

Digital Takaful and Peer-to-Peer Takaful: A Conceptual Framework for Strengthening Ta'awun and Risk Sharing in Islamic Insurance

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ABSTRACT

The rapid development of financial technology has created new opportunities for modernizing Islamic insurance while also raising concerns that corporate-oriented takaful governance has gradually shifted away from its original principles of *ta'awun* (mutual assistance) and risk sharing. This study aims to analyze the operational integration of Digital Takaful and Peer-to-Peer (P2P) Takaful, evaluate their compliance with Sharia principles, examine their potential to enhance financial inclusion, identify major implementation challenges, and explain how this integration can restore the fundamental values of Islamic insurance. This study employs a qualitative descriptive approach with a conceptual research design grounded in library research. Secondary data were collected from peer-reviewed journal articles, books, regulations, fatwas, and other authoritative sources, and analyzed through qualitative content analysis. The findings indicate that integrating Digital Takaful and P2P Takaful creates a more transparent, efficient, and community-oriented insurance model while preserving the principles of *tabarru'*, *wakalah bil ujah*, *ta'awun*, and risk sharing. The analysis also reveals significant opportunities to improve financial inclusion, particularly for underserved communities, although regulatory uncertainty, cybersecurity risks, and limited Islamic financial and digital literacy remain major implementation challenges.

Keywords: *Digital Takaful, Peer-to-Peer Takaful, Sharia FinTech, Ta'awun.*

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1. | INTRODUCTION

Islam promotes social welfare through financial systems based on justice, solidarity, and mutual responsibility. One of its key instruments is *takaful*, an Islamic insurance system designed to provide financial protection while complying with Sharia principles. Unlike conventional insurance, which transfers risk from policyholders to insurers, *takaful* is founded on *ta'awun* (mutual assistance) and *risk sharing*, whereby participants collectively bear financial risks. In addition, *takaful* prohibits *riba* (interest), *gharar* (excessive uncertainty), and *maysir* (gambling), ensuring that all financial transactions conform to Islamic ethical values. *Takaful* represents more than a financial product; it reflects the Islamic objective of promoting social justice and collective welfare through cooperation and shared responsibility (Abdeen et al., 2019; Adrian et al., 2023).

Despite its strong philosophical foundation, the *takaful* industry continues to encounter significant challenges in the digital era. Although the global Islamic finance sector has expanded steadily, *takaful* penetration remains relatively low due to limited public awareness, inadequate product innovation, and increasing competition from conventional insurance providers. At the same time, digital transformation has reshaped the financial services industry through financial technology (fintech), creating new opportunities for Islamic insurance to improve accessibility, operational efficiency, and customer engagement. However, the institutional development of modern *takaful* has also attracted criticism for adopting corporate-oriented governance structures, relatively high *ujrah* (management fees), and limited participant involvement in decision-making. These conditions have gradually shifted *takaful* away from its original philosophy of cooperation and collective responsibility, making it increasingly similar to conventional insurance in practice (AlBenJasim et al., 2024; Al Berto et al., 2025).

The emergence of digital *takaful* and *takaful* Tech offers an alternative approach to addressing these challenges (Alsmadi, 2024; Choiruddin et al., 2025). One of the most promising innovations is Peer-to-Peer (P2P) *takaful*, which uses digital platforms to connect participants directly to establish *tabarru'* funds for mutual protection. Compared with traditional institutional models, P2P *takaful* enables greater transparency, lower operational costs, broader financial inclusion, and stronger participant engagement in fund management and risk mitigation. Existing studies have widely discussed digital *takaful* from the perspectives of fintech adoption, digital innovation, operational efficiency, and regulatory development. Similarly, research on P2P insurance has primarily focused on technological platforms, business models, and market acceptance. Nevertheless, relatively few studies have examined how integrating Digital *takaful* with the P2P model can strengthen the fundamental values of *ta'awun* and *risk sharing* that distinguish Islamic insurance from conventional insurance.

