co-authorship', and the unit of analysis 'author' is set to a minimum of 2, while for 'countries' the minimum is 1. Thresholds are set to 'at least 2 or 1 document'. Meanwhile, Topic Cluster Groups, Topic Discussion Time, Dominant and Non-Dominant Topics are obtained by analyzing RIS data. The determination steps are as follows: create a map based on text data, read data from reference manager files, upload data, title, and abstract fields, full counting, and thresholds are set to a minimum of 10. Three distinct categories emerge: Network Visualization, Overlay Visualization, and Density Visualization. The data is subsequently viewed and evaluated.

Figure 3. Research Flow



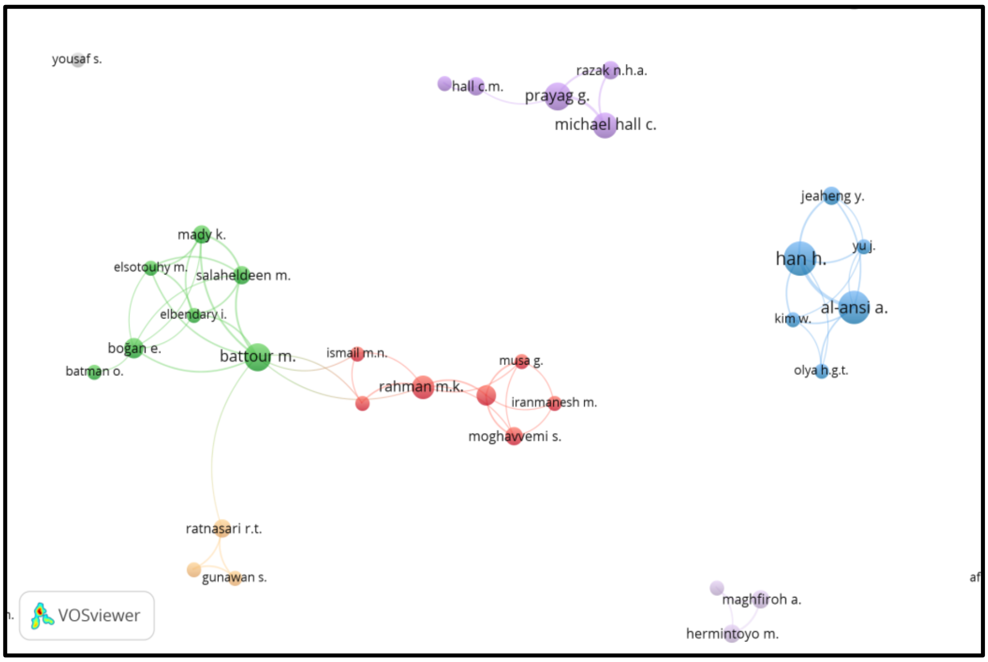
Source: Author's Own

3. Research Results

3.1. Author

In determining the number of researchers, researchers must write a minimum of two research documents on the topic of ḥalāl tourism in the Scopus database. The VOSviewer bibliometric analysis shows that there are 159 researchers who have researched the topic of ḥalāl tourism in the Scopus database. These researchers are divided into 59 research clusters. Among these researchers, Han H. has the largest number of research documents, with 12 research documents on the topic. Han H. is related to other researchers in one research cluster, such as Al-Ansi A., Jeaheng Y., Yu J., Kim W., and Olya H.G.T. Researchers in this cluster have not had any connections with researchers in other clusters. Another researcher, Battour M., has a total of 7 research documents. In his cluster, Battour M. is related to other researchers such as Bogan E., Mady K., Salahedeen M., Elsotouhy M., and Elbendary I. Interestingly, Battour M. is also related to researchers in two other clusters, namely Ratnasari R.T., Ismail M.N., Ratna M.S., and Rahman M.K. (as shown in Figure 4).

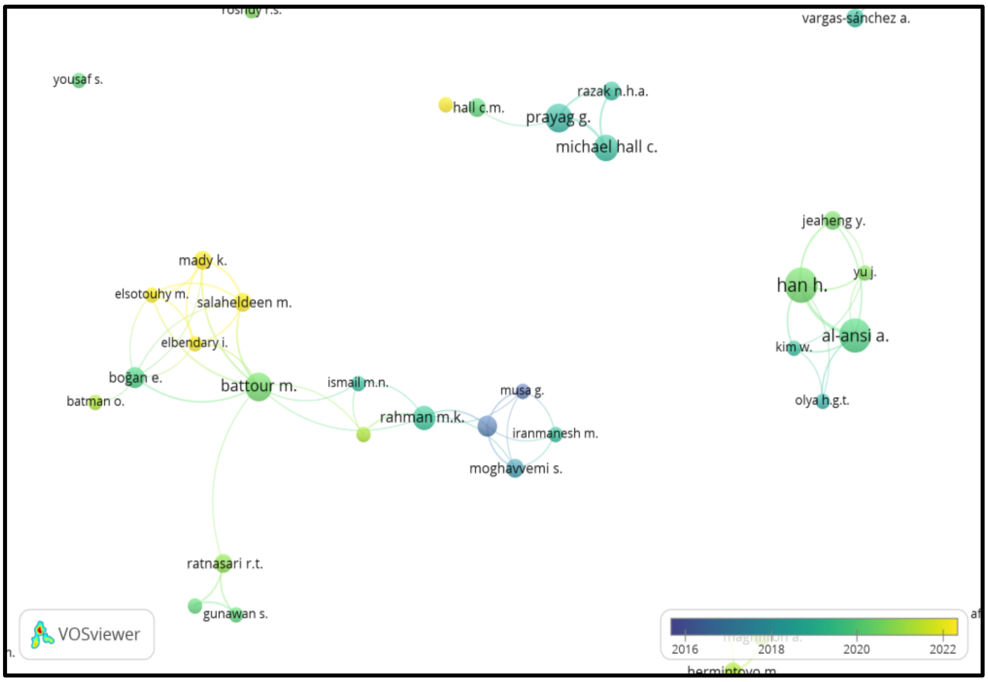
Figure 4. Authorship History



Source: Author's Own

Researchers in the cluster with Battour M. who are directly related to him have the highest level of research novelty (as shown in Figure 5). This is different from researchers in other clusters, such as Han H., who, despite being a researcher with a large number of research documents on the topic, is not directly related to researchers in other clusters. The researcher Han H. showed the most dominance in his cluster, but the number of documents was high while their novelty was not.

