

ARTIFICIAL INTELLIGENCE PRECISION: UNDERSTANDING ISLAMIC PROFIT-AND-LOSS SHARING CONTRACTS FOR EARLY LEARNERS

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ABSTRACT

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As artificial intelligence increasingly serves as an educational shortcut for learners navigating complex subjects, this study evaluates whether the practical efficacy of these platforms aligns with current expectations. Specifically, we examine the capacity of ChatGPT to accurately explicate Mudarabah and Musharakah, the foundational profit and loss sharing contracts in Islamic finance. To assess this systematically, the core knowledge of these contracts was categorised into five critical dimensions: general comprehension, legal basis, specific terms and conditions, contract typologies, and practical industry applications. In January 2024, structured prompts were submitted to the free public version of ChatGPT, specifically GPT version 3.5, and the generated responses were rigorously evaluated on a scale from 0 to 5. These outputs were benchmarked against the standardised reference texts used for certifying Shari'ah supervisors. The results reveal significant limitations in the factual accuracy of the model. Most notably, the terms and conditions dimension, a critical component of Islamic financial compliance, yielded a validity score of less than 2. With an overall average validity score of just 2.53, the findings indicate that ChatGPT is currently too unreliable to serve as an independent foundational learning tool in this domain. Ultimately, while artificial intelligence offers compelling educational potential, this study underscores the necessity of exercising strict caution when relying on autonomous tools to navigate highly specialised, deeply nuanced intersections of religion and finance.

Keywords: LLM; ChatGPT; Mudarabah; Musharakah; self-directed learning; early learners

1. INTRODUCTION

The profound evolution of technology has fundamentally reshaped modern society. The historical progression from the mechanical systems of the initial Industrial Revolution to the current era of Industry 4.0 has been driven largely by information and communication technology. This paradigm shift has deeply

integrated digital systems into daily life, significantly enhancing overall convenience and facilitating the rise of advanced tools such as artificial intelligence. Fundamentally, artificial intelligence consists of software engineered to simulate human cognitive functions, including learning, problem-solving, and logical reasoning. This concept originated when computing systems first gained the capacity to store programs and data simultaneously, prompting researchers to investigate whether machines could replicate human thought processes. Oke (2008) notes that artificial intelligence can successfully execute tasks that traditionally require human intellect. Beyond merely automating routine administrative duties, this technology demonstrates substantial utility across various sectors. For instance, Yuspin et al. (2022) highlight its significant potential within the Islamic banking industry.

ChatGPT has also become a powerful asset in educational settings. As a conversational artificial intelligence model, it greatly simplifies information retrieval for academic purposes and independent study. Setiawan and Luthfiyani (2023) examined its efficacy in developing writing skills, noting that the model could produce an initial draft of 693 words for learners to subsequently refine and expand. This level of technological assistance promotes autonomous learning by empowering students to independently request explanations, analyse examples, and obtain immediate feedback without constant instructor supervision. Notably, the applicability of such digital tools extends beyond the empirical sciences to encompass theological and religious studies. Artificial intelligence can even be used to investigate highly specific subjects, such as complex financial contracts governed by Islamic law. Although these disciplines involve considerable nuance and demand high accuracy, the educational potential of artificial intelligence in this context remains promising.

Profit-and-loss sharing (PLS) contracts, specifically Mudarabah and Musharakah, are integral components of Islamic banking management. Their jurisprudential foundation is rooted in the Qur'an and Hadith, providing Shari'ah-compliant equity financing alternatives that adhere to the religious prohibition against interest-bearing loans (Sutrisno & Widarjono, 2022). By distributing financial returns and risks between the bank and its customers, these mechanisms ensure a balanced and equitable position for all parties (Salman, 2022). Functionally, Mudarabah operates as a 'trustee finance' or passive partnership, whereas Musharakah constitutes an active equity participation agreement. Ultimately, by institutionalising the equitable distribution of profits and losses, both frameworks align closely with the core Islamic economic principles of fairness and mutual risk-sharing (Abusharbeh, 2014).

Comprehending profit-and-loss sharing contracts based on Islamic principles is challenging without the guidance of ulama (Islamic scholars). Athief (2019) elaborates on how Islamic knowledge is derived from its two primary sources: the Qur'an and the Sunnah. Historically, the ulama have played a crucial role in interpreting Islam by exploring, scrutinising, synthesising, and elucidating the knowledge embedded within these two sources. As experts in Islamic theology and jurisprudence, their role is essential for interpreting religious teachings, and their scholarship commands high reverence within the Islamic tradition. Furthermore, knowledge in Islam is transmitted through a continuous chain of scholars. This mechanism, known as sanad, refers to a documented chain of teachers and transmitters through whom a text or ruling is passed down and verified. It serves to ensure authenticity and accountability in the transmission of religious knowledge. Consequently, Muslims acquire knowledge of Shariah rulings by studying texts and teachings connected through these verified transmission chains (Nakissa, 2019).

Consequently, the integration of Artificial Intelligence (AI) as a modern pedagogical tool, particularly in the context of independent learning by novices, demands critical assessment. Although AI is capable of generating valid responses, the dissemination of inaccurate information concerning Islamic principles poses significant risks to Muslim adherents. Given these vulnerabilities, independent learning mediated by AI requires rigorous safeguards to ensure accuracy and precision. Specifically, this research investigates whether ChatGPT can provide reliable explanations of profit-and-loss-sharing contracts for early learners. To this end, it is imperative to validate the outputs generated by ChatGPT against the established consensus of Muslim scholars.

2. LITERATURE REVIEW

Several studies have been conducted with the objective of investigating ChatGPT's ability to solve multidimensional problems. For example, in the field of medical knowledge, Scquizzato et al. (2024) reviewed ChatGPT's answers to laypeople's questions regarding cardiopulmonary resuscitation (CPR) and cardiac arrest. The study found that ChatGPT consistently delivered precise, pertinent, and thorough responses to inquiries regarding cardiac arrest, questions frequently posed by survivors, their family members, and bystander rescuers. However, its responses to queries related to CPR garnered the lowest ratings. A similar finding was reported by Mohammad-Rahimi et al. (2023), who evaluated the reliability and validity of ChatGPT

in the field of dentistry. They found that ChatGPT was a more reliable artificial intelligence (AI) model compared to Google Bard and Bing, yielding validity scores of 60%, 15%, and 15%, respectively.