This gap highlights the need for a broader conceptual perspective that positions digital transformation not merely as technological modernization but as a means of

restoring the original essence (*khittah*) of *takaful*. Rather than emphasizing digital efficiency alone, this study argues that technological innovation should reinforce Islamic ethical values by encouraging greater participant involvement, strengthening collective governance, and promoting genuine risk sharing within the *takaful* ecosystem. The novelty of this study lies in integrating the concepts of digital *takaful* and P2P *takaful* to explain how digital technology can revive the spirit of *ta'awun* while preserving the Sharia principles that differentiate *takaful* from conventional insurance. This perspective extends the existing literature, particularly the works of Elomari (2023) and Faizi et al. (2025), by connecting digital innovation with the normative objectives of Islamic insurance rather than treating technology solely as an operational tool.

This study aims to analyze the operational mechanisms and integration of digital *takaful* and P2P *takaful*, evaluate their compliance with Sharia principles, examine their potential to enhance financial inclusion, identify the major challenges to their implementation, and explain how their integration can restore the fundamental values of *ta'awun* and risk sharing in the Islamic insurance system. The study contributes theoretically by enriching the literature on Islamic insurance, fintech, and digital finance through a conceptual framework that integrates technological innovation with Islamic ethical principles. In practice, the findings are expected to provide insights for *takaful* operators, fintech developers, regulators, and policymakers in developing sustainable digital *takaful* ecosystems that enhance operational efficiency while preserving the core values of Sharia-compliant insurance.

2. | LITERATURE REVIEW

Basic Concept of Takaful

Takaful is derived from the Arabic word *takafala–yatakafalu–takafulan*, meaning to mutually guarantee, protect, or support one another. In Islamic economics, *Takaful* refers to a Sharia-compliant insurance system in which participants collectively share risks by contributing to a *tabarru'* (charitable) fund. Unlike conventional insurance, which is primarily profit-oriented through risk transfer, *takaful* is founded on the principles of *ta'awun* (mutual assistance), solidarity, and shared responsibility. Its primary objective is not commercial gain but the provision of financial protection while promoting social justice and collective welfare in accordance with Islamic values (Frank et al., 2024).

The theological foundation of *takaful* is rooted in the Qur'an and Hadith, both of which emphasize cooperation and social responsibility. *Surah Al-Ma'idah (5:2)* instructs Muslims to cooperate in righteousness and piety while avoiding cooperation in sinful or harmful acts. Likewise, a Hadith narrated by Muslim compares the relationship among believers to a single body, where the others share the suffering of one member. These teachings establish the ethical basis of *takaful* by encouraging solidarity, compassion, and collective responsibility in managing financial risks (Gazali et al., 2023).

Takaful differs fundamentally from conventional insurance in its contractual structure and risk management mechanism. Conventional insurance applies the principle of *risk transfer*, whereby individual risk is shifted to the insurer, a practice often associated with *gharar* (excessive uncertainty), *maysir* (gambling), and *riba* (interest), all of which are prohibited under Islamic law. In contrast, Takaful adopts a *risk-sharing* model through a *tabarru'* contract, allowing participants to *takaful* to bear potential losses. The pooled funds are managed transparently by the Takaful operator under the supervision of the Sharia Supervisory Board to ensure full compliance with Islamic principles. *Takaful* serves not only as a risk management instrument but also as a practical manifestation of justice, cooperation, and ethical finance in Islam (Hidayat, 2015; Haridan et al., 2020).

Financial Technology and the Development of Sharia InsurTech

Financial technology (fintech) refers to the application of digital technology to financial services to improve efficiency, accelerate transactions, reduce operational costs, and enhance customer experience. Its integration into the insurance industry has given rise to Insurance Technology (InsurTech), while its application within Islamic insurance is commonly known as TakafulTech. As a digital innovation, TakafulTech integrates financial technology with Sharia-compliant insurance principles to deliver more accessible, transparent, and efficient services. Through digital platforms, automation, and data-driven processes, *takaful* operators can streamline policy administration, claims processing, and customer engagement while ensuring compliance with Sharia governance. TakafulTech has emerged as a strategic solution for modernizing *takaful* services and strengthening their competitiveness within the digital financial ecosystem (Kamila et al., 2025).

The development of TakafulTech has been driven by growing criticism of the traditional corporate *takaful* model, which is often characterized by rigid institutional structures, relatively high management and agency fees (*ujrah*), and information asymmetry between participants and fund managers. These limitations may reduce operational efficiency and weaken participant involvement, gradually distancing *takaful* from its core principles of *ta'awun* and risk sharing. In response, Sharia fintech offers digital solutions that automate operational processes, enhance transparency, and expand financial inclusion by providing affordable, accessible *takaful* services to underserved and previously uninsured communities. By reducing administrative barriers and strengthening participant engagement, TakafulTech has the potential to reshape the future of Islamic insurance while preserving its ethical and Sharia foundations (Kilic & Türkan, 2023).