Figure 5. Research Novelty

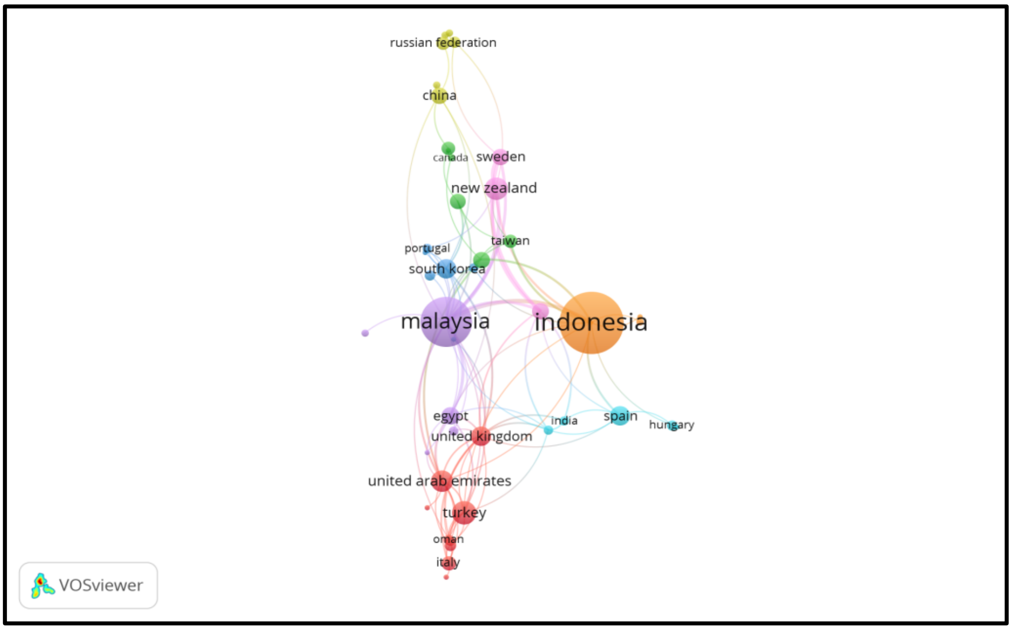


Source: Author's Own

3.2. Countries

Countries across 52 nations have conducted research on ḥalāl tourism. Indonesia has the highest number of ḥalāl tourism research papers, with 132 documents (Figure 6). Ḥalāl tourism has emerged as one of the most rapidly developing sectors in Indonesia, contributing significantly to the country's economic growth. It not only generates employment opportunities but also helps alleviate poverty. With the increasing number of Muslim tourists every year, the growth of ḥalāl tourism has become essential to cater to the needs of both national and international markets (Peristiwo, 2020). Another reason for developing ḥalāl tourism in Indonesia is because of the great potential it has, not only based on projections of Muslim population growth presented by the Pew Research Center (*Pew Research Center*, 2023), Indonesia has 742 languages and 17,100 islands, placing it as the country with the largest archipelago with a length of 5,120 km from west to east and 1,760 km from north to south. Apart from that, its population is more than 250 million people, and it is the country with the largest Muslim population, namely 88% of the total population, and 12% of Muslims in the world are in Indonesia (Ferdiansyah, 2020).

Figure 6. Distribution of Ḥalāl Tourism Research Countries



Source: Author's Own

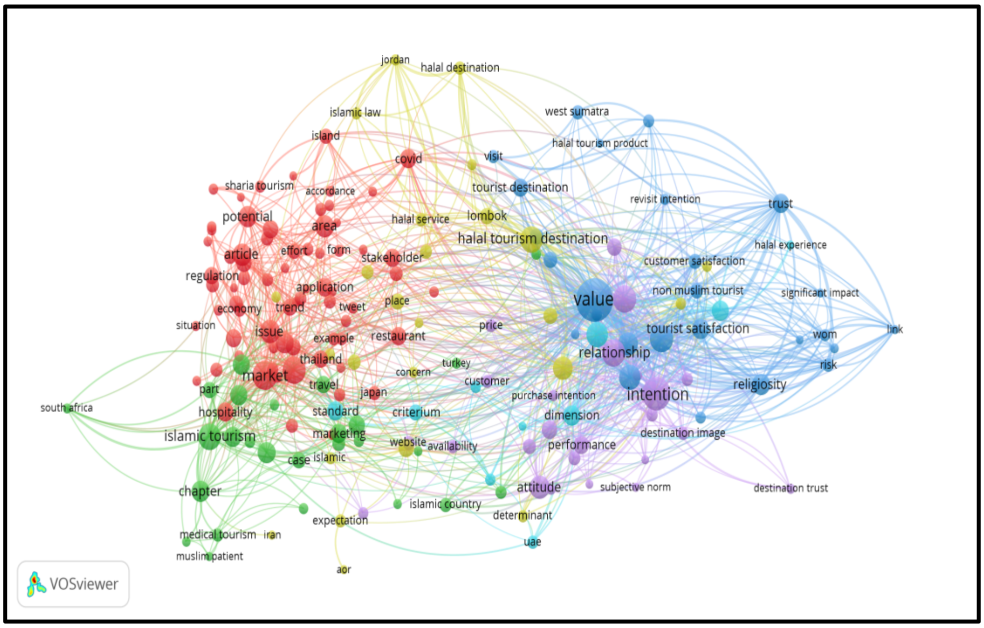
Travel is an important aspect of Islamic spirituality that continues to evolve in modern times. The concept of ḥalāl tourism is an example of this evolution, as it combines spiritual and worldly needs for tourists. This ensures that all their needs are met while adhering to Islamic values. Indonesia has embraced this concept and is working to develop its ḥalāl tourism industry. The Indonesian Ministry of Tourism is leading this effort in collaboration with various organizations, including the Indonesian Ulama Council (MUI), the Business Certification Institute (LSU), and the National Sharīʿah Council (DSN). Their goal is to promote religious and cultural values in tourism as outlined in ministerial regulations (Jaelani, 2017).

The appointment of several strategic areas with the concept of ḥalāl tourism emphasizes Indonesia's seriousness in developing this business. These areas include Aceh, Riau and the Riau Islands, West Sumatra, Jakarta, West Java, Central Java, Yogyakarta, Malang, Makassar, and Lombok. In Indonesia, these areas are categorized as leading ḥalāl tourism areas. One of them received the Best Ḥalāl Travel Destination award according to the Indonesian Muslim Travel Index (IMTI) 2019. In 2019, Indonesia also won the World's Best Ḥalāl Travel Destination award according to the Global Muslim Travel Index (GMTI) 2019 by outperforming 130 participating countries (*Indonesia Raih Peringkat Pertama Wisata Ḥalāl Dunia 2019 | Indonesia Baik*, n.d.) and second place in 2022 from 138 participants (*Indonesia Peringkat Kedua Wisata Ḥalāl Dunia 2022 Halaman All - Kompas.Com*, n.d.). Indonesia's achievements and accomplishments in the Ḥalāl tourism industry in recent years cannot be separated from serious efforts in service management and will continue to improve in facing global competition, especially aspects of infrastructure, promotion, service, and the environment (Lestari et al., 2022). As a result, there is an increase in Muslim tourist visits every year (Hartarto et al., 2022). The positive results obtained by Indonesia support the findings of research conducted by Hermintoyo that increasing tourists can be both an opportunity and a challenge (Hermintoyo et al., 2021). The opportunity is to exploit the potential of ḥalāl tourism and become the best ḥalāl tourist destination, while the challenge is managing supporting infrastructure. Based on these extraordinary efforts and achievements, Indonesian ḥalāl tourism has become a special attraction for both local and foreign researchers conducting research based on its work so far in the ḥalāl tourism industry.