Psychiatry is another field where ChatGPT has been tested for its validity. D'Souza et al. (2023) documented that ChatGPT 3.5 excelled in clinical case vignettes within psychiatry, earning a "Grade A" in 61 out of 100 cases, a "Grade B" in 31, and a "Grade C" in 8. Notably, the model performed exceptionally well in generating management strategies and diagnoses for various psychiatric conditions, with no instances of a "Grade D" (which would indicate critical errors in diagnosis or clinical care responses). The responses that received a "Grade C" primarily exhibited minor discrepancies or missed details.

In the field of oral health, Buldur and Sezer (2023) conducted a research study specifically focused on the use of fluoride. They found that ChatGPT offered more scientific and detailed answers compared to those provided by the American Dental Association (ADA). Nonetheless, both sources conveyed a consistent central idea regarding fluoride and its significance in oral health. These findings led Buldur and Sezer to conclude that while the accuracy and reliability of answers provided by AI applications are crucial, ChatGPT's responses to questions related to fluoride are both adequate and dependable.

In contrast to the aforementioned studies, several investigations have highlighted the invalidity and unreliability of ChatGPT. For example, in the field of economics, particularly regarding document citation, Buchanan et al. (2024) found that over 30% of the citations generated by GPT 3.5 were nonexistent, and this percentage saw only a marginal decrease when testing GPT 4. Furthermore, in the field of information technology, Karanjai et al. (2023) discovered significant findings pointing toward the introduction of security vulnerabilities in smart contracts generated by AI, which negatively affected both the overall quality and the correctness of the code. This research underscored the critical importance of scrutinising and enhancing the robustness of the code generation process to mitigate potential security risks.

A more nuanced perspective balancing the pros and cons of ChatGPT was offered by Amaro et al. (2023). Their research acknowledged that ChatGPT's answers are occasionally unreliable. However, through a study involving 15 participants, they also found that despite this recognised lack of validity, individuals still consistently intend to utilise the tool.

Several recent studies have examined the use of large language models and generative artificial intelligence in broader Islamic and religious knowledge contexts. Dzulraidi et al. (2025) evaluated ChatGPT in translating verses of the Quran by comparing its output with authoritative translations and references based on tafsir. The study demonstrated that while newer versions produced clearer wording, they still encountered difficulties in preserving nuanced meanings. The authors suggested using ChatGPT solely as an initial reference rather than a primary source for translations of the Quran. Similarly, Sembok and Wani (2023) discussed the use of ChatGPT in religious studies, raising concerns regarding hallucinated answers, unverified sources, and weak explanatory logic. Within the social studies of the religious domain, Daud et al. (2025) compared the outputs of large language models with those of human experts in labeling content related to Islamophobia. They reported a moderate level of agreement but noted persistent limitations when the models handled religiously and culturally sensitive data.

More specific studies have focused on topics concerning Islamic law, fatwas, and Islamic finance. Mohammed et al. (2025) developed a fatwa question answering system driven by artificial intelligence. This system utilised methods of retrieval and subsequent ranking to enhance answer quality and reduce instances of hallucination. Their results indicated that linking the model to verified knowledge sources helped improve the stability of the responses. Maliki et al. (2023) investigated the use of artificial intelligence tools to support judges in cases of Islamic law, concluding that while artificial intelligence can assist in analytical processes, it cannot replace human judgment. In the context of Islamic legal education, Susanti et al. (2025) assessed the validity and reliability of ChatGPT in explaining waqf concepts to early learners. They found that the model provided a generally accurate basic understanding but lacked the depth and contextual precision required for more advanced legal aspects. Regarding Islamic finance, Athief et al. (2025) evaluated the answers provided by ChatGPT to questions related to riba. They found a moderate level of accuracy alongside several limitations. Consequently, they recommended exercising caution when using ChatGPT for religious financial education.

Based on the aforementioned literature, there is a clear diversity of findings within the academic community. Some studies have concluded that the responses generated by ChatGPT are valid and sufficient, whereas others have highlighted significant deficiencies. Therefore, the present study aims to assess the validity of ChatGPT within the realm of Islamic banking, focusing specifically on the principles of profit and loss sharing. This concept is particularly important because it serves as the foundational anchor upon which ideal Islamic banking is built. Through this investigation, the current study addresses the existing gap in the literature in two primary ways. First, it provides additional scientific evidence regarding the reliability of ChatGPT. Second, it explores the capacity of the model to generate accurate answers concerning Islamic contracts of profit and loss sharing, specifically the Mudaraba and Musharaka contracts.

3. METHODOLOGY

Given that the purpose of this research is to analyse the responses generated by ChatGPT, a qualitative approach is the most appropriate. This choice aligns with the core characteristics of qualitative research, particularly its capacity to facilitate studies centred on subjective exploration where textual data play a pivotal role. The inductive reasoning model inherent in qualitative research aligns well with the broader aims of this study (Antwi & Kasim, 2015). More specifically, content analysis was employed during the data analysis process. Following the approach outlined by Downe-Wamboldt (1992), content analysis is designed to systematically and objectively synthesise textual data, placing a particular emphasis on written information. It is essential to clarify that the term ‘systematic’ in this context does not refer to a Systematic Literature Review, a method commonly employed by researchers such as Alam et al. (2022) and Athief et al. (2022). Instead, it denotes a logical process that can be replicated to ensure data validity.

Furthermore, Bengtsson (2016) underscores the inherent versatility of the content analysis model. Unbound by specific academic disciplines and lacking rigid guidelines, the prudent application of this model centres on maintaining the credibility of visualised data. Common concerns involve potential text reduction during presentation, which may introduce bias into the findings. However, in the present study, such concerns are unlikely to materialise, as the data consist entirely of direct excerpts from conversations with ChatGPT.

This study selected ChatGPT as the artificial intelligence system to be evaluated among several available generative applications. This decision was based on both practical and methodological considerations. At the time of data collection, ChatGPT was one of the most advanced and widely used conversational models accessible to the public. It was extensively utilised for answering questions and providing educational support across various domains. ChatGPT offered a direct conversational interface that closely resembled how early learners naturally pose queries. This feature renders it highly suitable for evaluating artificial intelligence performance within a realistic context of independent learning. In addition, numerous recent academic evaluation studies have also utilised ChatGPT as their primary tested model, a fact that supports direct comparability with prior research.