Concept and Mechanism of Digital Takaful

Digital *takaful* represents the digital transformation of conventional Islamic insurance into an integrated end-to-end ecosystem. Through mobile applications and web-based platforms, the entire insurance lifecycle, including product marketing, digital underwriting, contribution payments via payment gateways, and claims submission and verification, is managed electronically. This transformation enhances operational efficiency while maintaining compliance with Sharia principles, enabling *takaful* operators to deliver more accessible, transparent, and user-centered services (Mahmoud et al., 2025).

Digital *takaful* provides several key advantages over traditional *takaful* operations. First, digitalization improves cost efficiency by reducing dependence on physical agents and branch offices, thereby lowering management fees (*ujrah*). Second, it promotes greater transparency by allowing participants to monitor their *tabarru'* fund balances, investment performance, and administrative charges in real time through digital platforms. Third, the adoption of technologies such as Artificial Intelligence (AI) and automated data processing accelerates claims verification, significantly reducing processing time from weeks to days or even hours. These advantages position digital *takaful* as a more efficient, transparent, and customer-oriented model for delivering Sharia-compliant insurance services (Majid & Nugraha, 2022).

Peer-to-Peer (P2P) Takaful Concept and Construct Structure

Peer-to-Peer (P2P) *takaful* is an innovative model that leverages digital platforms to connect individuals or communities with similar risk profiles or shared interests. Unlike the traditional corporate *takaful* model, P2P *takaful* aims to restore the original essence (*khittah*) of *takaful* by returning financial control and risk management to the participant community. This decentralized approach strengthens participant involvement, promotes collective responsibility, and reinforces the principles of *ta'awun* and risk sharing that underpin Islamic insurance (Malik & Ullah, 2019).

The operational framework of P2P *takaful* is typically organized into smaller risk pools, enabling participants to share risks within their respective communities. This model primarily applies two Sharia contracts: *wakalah bil ujrah*, under which the digital platform acts as an agent responsible for system administration in exchange for a predetermined *ujrah* (management fee), and *tabarru'*, through which participants voluntarily contribute to a mutual fund that provides financial assistance to members experiencing covered losses. Unlike conventional insurance, the platform does not benefit from the remaining claim funds, as its role is limited to managing the system transparently and efficiently (Malik & Ullah, 2019).

One of the main theoretical advantages of P2P *takaful* is its ability to reduce information asymmetry and moral hazard. Because participants usually belong to communities with shared interests or social connections, mutual monitoring encourages

greater honesty and accountability in disclosing risk-related information. In addition, P2P *takaful* adopts a pure surplus-sharing mechanism, whereby any excess funds remaining after claims are settled are returned to participants or credited toward future contributions rather than retained by the operator. This mechanism strengthens fairness, transparency, and participant trust while reinforcing the cooperative values that distinguish *takaful* from conventional insurance (Maniam, 2024).

3. | RESEARCH METHOD

This study adopts a qualitative descriptive approach using a conceptual research design. This approach was selected to provide an in-depth analysis of how reconstructing the *takaful* business model through digital *takaful* and Peer-to-Peer (P2P) *takaful* can restore the fundamental principles of *ta'awun* (mutual assistance) and risk sharing. Rather than testing hypotheses, the study examines theoretical concepts, operational mechanisms, and their alignment with Sharia principles, drawing on existing scholarly literature.

The study relies exclusively on secondary data collected through library research. The data sources include peer-reviewed journal articles, books, relevant laws and regulations, fatwas issued by the National Sharia Council (Dewan Syariah Nasional), and other authoritative publications on *takaful*, digital *takaful*, P2P *takaful*, and the Sharia InsurTech ecosystem. These sources were purposively selected based on their relevance, credibility, and contribution to the research objectives.