3.3. Topic Cluster

The bibliometric analysis shows that research on ḥalāl tourism consists of six topic clusters: Market, Islamic Tourism, Value, Ḥalāl Tourism Destination, Intention, and Standard (Figure 7).

Figure 7. Topic Cluster (Network Visualization)



Source: Author's Own

3.3.1. Cluster 1 (Market)

Ḥalāl tourism research in the first cluster focuses on market study topics, where this study topic is also connected to study topics in the other clusters studied, including value, Islamic tourism, growth, Muslim travelers, and trust. The promising ḥalāl tourism market motivates countries and industries to open ḥalāl tourism services. In 2015, the Muslim population was 1.75 billion people and is predicted to increase by 3 billion people by 2060 (*Pew Research Center*, 2023). Meanwhile, according to GMTI data, in 2026, Muslim tourists will reach 230 million, and spending will increase to USD 300 billion (*Global Muslim Travel Index 2019*). This great opportunity is a driving force for all countries, not only Muslim countries but also non-Muslim countries. Non-Muslim countries are very open and do not consider the concept of Islam through ḥalāl tourism as something disturbing, as stated by Marlinda in South Korea (Marlinda et al., 2022), Gonzalez in Peru (Sánchez González, 2017), and Liberato in Portugal (Liberato et al., 2022). The phenomenon of non-Muslim countries' openness to the concept of ḥalāl tourism supports the findings found by Yustica that non-Muslim countries are very serious about developing ḥalāl tourism (Yustica & Widiandari, 2022). Due to its significant importance, the state could potentially manage ḥalāl tourism effectively. However, this is not always the case, as the Middle Eastern country of the UAE has experienced. Their tourism industry did not contribute optimally to their GDP (Al-Hammadi et al., 2019). In this case, the role of researchers is very necessary. The research was carried out to ensure the sustainability and improvement of the ḥalāl tourism market.

3.3.2. Cluster 2 (Islamic Tourism)

In Cluster 2, the research focuses on the study topic of Islamic tourism. The study of Islamic tourism is connected to several clusters, including Value, Market, Travel, Religion, Opportunity, Muslim traveler, Question, Lombok, and Ḥalāl Hospitality.

Islamic Tourism focuses on the development of tourism that adheres to Islamic principles, such as the provision of ḥalāl food, Muslim-friendly accommodations, and tourism activities that respect religious values. The Sharīʿah-compliant tourism industry is a new trend that requires industry players to improve their products and services to meet these demands (Marzuki et al., 2019). Although this tourism trend is growing, some Islamic countries still face challenges in developing it, as experienced by the Maldives, particularly in ensuring the certainty of ḥalāl products, services, and practices (Muneeza et al., 2020).

3.3.3. Cluster 3 (Value)

The topic of discussion about Value is in cluster 3 with networks connected to almost all study topics, including Markets, Ḥalāl Tourism Destinations, Islamic Tourism, Quality, Attitudes, Non-Muslim Tourists, Ḥalāl Services, and Islamic Law.

The global ḥalāl tourism business is expanding, and value research is critical to understanding the factors driving its long-term viability and expansion. Value shapes trust in ḥalāl destinations, particularly regarding services and products (Mursid & Anoraga, 2022; Yuliviona et al., 2019). Islamic values, as perceived by faith in ḥalāl tourism attributes, play a significant role in shaping customer expectations of perceived consumption value (Rodrigo & Turnbull, 2019), especially among millennial tourists (Salam et al., 2019). These values also influence Muslim tourists' attitudes towards non-Islamic countries (Aji et al., 2021).

3.3.4. Cluster 4 (Ḥalāl Tourism Destination)

Cluster 4 focuses on Ḥalāl tourism as a destination. The ḥalāl destination tourism study is connected to other topics such as

Value, Quality, Effect, Ḥalāl Destination, Ḥalāl Service, Opportunity, and Potential.

This topic is growing in line with the increasing demand for Muslim-friendly services and facilities, such as ḥalāl food, places of worship, and accommodations that adhere to ḥalāl standards. In the case of Indonesia, these elements can become development standards stimulated by the concept of smart tourism, which is supported by the elements of informativeness, accessibility, interactivity, and personalization for Muslim tourists (Ferdiansyah, 2020). Meeting the specific needs of Muslim tourists will provide numerous benefits, particularly for the competitiveness of destinations (Suharko et al., 2018).

The study of Ḥalāl Tourism Destinations, which is connected to many topics, reflects that the concept of ḥalāl tourism is not limited to providing Sharīʿah-compliant destinations but also involves a broader range of dimensions within tourism. According to the study by Battour and Ismail (2016), ḥalāl tourism incorporates values beyond religious compliance, such as service quality and consumer experience (Battour & Ismail, 2016). The connection between Value and Quality indicates that visitors evaluate destinations not only based on their adherence to Sharīʿah principles but also on the quality of services provided, as explained in the Service Quality Theory (Zeithaml et al., 1996). This demonstrates that ḥalāl tourism destinations must balance Sharīʿah compliance and service quality, as both influence tourists' perceived value of the destination.

However, despite the numerous identified opportunities and potential in the development of ḥalāl tourism, challenges related to Ḥalāl Service and the Effect (the impact of implementing ḥalāl tourism) still require further research. A study by El-Gohary (2016) points out that ḥalāl tourism faces obstacles in terms of standardizing ḥalāl services across different countries due to varying interpretations and implementations of ḥalāl regulations (El-Gohary, 2016). On the other hand, the significant opportunities and potential for developing ḥalāl tourism can be seen in the growing global awareness of more inclusive tourism services. Nevertheless, empirical research on the effectiveness and impact of ḥalāl tourism implementation in different countries remains limited. Therefore, further exploration is needed to critically understand how the combination of quality services and adherence to Sharīʿah principles can create sustainable added value for ḥalāl tourism destinations.