This study commenced with the collection of data from ChatGPT, obtained via prompts entered into the conversational interface. Table 1 outlines the specific aspects considered in this research. Based on these aspects, various prompts were inputted into the model. All prompts were written in Indonesian, a language chosen for its capacity to effectively represent a significant portion of the global Islamic community. These queries consisted of fundamental questions tailored for novice learners exploring Mudarabah and Musharakah contracts. To ensure methodological rigour, all prompts were entered during the same usage session across separate chat windows. Each prompt was submitted only once, and no subsequent clarifying prompts were added. This approach was employed to capture the initial response generated by ChatGPT for each question without any further refinement. Subsequent prompts were intentionally avoided because they rely on individual user judgement and prior understanding, factors that can vary significantly among users and lead to divergent answer trajectories. Restricting each query to one prompt helped maintain the comparability of the responses and supported consistency throughout the evaluation process. The sole exception involved a specific prompt utilised to test the generation of Arabic text to ensure consistency specifically for the legal basis aspect.

Table 1: Fundamental aspects of Mudarabah and Musharakah for early learners

No.	Aspect	Sub-aspect
A	General understanding	Definition of Mudarabah Definition of Musharakah Main Differences
B	Legal basis	Islamic legal basis of Mudarabah Islamic legal basis of Musharakah
C	Terms and conditions	Pillars of Mudarabah Pillars of Musharakah Conditions of Mudarabah Conditions of Musharakah
D	Types of contracts	Type of Mudarabah Type of Musharakah
E	Application	Islamic banking application of Mudarabah Islamic banking application of Musharakah

All prompts were submitted in January 2024 and entered manually through the ChatGPT platform. The model used was the free public version of ChatGPT available at that time, which was based on the GPT 3.5 architecture. The free version was intentionally selected because it reflected the model most likely to be

accessed by general users and early learners, rather than the premium alternatives. This approach supported the study objective of evaluating the reliability of artificial intelligence within a realistic user environment.

Subsequently, the responses generated by ChatGPT were cross-referenced with the text *Fiqh Business: The Shirkah and Mudarabah Contract (Fikih Muamalah Maliyah Akad Syirkah dan Mudharabah)*, authored by Mubarak and Hasanudin (2017). This book was used as the main operational reference because it served as a core module in the certification training programme for Sharia supervisors of Islamic financial institutions in Indonesia, providing a structured explanation of these contracts oriented towards practice. The use of this text as the primary benchmark does not disregard the existence of differing opinions among various Islamic schools of jurisprudence (mazhabs), nor does this study aim to establish a single legally definitive interpretation across all such schools. Instead, the book served as a consistent reference point for evaluating basic conceptual accuracy at the early learner level. Employing multiple jurisprudential opinions simultaneously as scoring standards would render the assessment less consistent, given that interpretations can differ significantly across scholars and institutions. In Indonesia, even regulatory guidance regarding these contracts varies across authorities (Yuspin et al., 2020); therefore, a single standardised instructional reference was utilised to maintain stable and comparable scoring criteria across all evaluated answers. For clarity and conciseness, this book is hereafter referred to as the Reference Benchmark throughout the manuscript.

To maintain consistency in this content analysis, the evaluation results were quantified using a scoring system based on a rubric to support transparency and replicability. A rubric functioned as a structured scoring guide to assess the extent to which each response aligned with the selected reference standard (Dawson, 2017). In this study, the rubric converted qualitative judgement into numerical scores using a scale of 0 to 5, where 0 indicates no valid conformity with the reference explanation and 5 indicates full conceptual alignment. Intermediate scores represent different degrees of partial accuracy and completeness, and values of half a point are permitted when a response falls between two categories. The scoring focused on conceptual correctness, the completeness of required elements, and consistency with the reference explanation rather than mere similarity in wording. The same criteria were applied across all prompts to keep the assessment consistent. Table 2 details the assessment rubric used for this validity check.

Table 2: Assessment rubric for validity

Score	Interpretation	Criteria
5	Fully valid	The response provided by ChatGPT is fully consistent with the main references. Any differences are minor and relate solely to language or phrasing.
4	Very strong validity	Most parts of the response align with the main references, but there are noticeable gaps or inaccuracies in several sections.
3	Slightly more than half are valid	More than half of the response aligns with the main references, while several portions do not.
2	Slightly less than half are valid	Less than half of the response aligns with the main references, while several parts diverge from the core ideas.
1	Very weak validity	Only a very small portion of the response aligns with the references, and the answer is largely inaccurate.

4. RESULTS AND DISCUSSION

4.1 ChatGPT's responses regarding the general understanding of Mudarabah and Musharakah

To obtain data related to the definition of each contract, the prompts utilised are presented in Table 3. Regarding the definition of Mudarabah, the response from ChatGPT is brief yet concise, stating that Mudarabah is a form of partnership agreement in Islamic economics between two parties, namely *shahibul mal* (capital owner) and *mudarib* (manager or executor of the business). The response also mentions the contracting parties, capital and effort obligations, as well as the distribution of profit and loss. As for the definition of Musharakah, ChatGPT answers that Musharakah is a form of cooperation or partnership in Islamic economics between two or more parties, where each party contributes capital or resources to achieve common goals. The response from ChatGPT regarding Musharakah also covers various elements, including capital involvement, the sharing of profit and loss, managerial participation, and general normative principles. Regarding the main differences, ChatGPT provides five points related to capital contribution, the sharing of profit and loss, management and control, risk and responsibility, and the termination of the agreement.

Overall, the explanations provided by ChatGPT for both contracts are substantively consistent with the definitions presented by the Reference Benchmark, with no core conceptual differences identified. The elements mentioned in the responses, including the contracting parties, capital contribution, the managerial role, and the distribution of profit and loss, correspond with the main reference description. There is only a minor note in the comparative explanation where ChatGPT states that in Musharakah, profits and losses are shared among the parties involved according to the proportion of their capital or contributions. However, since the earlier definition provided by ChatGPT already states the principle correctly, this difference is understood as a simplification rather than a conceptual error. Therefore, the response is assessed as fully aligned at the definitional level. The validation results for this specific aspect are presented in Table 3.

Table 3: Prompts and validity of the answers on general understanding

Sub-aspect	Prompt (translated from Indonesia)	Validity
Definition of mudarabah	Define mudarabah!	5
Definition of musharakah	Define musharakah!	5
Main differences	Describe the main differences between mudarabah and musharakah.	5

4.2 ChatGPT's responses on the legal basis

The prompts utilised to obtain data related to the legal basis of the contracts concerning profit and loss sharing, are presented in Table 3. After attempting to input the prompt, we realised that ChatGPT cannot directly quote Arabic texts, even though, in essence, the model can accept prompts written in Arabic. We also tried to stimulate ChatGPT using additional prompts to test whether it is truly unable to generate the expected legal basis directly from the Quran and Hadith, which serve as the most authoritative sources in Islam. However, this exercise only strengthened the finding that ChatGPT cannot provide direct quotes from Arabic texts and original sources.