Data were collected through a systematic digital literature search using keywords related to digital *takaful*, P2P *takaful*, Sharia InsurTech, *ta'awun*, and risk sharing. The retrieved literature was then screened, categorized, and organized according to the study's focus. Data analysis employed qualitative content analysis across three stages: data reduction, descriptive presentation of data, and conclusion drawing. This analytical process was used to examine the operational mechanisms of digital *Takaful* and Peer-to-Peer (P2P) *takaful*, evaluate their compliance with Sharia principles, identify their potential to enhance financial inclusion, and explore key implementation challenges, including regulatory issues, cybersecurity, and the level of public literacy in Indonesia.

4. | RESULTS AND DISCUSSION

Operational Mechanism and Contract Integration

The conceptual analysis indicates that integrating digital *takaful* and P2P *takaful* yields a more adaptive operational model than the conventional corporate *takaful* system. While digital *takaful* provides the technological infrastructure for digital underwriting, automated claims processing, and online fund management, the P2P model introduces community-based risk sharing that strengthens participants' involvement in fund governance. Together, these innovations reconstruct the operational mechanism of *takaful* without altering its Sharia foundation.

Table 1. Fundamental Comparison		
Dimensional Analysis	Traditional Takaful (Corporate)	Peer-to-Peer (P2P) Digital Takaful
Main Structure	Centralized. Large-scale insurance companies fully control fund management and operational decisions.	Decentralized. Community-based management through a digital platform that connects participants directly.
Management Agreement	Relatively High. A significant amount of funds is allocated for agent acquisition and company management costs.	Efficient/Minimal. Using a flat-fee scheme allocated specifically for technology system maintenance.
Surplus Allocation	Proportional Distribution. Surpluses are divided between the company and participants in accordance with the contractual ratio, so the portion allocated to customers is often insignificant.	Full Refund. 100% of the surplus is returned to the participating community or channelled towards social impact.
Risk Mitigation	Macro Actuarial. Risk calculations are based on projections of historical data from the insurance industry in aggregate/general.	Micro-Actuarial & AI. Risk calculations are AI-based on the real-world behavior of specific communities.

Table 1 compares the traditional corporate *takaful* model and the proposed P2P digital *takaful* model. The comparison demonstrates a fundamental shift in the governance and operational structure of Islamic insurance. Traditional *takaful* adopts a centralized model in which the insurance company primarily controls fund management, operational decisions, and surplus distribution. In contrast, the P2P digital *takaful* model adopts a decentralized approach, placing participants at the center of risk management through a digital platform. This transformation reflects a stronger implementation of *ta'awun* and risk sharing by encouraging greater participant involvement in decision-making and fund management.

The comparison further indicates that integrating digital technology improves the operational efficiency of *takaful*. The use of a flat-fee (*ujrah*) scheme reduces administrative and agency costs compared with the traditional corporate model, allowing a larger proportion of participant contributions to remain in the *tabarru'* fund. In addition, the proposed model allocates the underwriting surplus entirely to participants or community-based social purposes rather than sharing it with the operator. This mechanism reinforces transparency, accountability, and fairness while preserving the cooperative nature of Islamic insurance.

Another important difference lies in the approach to risk management. Conventional *takaful* generally relies on macro-actuarial calculations based on aggregated historical data, whereas the P2P Digital *Takaful* model incorporates Artificial Intelligence (AI) and community-specific data to support more adaptive risk assessment. The integration of digital and P2P *takaful* not only modernizes operational processes but also strengthens the core values of Islamic insurance by combining

technological innovation with the Sharia principles of mutual assistance and collective responsibility (Yusuf, 2011; Mansyur & Ali, 2022).

Shariah Compliance Analysis

The conceptual analysis demonstrates that integrating digital takaful with P2P takaful can maintain Sharia compliance while adapting Islamic insurance to the digital environment. This finding indicates that digital transformation does not alter the fundamental principles of *takaful*, provided that the operational model continues to preserve the *tabarru'* contract, implement *wakalah bil ujah* transparently, and maintain the collective ownership of participants' funds. Digital technology functions as an operational enabler rather than a substitute for Sharia principles, allowing innovation to coexist with the ethical foundations of Islamic finance.