3.3.5. Cluster 5 (Intention)

The 5th cluster focuses on the study topic of intention with various study sub-topics, including Value, Market, COVID, Ḥalāl Tourism Destination, Islamic Country, Quality, and Effect.

The topic of Intention, which is also connected to many other topics, indicates a strong relationship between tourists' intentions and external factors that influence their decisions. Research on Intention in the context of ḥalāl tourism is often linked to the perceived Value offered by ḥalāl destinations and how the Market responds to the specific needs of Muslim tourists. Ajzen's (1991) Theory of Planned Behavior suggests that a person's intention to engage in an action is largely influenced by their attitude toward the action, social norms, and perceived behavioral control (Ajzen, 1991). In this context, the Covid-19 pandemic introduces a new dimension, altering tourists' preferences and behavior patterns, especially in terms of safety and Quality. This study also highlights the role of Islamic Country as a significant factor influencing tourists' intention to visit ḥalāl destinations, as adherence to Islamic principles is more easily ensured in Muslim-majority countries. However, despite the substantial potential of the ḥalāl tourism market, further research is needed to understand the Effect of these factors on tourists' intentions in the post-pandemic period, particularly in rebuilding trust in the ḥalāl tourism sector.

3.3.6. Cluster 6 (Dimension)

In the last cluster, the topic of dimensions is the focus of research, with sub-topics of study such as Value, Ḥalāl Tourism Destinations, Islamic Hotels, Islamic Tourism, and Quality.

The dimension has emerged as an important cluster in ḥalāl tourism research because this topic plays a role in explaining various aspects that shape the ḥalāl tourism experience holistically. It encompasses factors such as cultural and religious aspects, services, facilities, and ḥalāl standards that influence the satisfaction and decisions of Muslim tourists.

3.4. Topic Discussion Time (Overlay Visualization)

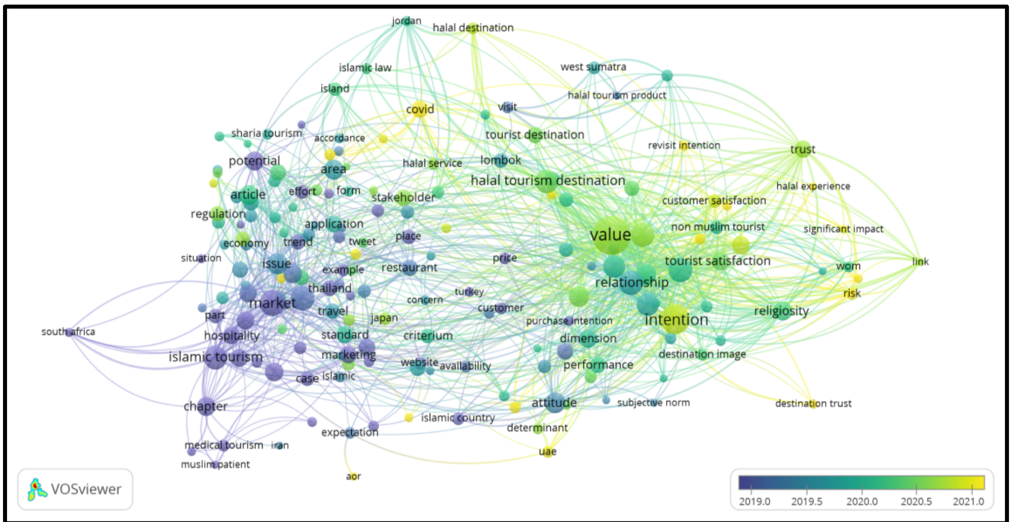
Ḥalāl tourism is divided into six clusters, each with interrelated topics. The study of certain topics can vary annually based on circumstances and researchers' interest in exploring new research topics. According to bibliometric analysis using the Overlay Visualization VOSviewer application, COVID-19 has become one of the newest study topics in ḥalāl tourism (figure 8). This topic has been the focus of researchers' attention since the beginning of 2021 and has not received as much attention as other topics.

The COVID-19 outbreak, which began in 2019, has had a negative impact on the world's economy, including the tourism sector, which had previously contributed positively to the country's economic growth. Researchers are exploring how the COVID-19 outbreak has impacted the ḥalāl tourism sector worldwide. For example, in Indonesia, a country that is actively developing ḥalāl tourism, most ḥalāl tourism businesses have closed due to the negative impact of COVID-19 (Yudha et al., 2022). This is because the pandemic has prevented people from traveling for tours (Wardi & Trinanda, 2022).

Another topic that is being focused on is ḥalāl tourism policy. This topic seeks to reveal the strategic steps for developing ḥalāl tourism after the COVID-19 outbreak. The outbreak has made it difficult for the ḥalāl tourism industry to restart its business. Thus, policies are needed to support the latest formula regarding the sustainability of ḥalāl tourism (Santoso et al., 2022).

In addition, there are other relatively new topics that researchers are showing interest in, such as Intention, Value, Trust, Ḥalāl Tourist Destinations, and Loyalty. These topics have been gaining attention since the end of 2020. On the other hand, there are also some older topics that still hold relevance in Ḥalāl tourism research, such as Market, Islamic Tourism, Opportunity, Potential, and Islam.

Figure 8. Topic Discussion Time (Overlay Visualization)