Regarding the primary findings for the legal basis of Mudarabah, ChatGPT states that there is no specific evidence from the Quran. As for evidence from the Hadith, ChatGPT claims there is a Hadith stating that once, "Prophet Muhammad SAW provided capital to someone to be managed, and when the capital generated profit, the Prophet shared the profit with the capital owner according to the prior agreement." Furthermore, ChatGPT presented Ijmak as a legal basis, asserting, "The consensus of the Muslim community regarding Mudarabah can be observed in the practices of Muslims and Islamic financial institutions that recognise Mudarabah as a valid financial instrument." Meanwhile, concerning Qiyas as the legal basis for Mudarabah, ChatGPT states, "Qiyas can be applied by analogizing the principles of Mudarabah with those mentioned in the Quran and hadith related to valid business and financial transactions in Islam."

In the case of Musharakah, ChatGPT answered that there is no specific verse in the Quran. The statement is as follows, "Even though there is no specific verse that discusses Musharakah, the concepts of risk and profit-sharing, as well as justice in business transactions, can be found in various verses." A similar answer was provided when ChatGPT was asked about the legal basis of Musharakah in the Hadith. In addition, ChatGPT provided an explanation regarding Ijmak and Qiyas as the legal basis, giving almost the exact same answer as when commenting on Mudarabah.

The responses provided by ChatGPT regarding the legal basis of both contracts are assessed as having weak validity because they omit or misstate key authoritative sources identified in the main reference. This assessment is based on the omission of key primary sources and the incorrect classification of legal foundations when compared with the main reference. First, regarding Mudarabah, the answer provided by ChatGPT is correct in noting the absence of an explicit Quranic text as the legal basis. However, there are at least two hadiths concerning Mudarabah that are widely used. The first hadith is the one mentioned by ChatGPT, with the caveat that the answer from the model only resembles the substance of the hadith rather than the exact text. Because the response provides only a generalised paraphrase and does not clearly anchor the ruling in the recognised textual sources presented in the reference, its legal grounding is considered incomplete. The second hadith concerns three good deeds that bring blessings, one of which is Mudarabah. Furthermore, the Reference Benchmark does not mention Ijmak and Qiyas, as it is widely known that the permissibility of Mudarabah does not stem from these two legal bases. Therefore, introducing Ijmak and Qiyas as the primary legal bases represents a misplacement within the structure of legal authority, rather than merely a difference in presentation.

Regarding the case of Musharakah, the Reference Benchmark cites explicit Quranic evidence discussing the practice of shirkah, specifically Chapter 38 Verse 24 of the Quran. Furthermore, numerous hadiths explicitly discuss the permissibility of Musharakah. One of the most frequently referenced hadiths is the narration stating that individuals conducting Musharakah will gain an enormous bounty, provided no involved party betrays the others. Regarding Ijmak and Qiyas as legal bases, the Reference Benchmark does

not mention them. This is because, as is the case with Mudarabah, the permissibility of Musharakah does not stem from these two legal bases. The statement from ChatGPT claiming that there is no specific Quranic basis, while the reference explicitly provides one, is treated as a substantive factual omission rather than a minor difference in interpretation. Based on this, the validity of the response provided by ChatGPT is poor, as illustrated in Table 4. These gaps directly affect the core legal sourcing, which explains the low validity scores assigned in this aspect.

Table 4: Prompts and the validity of answers regarding the legal basis

Sub-aspect	Prompt (translated from Indonesia)	Validity
Islamic legal basis of mudarabah	Explain the Islamic legal basis of mudarabah	2.5
Islamic legal basis of musharakah	Explain the Islamic legal basis of musharakah	0.5

4.3 ChatGPT's responses on pillars and conditions

In responding to questions regarding the pillars of Mudarabah, ChatGPT states that there are seven pillars: mudarib, sahibul mal, capital, effort or skills, partnership, capital protection, and profit from business results. Regarding the pillars of Musharakah, ChatGPT also mentions seven pillars: the parties involved, capital, effort or skills, partnership, the sharing of profit and loss, justice, and profit from business results. In its concluding explanations for both contracts, ChatGPT adds that these pillars must be fulfilled for the Musharakah contract to be considered valid and in accordance with the principles of Islamic Sharia. Furthermore, in explaining the required conditions for Mudarabah, ChatGPT stated that there are twelve aspects, five of which are sincere intention, the provision of capital, fairness in the sharing of profit and loss, openness and transparency, and capital protection. The remainder of the mentioned conditions are either ambiguous or mere repetitions of the pillars of Mudarabah.

Meanwhile, ChatGPT's response regarding Musharakah are also quite lengthy. ChatGPT stated that there are seven pillars of Musharakah, consisting of the parties involved, capital, effort or skills, partnership, the sharing of profit and loss, justice, and profit from joint business results. As for the conditions of Musharakah, eleven aspects are mentioned by ChatGPT; some of these include clear intention, agreement among the parties, the provision of capital, the active participation of partners, clear rules for the sharing of profit and loss, fairness in profit and loss distribution, openness and transparency, and capital protection. It is also important to note that at the end of its answer, there is a concluding statement noting that these conditions may vary depending on the interpretation and requirements of Islamic financial institutions or specific scholars.

The responses provided by ChatGPT regarding the pillars (arkān) and conditions (shurūṭ) of these contracts diverge significantly from established jurisprudential explanations. This assessment is predicated on a structural mismatch, categorical confusion, and the omission of core contractual elements when benchmarked against formulations based on fiqh. For instance, ChatGPT states that both Mudarabah and Musharakah comprise seven pillars, an enumeration that conflates conditions with pillars and includes elements of marginal relevance. This indicates a failure to distinguish clearly between arkān and shurūṭ, which is a foundational classification in the jurisprudence of contracts. In classical doctrine, the essential pillars of Mudarabah are limited to five: the provider of capital (ṣāhib al māl), the manager (muḍārib), the capital (ra's al māl), the work of the manager, and the offer and acceptance (ījāb wa qabūl) (Ayu, 2019). Similarly, the pillars of Musharakah are strictly defined as the partners, the contributed capital, the joint enterprise, and the offer and acceptance (Maulana & Muthoifin, 2024).

