

Crowdfunding and digital innovation for sustainable development in Asia and the Pacific

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Abstract

This study investigates the role of crowdfunding and digital innovation in advancing sustainable development in Asia and the Pacific by focusing on how these mechanisms can overcome the limitations of traditional financing to address environmental, social, and economic challenges. Utilizing a literature review approach, this study explains various crowdfunding models (donation-based, reward-based, equity-based, and debt-based) alongside emerging digital technologies such as blockchain, artificial intelligence (AI), and the Internet of Things (IoT). It also examines the integration of Islamic finance principles and highlights their contribution to ethical and socially responsible investments. The findings reveal that crowdfunding and digital innovation significantly enhance the efficiency, transparency, and impact of projects targeting Sustainable Development Goals (SDGs), despite facing challenges such as regulatory hurdles, market readiness, and technological access. The originality of this research lies in its comprehensive analysis of crowdfunding and digital innovation within the context of sustainable development, offering novel insights into leveraging these tools for societal benefits. These limitations include the need for further empirical studies to validate the proposed recommendations. This study provides recommendations for policymakers to create supportive environments to highlight the potential of crowdfunding and digital innovation to increase inclusive growth and environmental stewardship, thus contributing to a sustainable future for the region. This analysis aims to inform stakeholders, including policymakers, entrepreneurs, and investors, about harnessing alternative financing and digital solutions for sustainable development.

Keywords: Crowdfunding, Digital Innovation, Sustainable Development, Asia and the Pacific, Islamic Finance

Introduction

Crowdfunding and digital innovation have emerged as potential tools for addressing sustainable development challenges in Asia and the Pacific. Crowdfunding is the practice of raising small amounts of capital from many individuals to finance a new business venture and is typically facilitated through online platforms (Rambaud et al., 2022). This complies with the concept of an open call, primarily conduct-

ed over the internet, to gather financial resources either through donations or in exchange for rewards to support specific initiatives (Ahlers et al., 2015). The essence of crowdfunding lies in the collective effort of individuals pooling their resources, often in small amounts, to back projects or businesses initiated by others (Yu et al., 2020). Crowdfunding for sustainability-oriented ventures and clean production tech-

nologies has gained attention as an alternative means of financing (Hörisch, 2015). This is particularly relevant given the scale of human action regarding the Earth's capacity to sustain it, emphasizing the need for innovative approaches to address sustainable development challenges (Rockström et al., 2009). As a group behavior facilitated through the Internet, crowdfunding has been recognized as a supporting activity initiated by organizations and individuals, contributing to sustainable economic development (Liang et al., 2020; Usman et al., 2019). Furthermore, the potential of crowdfunding to contribute to sustainable development has been highlighted, particularly in filling the financial gap for entrepreneurs and small to medium enterprises (Testa et al., 2022). Additionally, crowdfunding has been recognized as an instrument for achieving the United Nations' SDGs, emphasizing its role in supporting sustainability ventures (Martínez-Gómez et al., 2020).

Moreover, the role of crowdfunding for entrepreneurship towards sustainable development has been emphasized, highlighting the challenge of transforming sustainability goals into product features that contribute to customer value (Belz and Binder, 2015). The behavior of sustainability-related crowdfunders and the factors influencing their involvement in crowdfunding rounds have been the subjects of research, highlighting the importance of personality and subjective well-being in influencing crowdfunding for sustainable development initiatives (Kim et al., 2021; Kim and Petrick, 2021). Additionally, the potential of crowdfunding to positively influence sustainability in the retail sector has been highlighted, particularly when project owners focus on sustainability criteria categories (Konhäusner, 2021). Crowdfunding has been recognized as financing green initiatives, particularly in countries where institutions are less oriented toward

environmental sustainability, thereby relaxing constraints on green entrepreneurs' access to external resources (Butticé et al. 2019).

Existing literature on crowdfunding, digital innovation, and sustainable development in Asia and the Pacific highlights the potential impact of these tools in addressing sustainability challenges. Studies have emphasized the role of crowdfunding in financing sustainability-oriented ventures, particularly in filling financial gaps for entrepreneurs and small to medium enterprises. Furthermore, the literature explores the influence of digital innovation and crowdfunding on entrepreneurship towards sustainable development, emphasizing the challenge of transforming sustainability goals into product features that contribute to customer value. Additionally, the potential of crowdfunding to positively influence sustainability in the retail sector has been highlighted, particularly when project owners focus on sustainability criteria.

However, there are gaps in the current research. For instance, there is a limited representation of studies examining how crowdfunding has been used to develop sustainable products (Corsini and Frey, 2021). Additionally, there is a lack of comprehensive understanding of the impact of crowdfunding on ventures and whether it contributes substantially to sustainable development (Hörisch, 2018). Moreover, minimal attention has been given to economic and social issues in the corporate social responsibility reporting of Asia-Pacific, indicating a gap in understanding the broader impact of sustainability initiatives in the region (Zhang, 2021). To address these gaps, a theoretical framework for understanding the impact of digital finance and innovation on sustainable development is essential. Owing to the increasing expectations of digital innovation, it is crucial to improve the blueprint of digital activities (Chenglei Xu, 2023). This framework should consider the influence of crowdfunding on sustainability-oriented ventures, the role of digital innovation in promoting sustainable entrepreneurship, and the crowdfunding's potential to positively influence sustainability in various sectors. Addition-

ally, the framework should integrate the financial, economic, and environmental dimensions of sustainability to provide a comprehensive understanding of the impact of digital finance and innovation on sustainable development in the Asia and Pacific regions.