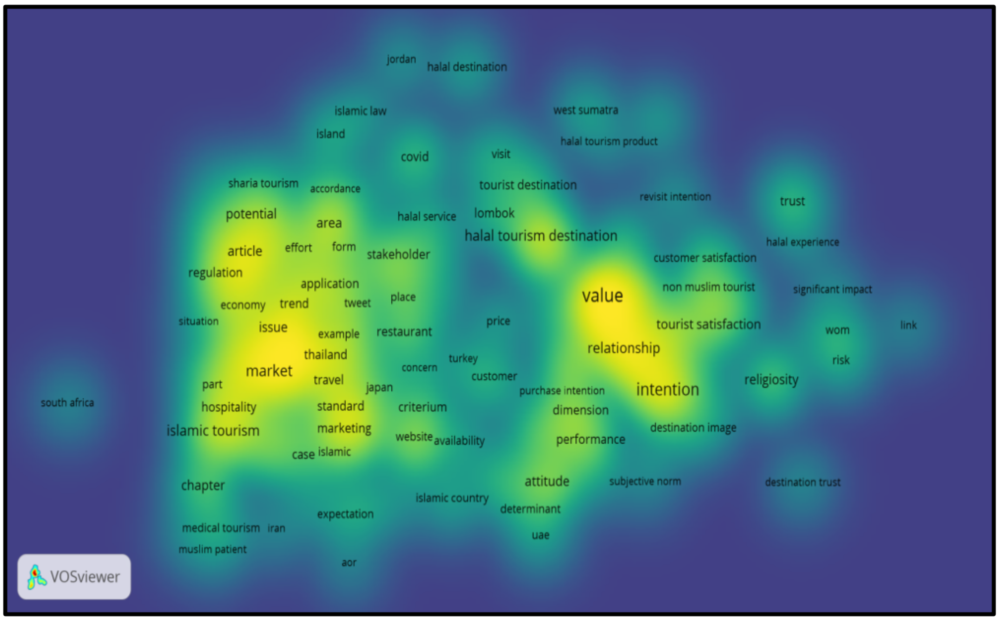
Source: Author's Own

3.5. Dominant and Non-Dominant Topics (Density Visualization)

3.5.1. Dominant Topic

In bibliometric analysis, one can use density visualization to determine the dominant topics in a given subject. When it comes to discussing ḥalāl tourism, the most prominent topics include Value and Market, Quality, Intention, and Standard. It is also possible to identify topic clusters and the duration of topic discussions through bibliometric analysis. Figure 9 illustrates these findings.

Figure 9. Dominant and Non-Dominant Topics (Density Visualization)



Source: Author's Own

3.5.1.1 Value and Market

Islamic values form the foundation for ḥalāl tourism, which aims to provide a comfortable experience for Muslim tourists. This is achieved through various means, such as ensuring the availability of ḥalāl food and worship facilities. The ḥalāl tourism industry takes Sharīʿah legal instruments seriously to ensure the sustainability of the business and maintain the interest of the Muslim community. According to a report by Mastercard Crescentrating Global Travel Market Index (GMTI), there will be an estimated 230 million Muslim tourists worldwide by 2026. Additionally, the Global Islamic Economy Report predicts that the global circulation of money from ḥalāl tourism will be around $274 billion by 2023 (*Kemenparekraf, 2021*). Given this potential, it is crucial to implement these values effectively and not just as slogans to maintain the market for this business (Junaidi, 2020). Researchers believe that the value of ḥalāl tourism research is enhanced by factors such as tourist trust, trusted destinations, tourists' intention to revisit, and determinants. In Abror's (2022) research, the value will sustain tourist loyalty and trust (Abror et al., 2022).

3.5.1.2 Quality

The topic of quality in ḥalāl tourism research is connected to several studies, including Value, Effect, Price, Non-Muslim Tourism, Service Quality, and Ḥalāl Destination Tourism. In recent years, the massive growth in countries developing ḥalāl tourism has made quality a dominant topic in this industry. Since ḥalāl tourism is based on Islamic values, it requires seriousness and trust from the public. However, there is a lack of trust, as Islamic-based business industry services have not always been in accordance with their promotion (Ghozali, 2018). This assessment also extends to the ḥalāl tourism industry sector, where the quality of ḥalāl attributes such as food, religious facilities, and accommodation has not been a serious concern for ḥalāl tourism business actors (Junaidi, 2020). Therefore, Juliana (2022) recommends that to promote the development of ḥalāl tourism, it is necessary to improve the quality of ḥalāl infrastructure (Juliana et al., 2022), which will impact tourist satisfaction (Rahman et al., 2022).

Apart from the reasons above, quality is a concern for many parties because this industry contributes to economic growth and the country's foreign exchange. It has a wide market share, attracting not only local but also foreign tourists (Peristiwo, 2020). Maintaining service quality is an absolute must amid its recent high growth. Quality of service guarantees tourist satisfaction and is the main element in efforts to retain and attract new tourists. If it can be maintained, it will contribute optimally to the country's economy.

3.5.1.3 Intention

The ḥalāl tourism industry relies heavily on the intention factor, which pertains to the reasons why tourists visit certain destinations and their level of trust in those places. This factor plays a crucial role in determining the quality and value of the services provided by the ḥalāl tourism industry. Studies on the intention factor have been extensive, not only focusing on Muslim tourists visiting ḥalāl destinations, but also on the attitudes and behaviors of Muslim tourists visiting non-ḥalāl tourist attractions outside Islamic countries (Hanafiah & Hamdan, 2020).

3.5.1.4 Standard

Attention from ḥalāl tourism managers to standard aspects, especially related to service products, will strengthen the trust of tourists with high religiosity (Abror et al., 2022); Wood & Al-Azri, 2019). There is a global standard for ḥalāl tourism, which is issued by the Global Muslim Travel Index (GMTI). This standard includes three criteria for the ḥalāl tourism industry. The first criterion is family-friendly destinations, which includes indicators such as public safety, Muslim tourists, and the number of Muslim tourist arrivals. The second criterion is Muslim-friendly destination services and facilities, which includes indicators such as food choices, ḥalāl guarantees, access to worship, airport facilities, and accommodation options. The third criterion is ḥalāl awareness and destination marketing, which includes indicators such as ease of communication, reach and awareness of the needs of Muslim tourists, air transportation connectivity, and visa requirements.

These standards are important in the ḥalāl tourism industry and are directly related to this business market. Researchers study how these standards are implemented in countries that organize ḥalāl tourism and how Islamic values are implemented through these standards. One way to measure this is by using the principles of Maqashid Syariah (YAHAYA et al., 2020).

According to Santoso's findings, the ḥalāl tourism industry needs to adopt a sustainable ḥalāl tourism regulatory model that is based on community plurality and responsive to local wisdom (Santoso et al., 2022). Although this may not be a concern for countries that do not have cultural diversity, it is still important to pay attention.

3.5.2 Non-Dominant Topic

It is worth noting that the presence of a non-dominant topic in a field provides researchers with an opportunity to conduct further studies and develop new research ideas. Through bibliometric analysis, it has been identified that some of the non-dominant topics in ḥalāl tourism research include Covid, Ḥalāl Service, Ḥalāl Tourism Product, and Price.

3.5.2.1 Covid-19

Social phenomena often influence researchers' interest in exploring research topics. One such phenomenon that emerged in early 2019 is COVID-19, caused by the infectious disease Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This virus has paralyzed various sectors of life and business, especially social interactions in society, which has had a profound impact on the global tourism industry (Yudha et al., 2022). From 2019 to 2021, a significant amount of research was conducted on COVID-19, whereas research on ḥalāl tourism and its relation to the virus was not prevalent before 2019. However, after 2021, research on COVID-19 and its impact on ḥalāl tourism has decreased. As a result, the topic of COVID-19 is not as dominant in ḥalāl tourism research anymore.

3.5.2.2 Ḥalāl Service

There is a lack of research on ḥalāl services, particularly in relation to ḥalāl tourism. The current research is limited to faith, Islamic law, and ḥalāl travel destinations.

3.5.2.3 Ḥalāl Tourism Product

As in Ḥalāl Services, not much research has been carried out on ḥalāl tourism products. Fewer researchers interested in this area.