Furthermore, the enumeration of conditions for Musharakah and Mudarabah provided by ChatGPT fails to reflect the substantive legal stipulations typical of juristic discourse. The provided items lean towards general ethical recommendations or merely restate previously mentioned pillars, rather than constituting legally operative conditions for the validity of the contract. Finally, the concluding remark from ChatGPT stating that conditions may depend on the interpretation of Sharia financial institutions introduces a contextual misalignment. It erroneously shifts the frame of reference from the definitive requirements of contract formation between transacting parties to the variable practices of institutional policy. This conflation of immutable juristic requirements with adaptable industry standards further diminishes the legal precision of the response.

Consequently, the validity score assigned to the answers generated by ChatGPT in this domain is exceptionally low, as reflected in Table 5. Given that these errors pertain directly to core contract structure and fundamental legal categorisation, the low rubric scores assigned in this evaluation are methodologically sound and justified.

Table 5: Prompts and validity of responses regarding pillars and conditions

Sub-aspect	Prompt (translated from Indonesia)	Validity
Pillars of Mudarabah	What are the pillars of mudarabah?	1.5
Pillars of Musharakah	What are the pillars of musharakah?	1.5
Conditions of Mudarabah	Explain the conditions that must be fulfilled for a Mudarabah contract to be considered Islamically valid!	0.5

4.4 ChatGPT's responses on the types of contracts

In response to the prompts identified in Table 5, ChatGPT stated that there are seven types of *muḍārabah*: *muḍārabah muṭlaqah* (unrestricted *muḍārabah*), *muḍārabah muqayyadah* (restricted *muḍārabah*), *muḍārabah musytarakah* (mixed *muḍārabah*), *muḍārabah mughayyarah* (time-bound *muḍārabah*), *muḍārabah musāqāh* (agricultural *muḍārabah*), *muḍārabah ta'wīḍ* (penalty *muḍārabah*), and *muḍārabah qirād* (financing *muḍārabah*). Regarding the types of *mushārah* contracts, two distinct prompts were administered. In response to the first prompt—'Mention the types of *mushārah* contracts'—ChatGPT enumerated eight varieties: *mushārah mutanāqishah* (diminishing *mushārah*), *mushārah mutanājisah* (production *mushārah*), *mushārah mutqayyibah* (restricted *mushārah*), *mushārah mughayyarah* (time-bound *mushārah*), *mushārah al-muḍārabah* (combined *mushārah* and *muḍārabah*), *mushārah al-shuf'ah* (pre-emptive *mushārah*), *mushārah al-wujūh* (multi-party *mushārah*), and *mushārah al-muṭlaqah* (unrestricted *mushārah*). In response to the second prompt—'Mention the types of *shirkah* contracts'—ChatGPT similarly listed eight types: *shirkah al-mufāwah* (delegated partnership), *shirkah al-muḍārabah* (management partnership), *shirkah al-wujūh* (multi-party partnership), *shirkah al-muṭlaqah* (unrestricted partnership), *shirkah al-'inān* (capital partnership), *shirkah al-milk* (proprietary partnership), *shirkah al-'aqd* (contractual partnership), and *shirkah al-abdān* (labour partnership).

Concerning the validity of ChatGPT's output regarding the types of Mudarabah contracts, several of the listed classifications do indeed correspond with the explanations provided by the Reference Benchmark. The accurate classifications comprise *muḍārabah muṭlaqah*, *muḍārabah muqayyadah*, and *muḍārabah musytarakah*. The remaining types, however, do not align with the standard categorisations found within the fiqh literature pertaining to *muḍārabah*. This indicates partial accuracy in the model's classification, albeit accompanied by the substantial inclusion of categories unrecognised within the principal frame of reference. Accordingly, the validity of these responses has been assessed as moderate rather than high.

Regarding the typologies of Musharakah contracts, the model correctly identifies the term *mushārah mutanāqishah*; however, its accompanying explanation is inaccurate. ChatGPT defines the concept as follows: 'This type involves the ownership division of certain assets or properties.' Conversely, the correct definition of *mushārah mutanāqishah* entails a process whereby the ownership of a shared asset diminishes gradually, allowing one party's ownership share to decline while the other's proportionally increases. Because the core operational mechanism is misdescribed, this must be treated as a substantive conceptual error rather than a mere semantic discrepancy.

Similarly, while *mushārah al-wujūh* is a recognised contract, ChatGPT's explanation is incorrect, defining it as 'involving more than two parties as partners in a joint venture.' Furthermore, the term *shirkah 'inān*, although acknowledged by the model, is inaccurately described as an arrangement that 'occurs when all partners only contribute capital without being involved in managing the business.' These conceptual errors fundamentally distort the defining characteristics of each contract type, thereby significantly lowering the validity score. Several other terms identified by ChatGPT are accurate in their nomenclature—namely *mushārah mutanāqishah*, *mushārah al-muṭlaqah*, *shirkah al-mufāwah*, *shirkah al-muṭlaqah*, *shirkah al-milk*, *shirkah al-'aqd*, and *shirkah al-abdān*. Nevertheless, because correct terminology is conflated with incorrect definitions and non-standard classification groupings, the model's overall validity remains strictly limited.

Furthermore, it is imperative to note that the broader classifications provided by ChatGPT deviate significantly from the established paradigms detailed in standard fiqh literature. Given that these deviations encompass both definitional errors and inconsistent structural classifications, the rubric scores assigned in Table 6 reflect a partial, yet ultimately unreliable, degree of validity.

Table 6: Prompts and validity of the types of contracts

Sub-aspect	Prompt (translated from Indonesia)	Validity
Type of Mudarabah	Mention types of Mudarabah contract!	2.5
Type of Musharakah	Mention types of Musharakah contract!	1.5
	Mention types of Shirkah contract!	2.5

4.5 ChatGPT's responses regarding the application in the Islamic banking industry

Based on the prompts detailed in Table 6, ChatGPT identifies five applications of Mudarabah in Islamic banking: Mudarabah financing, Mudarabah investment, Mudarabah mutual funds, micro-Mudarabah financing, and unsecured Mudarabah financing. The explanations for these five examples lack substantial differentiation, each describing a basic structure in which the bank provides capital and the customer acts as the *mudarib*. Regarding the application of Musharakah, ChatGPT lists six distinct variations: Musharakah financing, diminishing Musharakah, Musharakah in automobile financing, Musharakah in investment, Musharakah in project financing, and Musharakah in microfinance. Similar to its previous output, the definitions remain repetitive, indicating that the bank functions as a partner within a Musharakah joint venture.