The analysis further shows that the use of digital technologies, particularly blockchain-based smart contracts and automated claims processing, helps reduce gharar (uncertainty) by improving transparency, ensuring transaction traceability, and minimizing subjective decision-making in claims verification. Since participant contributions are explicitly designated as *tabarru'* (charitable donations) intended for mutual assistance (*ta'awun*), the ownership and utilization of the funds remain clearly defined throughout the operational process. These findings by Nazarov and Dhiraj (2019) and Qazi and Binti (2025) support previous studies, which argue that blockchain technology can strengthen transparency, accountability, and trust within Islamic financial institutions while remaining consistent with Sharia governance. Likewise, studies on digital *takaful* have emphasized that technological innovation can enhance operational integrity without compromising the principles of cooperation and risk sharing (Qazi & Husin, 2024).

Nevertheless, the findings also reveal that digitalization introduces new governance challenges. The role of the Sharia Supervisory Board (SSB) extends beyond reviewing financial transactions to overseeing the technological infrastructure that supports digital *takaful* operations. This expanded responsibility includes evaluating smart contract logic, auditing system algorithms, monitoring data governance, and ensuring that digital processes continue to uphold the principles of *maslahah* (public benefit), justice, and transparency. Similar concerns have been highlighted in previous studies, which suggest that effective Sharia governance in the digital era requires not only compliance with Islamic contracts but also continuous supervision of financial technologies to ensure that innovation remains aligned with the objectives of *maqasid al-shariah* (Rahman, 2025). Therefore, the findings indicate that the successful implementation of digital *takaful* and P2P *takaful* depends not only on technological advancement but also on strengthening Sharia governance that can respond to emerging digital risks.

Opportunities for Financial Acceleration and Inclusion

The conceptual analysis indicates that integrating digital and P2P *takaful* has considerable potential to enhance financial inclusion by improving the accessibility and

affordability of Islamic insurance services. The findings suggest that digitalization significantly reduces operational costs through the automation of administrative processes, the elimination of extensive physical agency networks, and the reduced dependence on branch office infrastructure. As a result, *takaful* operators can offer lower contribution rates while maintaining operational efficiency, thereby making Sharia-compliant insurance products more affordable for a broader segment of society.

Furthermore, the analysis demonstrates that this integrated model expands access to financial protection for underserved populations, particularly Micro, Small, and Medium Enterprises (MSMEs), informal sector workers, and digitally connected younger generations, including Millennials and Generation Z. These groups have traditionally faced barriers to insurance participation due to limited financial capacity, geographical constraints, or the complexity of conventional insurance procedures. By utilizing digital platforms that provide simple registration, online contribution payments, and automated claims processing, digital *takaful* and P2P *takaful* offer a more flexible and user-oriented insurance ecosystem. These findings are consistent with previous studies by Salleh et al. (2013) and Saad and Fisol (2019), reporting that digital financial services improve financial inclusion by lowering transaction costs, expanding market reach, and increasing access to financial products among previously underserved communities. Similarly, studies on Islamic fintech have emphasized that digital innovation can strengthen the inclusiveness of Islamic financial services while preserving Sharia principles and promoting broader socio-economic welfare (Salman et al., 2019).

Implementation Challenges and Risks

Despite its considerable potential to modernize Islamic insurance, the conceptual analysis identifies several critical challenges that may hinder the implementation of digital *takaful* and P2P *takaful*, particularly in Indonesia. The findings indicate that technological innovation alone is insufficient to ensure the successful adoption of this model without adequate institutional, technological, and social readiness.

The first challenge concerns the regulatory framework. The analysis suggests that existing financial regulations remain primarily oriented toward conventional and corporate-based Islamic insurance institutions, leaving limited legal provisions for decentralized, community-based P2P *takaful* platforms. This regulatory gap creates uncertainty regarding licensing mechanisms, operational governance, consumer protection, and Sharia supervision. Previous studies have similarly argued that the rapid development of Islamic fintech has outpaced regulatory adaptation, highlighting the need for more flexible and innovation-oriented legal frameworks to support emerging digital financial services (Smith, 2024).

The second challenge relates to cybersecurity and digital governance. As digital *takaful* relies extensively on online platforms, cloud computing, and automated transactions, the security of participants' personal and financial data becomes increasingly important. The analysis indicates that potential risks, including

cyberattacks, ransomware, data breaches, and system manipulation, may undermine public confidence if not supported by robust cybersecurity infrastructure and effective data protection mechanisms. This finding is consistent with previous research emphasizing that cybersecurity is a primary prerequisite for sustaining trust in digital financial ecosystems (Suzuki & Miah, 2022).