3.5.2.4 Price

The topic of pricing in ḥalāl tourism has not been extensively researched, yet it plays a significant role in determining tourists' travel intentions (Papastathopoulos et al., 2021). It will be intriguing to observe how this and other underrepresented topics develop post-COVID-19, especially with new policies from the ḥalāl tourism industry aimed at revitalizing this sector.

4. Conclusions

From the results of the discussion above, it can be concluded that 159 researchers are researching ḥalāl tourism consisting of 59 research clusters. The largest number of documents owned by researchers is 12 documents by Han H. Ḥalāl tourism research topics are also spread across 52 countries, where Indonesia is the country with the largest number of research, namely 132 research documents. This is due to Indonesia's great attention to developing ḥalāl tourism potential. The potential for development is supported by the numerous languages, islands, and Muslim population.

For topic clusters (Network Visualization), research related to ḥalāl tourism consists of 6 main clusters, namely Market, Islamic Tourism, Value, Ḥalāl Tourism Destination, Intention, and Standard. Market is the first cluster due to the high interest of countries in the ḥalāl tourism sector which needs to be supported by research results to ensure sustainability and market improvement. From the time the topic was discussed (Overlay Visualization), the topic of COVID-19 has become one of the newest topics since the beginning of 2021 which has had a big impact on the tourism sector and has not received much attention from researchers. Apart from COVID-19, there are topics about ḥalāl tourism policy (Ḥalāl Tourism Policy), destinations (Intention), values (Value), ḥalāl tourism destinations (Trust), and loyalty (Loyalty). The topics that are not relatively new are markets, Islamic tourism, opportunities, potential, and Islam. Several topics are very dominant in discussing ḥalāl tourism. These topics include Value and Market, Quality, Intention, and Standard. The topics will become key instruments, especially concerning trust and the competitiveness of the ḥalāl tourism market. Meanwhile, topics that are not dominant in ḥalāl tourism research include Covid, Ḥalāl Service, Ḥalāl Tourism Product, and Price.

The findings of this study recommend that policymakers and practitioners focus on maintaining the value and quality of ḥalāl tourism services to strengthen tourist trust and market competitiveness. This can be achieved through training, improving facilities, and enhancing tourist comfort and safety while ensuring the consistent application of ḥalāl standards through regular ḥalāl certification for tourist destinations, hotels, and restaurants, and ensuring compliance with ḥalāl guidelines. Researchers are also encouraged to explore less dominant topics such as COVID-19, ḥalāl service, ḥalāl tourism products, and pricing, to provide new insights that can support the comprehensive development of ḥalāl tourism through strategic decisions for policymakers and the industry.

The data used in this study was limited to secondary sources such as articles found in the Scopus database. Thus, the interpretation fully reflects the broad reality. Further research is needed through a Comparative Study Across Regions. This would be useful in exploring how specific differences between regions with potentially unique contexts relate to ḥalāl tourism.

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اتجاهات السياحة الحلال: مُراجعة نظمية للأدبيات

اسماعيل
قسم اقتصاد الشريعة
جامعة المحمدية الإسلامية بيما
أونوررفيق
الدراسات العليا في قسم اقتصاد الشريعة
جامعة مولانا مالك إبراهيم الإسلامية الحكومية مالانج
يونيارتى هداية سويوسو بوترا
قسم المحاسبة، كلية الإقتصادية
جامعة مولانا مالك إبراهيم الإسلامية الحكومية مالانج

المستخلص. يهدف هذا البحث إلى مراجعة ورسم خرائط منهجية للموضوعات البحثية المتعلقة بالسياحة الحلال. تمت مراجعة ما مجموعه (٣٣٣) مقالاً من قاعدة بيانات سكوبس (Scopus) العالمية باستخدام طريقة المراجعة المنهجية للأدبيات (SLR) وتطبيق VOSviewer. أظهرت النتائج وجود (١٥٩) باحثًا في مجال السياحة الحلال، مع (٥٩) مجموعة بحثية، وبلغ أعلى عدد من المقالات التي قام بنشرها باحث، (١٢) مقالاً. برزت إندونيسيا كدولة رائدة في مجال أبحاث السياحة الحلال، بواقع (١٣٢) وثيقة بحثية. ويرجع ذلك إلى تركيز الدولة على تطوير إمكاناتها في مجال السياحة الحلال، والتي تدعمها (٧٤٢) لغة و(١٧,١٠٠) جزيرة؛ ما يجعلها الدولة ذات أكبر أرخبيل. كما تمتلك إندونيسيا أعلى عدد من السكان المسلمين في جميع أنحاء العالم؛ حيث يبلغ عدد المسلمين ٨٨٪ من إجمالي سكانها و١٢٪ من المسلمين في جميع أنحاء العالم في إندونيسيا. صنفت الدراسة النتائج إلى (٣) مجموعات، هي: المجموعة القائمة على الموضوع، والمجموعة القائمة على وقت المناقشة، والمجموعة القائمة على الموضوعات السائدة وغير السائدة. بالنسبة لمجموعة الموضوعات، تتكون الأبحاث المتعلقة بالسياحة الحلال من (٦) مجموعات رئيسة، هي: السوق، والسياحة الإسلامية، والقيمة، ووجهة السياحة الحلال، والنية، والأبعاد. من حيث وقت مناقشة الموضوع، تتكون الموضوعات الأحدث من كوفيد-١٩، وسياسة السياحة الحلال، والنية، والقيمة، ووجهة السياحة الحلال، والثقة، والولاء. وفي الوقت نفسه، تتكون الموضوعات الأكثر مناقشة من السوق، والسياحة الإسلامية، والفرصة، والإمكانات، والإسلام. النتيجة النهائية هي موضوعات المناقشة السائدة وغير السائدة (تصور الكثافة). تتكون الفئات السائدة لموضوعات المناقشة من القيمة، والسوق، والجودة، والنية، والمعيار. وفي الوقت نفسه، فإن الفئات غير السائدة هي موضوعات حول كوفيد-١٩، والخدمة الحلال، ومنتجات السياحة الحلال، والأسعار. تُعدُّ نتائج هذا البحث بمثابة مرجع لتنمية السياحة الحلال. لا تزال البيانات في هذا البحث مقتصرة على البيانات الثانوية المستمدة من قاعدة بيانات سكوبس. تحتاج الأبحاث المستقبلية إلى إجراء دراسة مقارنة بين المناطق.