These AI-generated responses regarding the applications of Musharakah and Mudarabah are deemed partially valid. Notably, ChatGPT provides a generally accurate directional understanding of these contracts; however, the output lacks comprehensive depth, given the extensive flexibility inherent in structuring Islamic banking products. The listed applications are relevant, but they represent only a narrow subset of the real-world applications detailed in standard academic and industry references. For instance, the benchmark reference identifies a diverse array of product utilisation, ranging from Islamic banking (IB) mortgage products to *ijarah indent* and factory machinery financing, specifically under the diminishing Musharakah framework. ChatGPT's output fails to capture this operational diversity. Similarly, for Mudarabah, the benchmark text specifies that the contract can be used for both funding mechanisms (such as savings and demand deposits) and a wide variety of financing schemes. Because ChatGPT provides accurate yet overly narrow examples while omitting several major use cases, its responses are classified as moderately valid rather than fully comprehensive. Consequently, the validity score assigned to this dimension is moderate, as detailed in Table 7.

Table 7: Prompts and validity of Islamic banking applications

Sub-aspect	Prompt (translated from Indonesia)	Validity
Islamic banking application of mudarabah	Explain the application of the mudarabah contract in the Islamic banking industry!	3
Islamic banking application of musharakah	Explain the application of the musharakah contract in the Islamic banking industry!	3

4.6 Discussion

The various findings presented above underscore a single, salient point: the precision and accuracy of ChatGPT's responses are notably low. This is evident in Table 8 which summarises the overall validity scores derived from the analysis; the total average score is 2.53. Stated differently, of the ten questions posed to ChatGPT, only five were answered correctly and accurately. Implicitly, this suggests that the independent study of Islamic finance utilising ChatGPT cannot be recommended.

At present, educational practice is increasingly orientated towards cultivating learners who possess both the capacity and the disposition for self-directed learning. Self-directed learning is defined as 'the process by which individuals take the initiative, with or without the assistance of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes' (Knowles, 1975). Numerous studies have demonstrated that self-directed learning yields positive effects for learners. For instance, research conducted by Ghomi et al. (2017) on medical students revealed that independent learning can enhance academic outcomes, leading the authors to recommend that educators afford students greater opportunities to engage in self-directed learning. Nasution et al. (2018), in a study involving middle-school students, reported similar findings, indicating that self-directed learning produces favourable results. Within the specific context of e-learning, self-directed learning emerges as a predominant factor determining individual success (Narenji Thani et al., 2022). Nevertheless, employing ChatGPT as a means of knowledge acquisition fails to satisfy the fundamental requirements of the lifelong learner. As Agbi and Yuangsoi (2022) contend, cognitive development necessitates that learning extends beyond the mere, repetitive accumulation of facts and information; it must also encompass effective, deep conceptual change in order to sustain lifelong learning.

The findings of this study appear, at first glance, to contradict a substantial body of established research concerning the efficacy of self-directed learning. Upon closer examination, however, this apparent discrepancy may be attributed to the inherent limitations and constraints of ChatGPT itself. ChatGPT is a language model that employs natural language processing to generate human-like textual or video content in response to user prompts (Wu et al., 2023). Alawida et al. (2023) have identified several limitations of the model, including susceptibility to bias, deficient contextual understanding, an absence of common-sense reasoning, limited interpretability, and a heavy reliance upon extensive training datasets. It must therefore be acknowledged that ChatGPT does not constitute a universal remedy for all academic requirements. This

observation accords with Firat's (2023) contention that, while ChatGPT is a versatile instrument capable of supporting education through the provision of guidance and personalised feedback for autonomous learners, its deployment necessitates rigorous, case-specific scrutiny.

Nevertheless, the present findings corroborate several prior studies, particularly within the domains of Islamic law and Islamic finance. For instance, these results align with those of Athief et al. (2025), who specifically investigated the use of ChatGPT regarding the topic of *riba* (usury) and determined that its responses frequently lacked sufficient validity. Furthermore, this study reaches a conclusion similar to that of Susanti et al. (2025), who found that although ChatGPT can generate generally valid answers in *waqf* (endowment) studies, its use still mandates guidance and verification from authoritative sources. ChatGPT's failure to provide foundational information for early learners on the subjects of Muḍarabah and Musharakah represents a critical concern for Muslim students. In practice, improving learning outcomes within Islamic studies can be efficiently achieved through a contextual approach (Daabi & Inayati, 2023). Moreover, comprehending the systematic nature of a contract, alongside its legal dimensions derived from divine texts, necessitates guidance from knowledgeable scholars.

This underscores why the concept of sanad (continuous chain of transmission)—both within the specific discipline of hadith studies and across Islamic scholarship broadly—remains an indispensable element for those seeking to study Islam deeply. The sanad preserves the validity of information transmitted from teacher to student, spanning from the era of the Prophet Muhammad (SAW) to contemporary educators, or from the original authors of the classical texts being studied. Therefore, within the Islamic educational tradition, the verification of comprehension is achieved through the transmission of knowledge from a qualified teacher; it cannot be pursued entirely independently, as a misunderstanding of religious doctrines can have profound and detrimental consequences (Elbih, 2015).

Table 8: Average score

No.	Aspect	Avg. Score
A	General understanding	5
B	Legal basis	1.5
C	Terms and conditions	1
D	Types of contracts	2.16
E	Application	3
Average		2.53

5. CONCLUSIONS

The rapid integration of artificial intelligence (AI) into educational frameworks offers transformative possibilities, particularly within the domain of self-directed learning. The primary objective of this study was to examine ChatGPT's precision and accuracy in disseminating information pertaining to Islamic financial contracts, specifically Muḍarabah and Musharakah. The incorporation of AI into educational paradigms represents a significant shift, offering novel avenues for knowledge acquisition. Accordingly, this inquiry into the capabilities of ChatGPT within the context of Islamic finance sought to illuminate the potential of AI to facilitate self-directed learning in a field deeply embedded within intricate Islamic legal and contractual frameworks.

The findings of this study reveal a notable limitation: ChatGPT exhibits a restricted capacity to provide accurate information concerning profit-and-loss-sharing contracts in Islamic finance. The analysis indicates that while two sub-aspects attained the maximum score of 5.0, a further two received scores as low as 0.5. Crucially, the core substantive elements of Musharakah and Muḍarabah contracts—namely, their legal foundations, pillars, conditions, and typologies—yielded exceptionally low validity scores, none exceeding 2.0. The overall average validity score of 2.53 underscores the necessity of exercising caution when relying upon ChatGPT for autonomous learning in this domain. It may be inferred from this outcome that merely half of the inquiries directed at ChatGPT elicited responses that were both precise and accurate. Consequently, the present research does not advocate the use of AI for this purpose; at the very least, it highlights the imperative of adopting a circumspect approach when incorporating AI tools such as ChatGPT into educational contexts, especially those falling within the purview of religious studies.