The findings reveal that low levels of Islamic and digital literacy remain substantial barriers to the wider adoption of digital and P2P *takaful*. Many potential users, particularly those in rural and underserved areas, continue to struggle to understand both Sharia-compliant insurance concepts and digital financial services. Previous studies by Swartz and Coetzer (2010) have likewise reported that financial literacy significantly influences public acceptance and utilization of Islamic fintech products. Therefore, strengthening regulatory support, enhancing cybersecurity governance, and improving public literacy should be considered complementary priorities to maximize the long-term sustainability of digital *takaful* and P2P *takaful*.

Illustrative Application of the Proposed Digital P2P Takaful Model

The following section presents a hypothetical simulation intended solely to illustrate the practical application of the proposed digital P2P Takaful model. The scenario is conceptual in nature and does not rely on empirical field data or actual implementation outcomes. To illustrate the practical applicability of the proposed model, this study presents a conceptual application involving Indonesia's online motorcycle taxi (*ojek online*) drivers, who are among the largest groups of informal workers with relatively high occupational risks. Due to irregular income and limited access to affordable insurance products, many drivers remain financially vulnerable to work-related accidents. This condition indicates a significant opportunity for digital *takaful* and P2P *takaful* to provide a more inclusive and accessible Sharia-compliant insurance model for underserved communities.

In this illustrative application, a community of 1,000 online motorcycle taxi drivers voluntarily establishes a digital P2P *takaful* scheme by contributing IDR 10,000 per member each month, generating a collective *tabarru'* fund of IDR 10 million. The digital platform operates solely as a technology facilitator under a *wakalah bil ujrah* contract, receiving a predetermined administrative fee without acquiring ownership of participants' funds. All contributions are managed transparently through a shared digital platform, while claims are processed using blockchain-enabled smart contracts following digital verification of supporting documents. This mechanism enables faster claim settlement, reduces administrative complexity, and improves accountability in fund management (Suzuki & Miah, 2022).

The conceptual analysis further indicates that community-based participation strengthens social monitoring among members, thereby reducing the likelihood of fraudulent claims and information asymmetry. If total claims remain lower than the accumulated *tabarru'* fund at the end of the contribution period, the underwriting

surplus is fully redistributed to participants or credited toward future contributions in accordance with the principle of surplus sharing. This illustrative application demonstrates that integrating digital *takaful* and P2P *takaful* can restore the fundamental values of *ta'awun* (mutual assistance) and risk sharing while expanding financial inclusion through a transparent, affordable, and community-centered Islamic insurance model. This hypothetical scenario is theoretically consistent with a previous study by Smith (2024), suggesting that digital platforms and community-based risk-sharing mechanisms can strengthen the sustainability and inclusiveness of Islamic insurance services.

5. | CONCLUSION

This study conceptually demonstrates that integrating digital *takaful* with the P2P *takaful* model offers a promising approach to reconstructing the Islamic insurance system while preserving its fundamental Sharia principles. The analysis indicates that digital technology can enhance operational efficiency through automated processes, transparent fund management, and lower operational costs without compromising the principles of *tabarru'*, *wakalah bil ujah*, *ta'awun*, and risk sharing. Furthermore, the proposed model has the potential to strengthen participant involvement, improve financial inclusion by expanding access for underserved groups, including MSMEs, informal workers, and younger generations, and promote greater transparency through decentralized governance and surplus-sharing mechanisms. However, the analysis also identifies several implementation challenges, including regulatory uncertainty, cybersecurity risks, and limited levels of Islamic financial and digital literacy, all of which require coordinated institutional responses to support sustainable implementation.

This study contributes to the Islamic finance literature by integrating digital *takaful* and P2P *takaful* into a conceptual framework that reconnects technological innovation with the ethical objectives of Islamic insurance rather than viewing digitalization solely as an operational improvement. The findings provide insights for *takaful* operators, fintech developers, regulators, and policymakers in designing sustainable digital *takaful* ecosystems that remain consistent with Sharia principles. Nevertheless, this study is limited by its conceptual nature and reliance on secondary literature without empirical validation. Future research should therefore employ quantitative, qualitative, or case-based approaches to evaluate user acceptance, operational performance, regulatory readiness, and the practical implementation of Digital P2P *Takaful* across different countries and institutional settings.

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