الكلمات الدّالة: السياحة، الحلال، طريقة مراجعة الأدبيات المنهجية، برنامج التحليل الببليومتري، سكوبس
تصنيف **JEL:** L83, Z32, D64
تصنيف **KAUJIE:** O0, F12, N0, V11

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المحتويات

(العدد باللغة الإنجليزية)

- **أبحاث**

الصفحة

أخلاقيات مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي

تلتزم مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي بأعلى المعايير الأخلاقية في النشر العلمي والمراجعة والتحكيم، ومن ثَمَّ فإن جميع من له صلة بعمل المجلة بأي وجه كان؛ مؤلفًا، أو مراجعًا، أو محررًا عليه أن يلتزم بمعايير المجلة المهنية والأخلاقية. ومن المعايير المهمة في هذا الشأن خضوع جميع الأعمال العلمية التي تُقدم للمجلة للتحكيم العلمي الذي تراعى فيه السرية التامة؛ من حذفٍ لأسماء المؤلفين والمراجعين في آن واحد. كما تخضع تلك الأعمال للمراجعة الدقيقة من هيئة التحرير قبل نشرها إلكترونيًا وورقيًا.

يؤكد كل باحث و/أو الباحثون صراحة أن تقديم أي عمل علمي للمجلة يُلبي أَعْلى المعايير الأخلاقية بما في ذلك البيانات الإحصائية المناسبة والمراجعة الأخلاقية الشاملة من الجهة لمالكة لتلك البيانات. كما يُطلب من الباحثين (المؤلفين) التأكد من أنهم قدموا أعمالاً علمية أصيلة ورصينة، وأنهم يشيرون في حالة الاقتباس للمواضع المقتبسة وبالطريقة العلمية المناسبة التي تنسب الأفكار والكلمات لأصحابها. علاوة على التأكيد بأن يضمن المقدمون للأعمال العلمية للمجلة خُلوها من أي مُكون يمكن تفسيره على أن فيه تشهيرًا أو انتهاكًا - بأي شكل من الأشكال- لحقوق الطبع والنشر لطرف آخر. إضافة إلى ذلك يُطلب من المؤلفين التعهد بأن الأعمال التي تم تقديمها للمجلة لم تُنشر من قبل و/أو تَمَّ تقديمها للنشر في مكان آخر وبأي شكل من الأشكال؛ إلكترونيًا كان أم ورقيًا.

تضمن المجلة من خلال عملية التحرير أن تحتوي الأعمال العلمية المقدمة للنشر على تفاصيل ومراجع كافية تمكن الآخرين من التحقق من العمل إذا كان مطلوبًا. وفي المقابل تلتزم هيئة تحرير المجلة بالمعايير الأخلاقية من خلال الامتثال لسياستها التحريرية؛ ومن ذلك الصرامة الشديدة حيال مسألة الانتحال والسرقات العلمية بأي شكل من الأشكال. وفي هذا الصدد تؤكد الهيئة بأن المجلة تتبع سياسة عدم التسامح المطلق مع أي عمل علمي يُكتشف فيه عمليات الانتحال والسرقات العلمية. ومن السياسات الإجرائية المتبعة في هذا الإطار إخطار المؤلفين عبر تحذير مكتوب للذين يلجؤون إلى مثل هذه الممارسات إما بخطاب شديد اللهجة و/أو يتم إدراج أسمائهم في "القائمة السوداء". إن اللجأ لهذا الإجراء أو ذاك أو لكليهما يتوقف على درجة سوء السلوك المُرتكب، والذي يَرجع التقدير النهائي فيه لهيئة تحرير المجلة.

كما وتضمن هيئة التحرير وبأقصى ما تملك من إمكانات أن تتسم المراجعة العلمية والتحرير للأعمال العلمية المُقَدَّمة للنشر بالعدل والسرية والشفافية غير المتحيزة للعرق أو الجنس، أو الجهة أو الدِّين. من أجل ذلك يُطلب من جميع المحررين والمراجعين للأعمال التي تُسند إليهم مسألة ضمان عدم وجود تضارب في المصالح ناتج عن علاقات و/أو اتصالات تنافسية أو ارتباطات بأي شكل كان مع أي من المؤلفين أو الشركات أو المؤسسات المرتبطة بالأوراق العلمية التي أُرسلت إليهم. كما ويبذل محررو المجلة قُصارى جهدهم للتأكد من أن جميع المواد المنشورة دقيقة وكاملة وخالية من جميع الأخطاء في وذلك في حدود الإمكانات المتاحة لهم، وفي حدود الجهد البشري المتسم بالقصور بطبيعة الحال. ومع ذلك، فإن هيئة التحرير ستقوم بالتصحيح، والتصويب لأي عمل تم نشره، وظهرت فيه أخطاء فادحة تحتاج إلى التعديل. ولدى الهيئة سياسات وإجراءات واضحة في هذا الصدد. وكما أُشير سابقًا فإن الهيئة تتبع سياسات صارمة غير متسامحة مع حالات سوء السلوك المكتشفة؛ سواء تعلق الأمر بالمؤلفين أو المراجعين أو المحررين.

ومن أجل دعم وتعزيز النزاهة والشفافية للنشر العلمي بالمجلة فإن هيئة تحرير المجلة تتبنى وبشكل كامل مضمون ومحتوى بيان الموقف للمحررين والمؤلفين الذي تم تطويره في المؤتمر العالمي الثاني حول نزاهة البحث المُنعقد في سنغافورة في ٢٢ سبتمبر ٢٠١٠م، والمتاح على الرابط التالي: https://wcrif.org/statement.

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جامعة الملك عبدالعزيز
الاقتصاد الإسلامي

المجلد 38 العدد 1

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مركز النشر العلمي
جامعة الملك عبدالعزيز
ص ب : ٨٠٢٠٠ - جدة : ٢١٥٨٩
المملكة العربية السعودية
http://spc.kau.edu.sa

تفخر "**مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي**" بأنها أول مجلة علمية محكمة متخصصة في الاقتصاد الإسلامي، حيث صدر عددها الأول في عام ١٤٠٣هـ (١٩٨٣م) بمسمى "**مجلة أبحاث الاقتصاد الإسلامي**"، الذي تغير في عام ١٤٠٩هـ (١٩٨٩م)، إلى "**مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي**" وفق تنظيم جديد للمجلات العلمية التي تصدرها الجامعة. وهي تصدر بانتظام مرتين في العام؛ باللغتين العربية والإنجليزية. وتقديرًا لتميزها أُدرِجت المجلة في عام ١٤٣٠هـ (٢٠٠٩م) في تصنيف "سكُوبَس – Scopus"؛ الذي يعد واحدًا من التصنيفات العالمية المرموقة في فهرسة المجلات العلمية المتميزة. وفي عام ١٤٣٥هـ (٢٠١٤م)، رأت هيئة تحرير المجلة أن تنشر ثلاثة أعداد في السنة؛ عددين باللغة الإنجليزية، وعددًا واحدًا باللغة العربية. تتناول المجلة موضوعات متعددة ومتنوعة في الاقتصاد والتمويل الإسلامي من الناحية النظرية والتطبيقية، وتولي عناية خاصة لدراسة المستجدات الاقتصادية؛ عبر حوارات يشارك فيها خبراء ومتخصصون – مسلمون وغيرهم-، مما يجعلها واحدةً من القنوات المهمة للنشر العلمي في الاقتصاد الإسلامي والموضوعات ذات الصلة.