This research makes a significant contribution to the understanding of AI's role in education, with a specific emphasis on its application in Islamic finance. One of the study's main contributions is the comprehensive evaluation of ChatGPT's accuracy in conveying information regarding profit-and-loss-sharing contracts. The study's rigorous analysis, as reflected in the validity scores, highlights the limitations of AI

models when addressing complex religious concepts. This serves as a cautionary insight for those contemplating autonomous learning in Islamic finance, underscoring the necessity of careful deliberation when integrating AI tools into self-directed learning environments, particularly in relation to religious subject matter.

DECLARATION

1. Conflict of interest

The authors declare no conflict of interest.

2. Generative AI and AI-assisted technologies in the writing process

The authors confirm that generative AI was used only for sharpening the language and adding to the clarity of the manuscript. The authors conducted the whole process of research, from conceptualisation and project design to data collection, interpretation, writing, and revision.

3. Data availability statement

All data generated or analysed during this study are included in this published version.

4. Ethics statement

The authors affirm that this study was conducted in accordance with established ethical standards and guidelines.

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6. Contributor Role Taxonomy (CRediT)

Fauzul Hanif Noor Athief: Conceptualization, Methodology, Validation, Supervision, Writing – original draft, Writing – review & editing.

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REFERENCES

- Abusharbeh, M. T. (2014). Credit risks and profitability of Islamic banks: Evidence from Indonesia. *World Review of Business Research*, 4(3), 136–147.
- Agbi, A., & Yungsoi, P. (2022). Enhancement of critical thinking skills in students using mobile-blended learning with a collaborative inquiry-based approach. *Humanities, Arts and Social Sciences Studies*, 22(1), 9–20. <https://doi.org/10.14456/hasss.2022.2>
- Alam, A., Ratnasari, R. T., Qolbi, F. 'A., & Athief, F. H. N. (2022). Efficiency studies of the sharia insurance industry: A systematic literature review. *Insurance Markets and Companies*, 13(1), 90–101. [http://dx.doi.org/10.21511/ins.13\(1\).2022.08](http://dx.doi.org/10.21511/ins.13(1).2022.08)
- Alawida, M., Mejri, S., Mehmood, A., Chikhaoui, B., & Abiodun, O. I. (2023). A comprehensive study of ChatGPT: Advancements, limitations, and ethical considerations in natural language processing and cybersecurity. *Information*, 14(8), Article 462. <https://doi.org/10.3390/info14080462>
- Amaro, I., Della Greca, A., Francese, R., Tortora, G., & Tucci, C. (2023). AI unreliable answers: A case study on ChatGPT. In H. Degen, & S. Ntoa (Eds.), *Artificial intelligence in HCI* (pp. 23–40). Springer. https://doi.org/10.1007/978-3-031-35894-4_2

- Antwi, S. K., & Kasim, H. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management*, 7(3), 217–225.
- Athief, F. H. N. (2019). Konsep 'Urf Sebagai Variabel Produk Hukum [The concept of 'Urf as a variable in legal products]. *Suhuf: International Journal of Islamic Studies*, 31(1), 40–57. <https://journals.ums.ac.id/index.php/suhuf/article/view/9004> [in Indonesian]
- Athief, F. H. N., Ma'ruf, A., & Zakiy, F. S. (2022). Surviving amidst pandemic: Indonesian Islamic microfinance experience. *International Journal of Advanced and Applied Sciences*, 10(3), 119–129. <https://doi.org/10.21833/ijaas.2023.03.016>
- Athief, F. H. N., Mawardi, I., Assholihah, K., Mukhlis, F., & Apriantoro, M. S. (2025). Artificial intelligence and Islamic law in finance: Assessing ChatGPT's responses to public doubts on Riba. *Manchester Journal of Transnational Islamic Law and Practice*, 21(4), 92–107. <https://www.electronicpublications.org/stuff/1298>
- Ayu, D. (2019). Muḍāraba Fund of Bank Jateng Syariah Cabang Surakarta (BJSCS) according to Dewan Syariah National-Majelis Ulama Indonesia (DSN-MUI). *Journal of Islamic Economic Laws*, 2(1), 1–29. <https://doi.org/10.23917/jisel.v2i1.6129>
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8–14. <https://doi.org/10.1016/j.npls.2016.01.001>
- Buchanan, J., Hill, S., & Shapoval, O. (2024). ChatGPT hallucinates non-existent citations: Evidence from economics. *The American Economist*, 69(1), 80–87. <https://doi.org/10.1177/05694345231218454>
- Buldur, M., & Sezer, B. (2023). Can artificial intelligence effectively respond to frequently asked questions about fluoride usage and effects? A qualitative study on ChatGPT. *Fluoride*, 56(3), 201–216.
- Daabi, M. K. I., & Inayati, N. L. (2023). Increasing learning achievement in Islamic religious education through a contextual learning approach of students. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, 17(6), 4422–4429. <http://dx.doi.org/10.35931/aq.v17i6.2829>
- Daud, R., Basir, N., Rafei Heng, N. F. N. M., Meor Seppli, M. M. S., & Melinda, M. (2025). Evaluating large language model versus human performance in Islamophobia dataset annotation. *International Journal of Advanced Computer Science and Applications*, 16(5), 111–122. <http://doi.org/10.14569/ijacsa.2025.0160512>
- Dawson, P. (2017). Assessment rubrics: Towards clearer and more replicable design, research and practice. *Assessment & Evaluation in Higher Education*, 42(3), 347–360. <https://doi.org/10.1080/02602938.2015.1111294>
- Downe-Wamboldt, B. (1992). Content analysis: Method, applications, and issues. *Health Care for Women International*, 13(3), 313–321. <https://doi.org/10.1080/07399339209516006>
- D'Souza, R. F., Amanullah, S., Mathew, M., & Surapaneni, K. M. (2023). Appraising the performance of ChatGPT in psychiatry using 100 clinical case vignettes. *Asian Journal of Psychiatry*, 89, Article 103770. <https://doi.org/10.1016/j.ajp.2023.103770>
- Dzulraidi, D. H., Jalil, A. A., & Sin, M. L. M. (2025). The accuracy of ChatGPT in translating the Qur'an: A comparative analysis with authoritative translation. *International Journal of Quranic Research*, 17(2), 21–52. <https://sare.um.edu.my/index.php/quranica/article/view/64933>
- Elbih, R. (2015). Teaching about Islam and Muslims while countering cultural misrepresentations. *The Social Studies*, 106(3), 112–116. <https://doi.org/10.1080/00377996.2015.1015712>
- Firat, M. (2023). How ChatGPT can transform autodidactic experiences and open education? *Open Science Framework*. <https://doi.org/10.31219/osf.io/9ge8m>
- Ghomi, M., Moslemi, Z., & Mohammadi, S. D. (2017). The relationship between self-directed learning with academic adjustment and academic performances in students in Qom University of Medical Sciences. *Educational Development of Judishapur*, 8(3), 260–274.
- Karanjai, R., Li, E., Xu, L., & Shi, W. (2023, October 11–13). *Who is smarter? An empirical study of AI-based smart contract creation* [Paper presentation]. 2023 5th Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS), Paris, France. <https://doi.org/10.1109/BRAINS59668.2023.10316829>
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. Association Press.
- Maliki, I. A., Ali, Z. Z., & Khusaini, M. (2023). Artificial intelligence and the law: The use of artificial intelligence as a tool to assist judges in deciding polygamy cases. *Nurani: Jurnal Kajian Syari'ah Dan Masyarakat*, 23(2), 211–228. <https://doi.org/10.19109/nurani.v23i2.20152>
- Maulana, A. A., & Muthoifin. (2024). Analysis of Musyarakah and its implementation at BMT Fadhilah Sentosa Bekonang. *Al-Afkar: Journal for Islamic Studies*, 7(1), 135–145.