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لمعهد الاقتصاد الإسلامي تاريخ حافل بالعطاء منذ أن ظهر للوجود في عام ١٤٣٢هـ (٢٠١١م) كامتداد لأقدم مؤسسة علمية متخصصة في الاقتصاد الإسلامي؛ ألا وهي **مركز أبحاث الاقتصاد الإسلامي**، الذي أُنشئ عام ١٣٩٧هـ (١٩٧٧م). فوفّر إنشاؤه بنية أساسية متينة للبحوث النظرية والتطبيقية في الاقتصاد والتمويل الإسلامي. وفتح هذا التحول المجال للتدريس والتدريب، إلى جانب البحث العلمي الذي يشكل النشاط الأصلي للمؤسسة. ويحاول المعهد تهيئة بيئة ملائمة يستطيع من خلالها أجيال العلماء والخبراء المتعاقبين من خدمة الجوانب المختلفة للاقتصاد والتمويل الإسلامي. تحقيقًا لهذه الغاية النبيلة، يتعاون المعهد مع العديد من المؤسسات الأكاديمية في مختلف أنحاء العالم، ويُسَخِّرُ موارده المختلفة لهذه الغاية. وقد اتخذت أشكال هذا التعاون صورًا متعددة منها اتفاقيات تعاون مع كيانات عالمية مرموقة، كما هو الحال مع جامعة "IE" الإسبانية بمدريد، وجامعة باريس١ بانتيون السوربون.

بسم الله الرحمن الرحيم

مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي

مجلة علمية دورية محكمة متخصصة؛ يُصدرها معهد الاقتصاد الإسلامي بجامعة الملك عبدالعزيز بجدة منذ عام ١٤٠٣هـ (١٩٨٣م) باللغتين العربية والإنجليزية، وينشرها مركز النشر العلمي بالجامعة. وهي مُدرجة في تصنيف "Scopus SSRN, EconLit and RePEc" العالمي. والمجلة تقبل الإسهامات باللغتين العربية والإنجليزية.

الأهداف والنطاق

تهدف المجلة إلى تحقيق ما يلي:

- تطوير النظرية الاقتصادية الإسلامية على أسس علمية رصينة، من خلال أبحاث أصيلة تخضع للتحكيم العلمي.
- تشجيع الحوار والنقاش حول القضايا والمستجدات المعاصرة في الاقتصاد والتمويل الإسلامي.
- العناية بالبحوث التطبيقية في التمويل الإسلامي، والتكافل، والزكاة، والأوقاف، وغيرها من مجالات الاقتصاد الإسلامي، بما في ذلك دراسة حالات عن اقتصاديات الدول الإسلامية.
- المساهمة في إيجاد حلول للمشكلات الاقتصادية المعاصرة التي تواجه المجتمعات الإنسانية من منظور إسلامي.
- عرض الكتب الجديدة في الاقتصاد والتمويل الإسلامي أو كتب الاقتصاد والتمويل التقليدي التي تخدم الاقتصاد الإسلامي من الناحيتين النظرية والتطبيقية.

إجراءات تقديم البحوث للنشر في المجلة

- تُرسل البحوث والمقالات على بريد المجلة الإلكتروني: iei.journal@kau.edu.sa. كما يجب تقديم المقالات عن طريق نظام التقديم الإلكتروني المتاح على الرابط التالي: https://www.editorialmanager.com/jkau-islsci
- يجب أن لا يتجاوز عدد كلمات المقال عشرة آلاف (١٠,٠٠٠) كلمة؛ بما في ذلك الهوامش، والجداول، والأشكال والمراجع، والملاحق.
- في حال وجود أكثر من مُؤلف للبحث، يجب إبراز اسم المؤلف الذي تتم مراسلته؛ بذكر عنوانه، وبريده الإلكتروني ورقم هاتفه.
- لا تفرض المجلة أية رسوم للنشر.
- بمجرد إرسال البحث لهيئة تحرير المجلة، لا يحق للمؤلف (ين) تقديم البحث لأية مجلة أخرى لمدة ستة (٦) شهور من تاريخ الإرسال.
- يتم فحص جميع الأعمال المقدمة من قبل محكمين متخصصين وفق مبدأ المراجعة المزدوجة التي تضمن السرية التامة، وعدم الإفصاح عن هوية الكاتب.
- يجب أن تُمثّل المواد المقدمة أعمالاً أصيلة تتضمن إضافة علمية، على أن تكون غير منشورة، أو معروضة للنشر في أي مجلة أخرى.
- في حال قبول البحث للنشر بالمجلة، لا يُسمح بنشره أو ترجمته إلى أي لغة أخرى دون الحصول على موافقة خطية من رئيس تحرير المجلة.
- يتحمل المؤلف (ون) كامل المسؤولية عن خرق حقوق النشر، أو السرقات العلمية، بحسب نظام الملكية الفكرية المتعارف عليه عالميًا. وسياسة المجلة جد صارمة وحازمة حيال الوقوع في أي من هذه الممارسات.

صيغة البحث: يجب أن تعد البحوث المقدمة للنشر وفق القواعد الإرشادية المنشورة في رابط موقع المجلة المبين أدناه.

العنوان: **رئيس تحرير مجلة جامعة الملك عبدالعزيز: الاقتصاد الإسلامي**
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البريد الإلكتروني: iei.journal@kau.edu.sa
الموقع الإلكتروني: http://iei.kau.edu.sa/Pages-A-JournalHome.aspx

تحتفظ المجلة بحقها في عدم النظر في أي عمل علمي لا يلتزم بتلك القواعد.

جـامعـة الملك عبـد العزيـز
الاقتصاد الإسلامي

مجلة

المجلد ٣٨ العدد ١ (إنجليزي) يناير ٢٠٢٥م ردمد ٧٣٨٣-١٠١٨

- **أبحاث**

الآلية المؤسسية للاستصناع الهندسي وآفاقه في المملكة العربية السعودية

أندريه جريماليوك و سفيتلانا دانيلينا

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ألفة بلخير، أمير السعداوي و منى عباس بوجلبان

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- **قواعد النشر في المجلة**
- **كشا فالمقالا ت**

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