- Mohammad-Rahimi, H., Ourang, S. A., Pourhoseingholi, M. A., Dianat, O., Dummer, P. M. H., & Nosrat, A. (2023). Validity and reliability of artificial intelligence chatbots as public sources of information on endodontics. *International Endodontic Journal*, 57(3), 305–314. <https://doi.org/10.1111/iej.14014>
- Mohammed, M. Y., Ali, S. A., Ali, S. K., Majeed, A. A., & Mohamed, E. H. (2025). Aftina: Enhancing stability and preventing hallucination in AI-based Islamic fatwa generation using LLMs and RAG. *Neural Computing and Applications*, 37, 20957–20982. <https://doi.org/10.1007/s00521-025-11229-y>
- Mubarak, J. H., & Hasanudin. (2017). *Fikih muamalah maliyyah: Akad syirkah dan mudharabah* [Islamic financial jurisprudence: Partnership and mudarabah contracts]. Simbiosis Rekatama Media. [in Indonesian]
- Nakissa, A. (2019). *The anthropology of Islamic law: Education, ethics, and legal interpretation at Egypt's Al-Azhar*. Oxford University Press.
- Narenji Thani, F., Keramati, M., & Sohi, M. (2022). The role of self-directed learning in the effectiveness of e-learning during the COVID-19 pandemic. *Technology of Education Journal*, 16(3), 571–589. <https://doi.org/10.22061/tej.2022.8299.2648>
- Nasution, N., Rahayu, R. F., Yazid, S. T. M., & Amalia, D. (2018). Pengaruh kemandirian belajar terhadap hasil belajar siswa [The effect of learning independence on students' learning outcomes]. *Jurnal Pendidikan Luar Sekolah*, 12(1), 9–14. <https://doi.org/10.32832/jpls.v12i1.2879> [in Indonesian]
- Oke, S. A. (2008). A literature review on artificial intelligence. *International Journal of Information and Management Sciences*, 19(4), 535–570.
- Salman, K. R. (2022). The determinants of profit-loss sharing financing of Islamic banks in Indonesia. *Jurnal Ekonomi dan Perbankan Syariah*, 13(2), 95–111. <https://doi.org/10.18326/muqtasid.v13i2.95-111>
- Scquizzato, T., Semeraro, F., Swindell, P., Simpson, R., Angelini, M., Gazzato, A., Sajjad, U., Bignami, E. G., Landoni, G., Keeble, T. R., & Mion, M. (2024). Testing ChatGPT ability to answer laypeople questions about cardiac arrest and cardiopulmonary resuscitation. *Resuscitation*, 194, Article 110077. <https://doi.org/10.1016/j.resuscitation.2023.110077>
- Sembok, T. M. T., & Wani, S. (2023, October). Is ChatGPT not appropriate for religious use? In H. B. Zaman, P. Robinson, A. F. Smeaton, R. L. De Oliveira, B. N. Jørgensen, T. K. Shih, R. A. Kadir, U. H. Mohamad, & M. N. Ahmad (Eds.), *International Visual Informatics Conference* (pp. 595–605). Springer. https://doi.org/10.1007/978-981-99-7339-2_48
- Setiawan, A., & Luthfiyani, U. K. (2023). Penggunaan ChatGPT Untuk Pendidikan di Era Education 4.0: Usulan Inovasi Meningkatkan Keterampilan Menulis [The use of ChatGPT for education in the education 4.0 era: An innovation proposal to improve writing skills]. *Jurnal PETISI (Pendidikan Teknologi Informasi)*, 4(1), 49–58. [in Indonesian]
- Susanti, N. F. H., Tanjung, H., Supriyanto, T., Athief, F. H. N., & Furqoni, A. (2025). ChatGPT's validity and reliability in Islamic legal studies: A critical assessment of Waqf for early learners. *Suhuf: International Journal of Islamic Studies*, 37(2), 288–309. <https://doi.org/10.23917/suhuf.v37i2.11821>
- Sutrisno, S., & Widarjono, A. (2022). Is profit-loss-sharing financing matter for Islamic Bank's profitability? The Indonesian case. *Risks*, 10(11), Article 207. <https://doi.org/10.3390/risks10110207>
- Wu, T., He, S., Liu, J., Sun, S., Liu, K., Han, Q.-L., & Tang, Y. (2023). A brief overview of ChatGPT: The history, status quo and potential future development. *Journal of Automatica Sinica*, 10(5), 1122–1136. <https://doi.org/10.1109/JAS.2023.123618>
- Yuspin, W., Budiwati, S., Inayah, & Maulani, I. (2020). Legal reconstruction of Mudharabah: A comparative study on the compilation of Islamic economic law and financial services authority regulation. *International Journal of Innovation, Creativity and Change*, 12(2), 1–21. https://ijicc.net/images/vol12/iss2/12201_Yuspin_2020_E_R.pdf
- Yuspin, W., Wardiono, K., Budiono, A., & Gulyamov, S. (2022). The law alteration on artificial intelligence in reducing Islamic bank's profit and loss sharing risk. *Legality: Jurnal Ilmiah Hukum*, 30(2), 267–282. <https://doi.org/10.22219/ljih.v30i2.23051>