This study begins with an introduction that outlines sustainable development challenges and opportunities within the region, highlighting the role of digital innovation and crowdfunding as pivotal tools for addressing these challenges. The objectives and scope of the review are clearly defined, laying the groundwork for a thorough exploration of the subject. Following the introduction, a literature review highlights existing research on crowdfunding, digital innovation, and their impact on sustainable development, identifying gaps, and establishing a theoretical framework for understanding the influence of digital finance on sustainability efforts. The research design adopts a systematic literature review approach to synthesize existing knowledge on crowdfunding, digital innovation, and sustainable development in Asia and the Pacific. a search of academic databases, including Scopus, Web of Science, and Google Scholar, to identify relevant peer-reviewed articles, books, and research studies was conducted. The systematic analysis to identify key themes and patterns across the literature was carried. This provided an overview of the current state of knowledge in the field. In the subsequent sections an overview of the current state of digital innovation and crowdfunding in the region, detailed case studies of successful initiatives are shared and a description of different crowdfunding models and their suitability for sustainable development projects is also shared.

The criteria for selecting case studies or empirical evidence prioritize studies directly addressing the convergence of crowdfunding, digital innovation, and sustainable development in Asia and the Pacific. Specifically, we include studies that focus on the impact of digital finance and innovation on sustainable entrepreneurship, the role of crowdfunding in financing sustainability-oriented ventures, and the potential of digital innovation to promote sustainability. However, this study had

certain limitations. First, the scope of the review may be limited by the availability of literature specifically focused on Asia and the Pacific. Second, the quality and heterogeneity of the selected literature may pose challenges in synthesizing the findings. Third, the generalizability of the findings to all countries within the region may be limited due to economic, social, and environmental variations. This study also addresses the challenges and opportunities presented by these innovative financing mechanisms, including the role of Islamic finance in promoting ethical investments. Policy recommendations offer guidance for enhancing a supportive environment for these initiatives, with suggestions for international cooperation and partnership models. Finally, the study concludes with a summary of the key findings, reflecting the role of crowdfunding and digital innovation in achieving development goals to contribute to ethical and sustainable investment in the region.

Crowdfunding and digital innovation in Asia and the Pacific: An overview

Crowdfunding has emerged as a mechanism for financing innovative projects, startups, and small and medium enterprises (SMEs) in Asia and the Pacific, contributing significantly to digital innovation. This case evokes some questions, especially about the role of technology in mediating the role of allowing some organizations to crowdsource to support the digital humanities (Pratono, 2020). This financial model leverages the power of the Internet to gather small amounts of capital from many individuals to support a wide range of activities, including artistic endeavors, product development, and entrepreneurial ventures. The growth of crowdfunding in Asia and the Pacific can be attributed to several factors including technological advancements, changes in consumer behavior, and an evolving regulatory framework that creates a conducive environment for digital innovation.

The Asia-Pacific region, with its diverse economies ranging from high-income

countries, such as Japan and Singapore, to emerging markets, such as India and Indonesia, presents a unique ecosystem for crowdfunding. The adoption and impact of crowdfunding in this region are influenced by varying levels of technological penetration, digital literacy, and regulatory landscapes across countries. In countries such as China and India, crowdfunding has experienced rapid growth, partly due to the expanding middle class with increasing disposable income and a growing appetite for digital platforms. In China, the success of crowdfunding practices is linked to internal factors (updates and predefined durations), whereas the role of external factors (platform and award) is less certain (Xiao Pan, 2023).

In contrast to traditional funding methods that often prioritize established priorities and individualistic intervention approaches, crowdfunding represents a shift towards a more inclusive and market-driven financing approach. The collective wisdom of a crowd plays a crucial role in determining the success of a project. Crowdfunding diversifies funding sources and provides a platform for entrepreneurs to showcase their expertise and innovative ideas, thereby attracting support from a broad range of funders (Wang et al., 2022).

Linkages digital technologies and crowdfunding

Crowdfunding plays a crucial role in digital innovation and contributes significantly to regional economic development. It provides startups and projects with access to essential funding that may be difficult to obtain through traditional financing channels. This democratization of capital not only empowers entrepreneurs but also validates new concepts through market feedback, enabling project creators to enhance their offerings and business strategies (Estrin et al., 2018). The key aspect of crowdfunding is its ability to engage a wide audience to support ventures, thereby promoting innovation and entrepreneurship.

The advent of digital innovation has elevated crowdfunding to new levels, broadening its impact across various sectors. Crowdfunding has emerged as a viable alternative to traditional

funding sources, particularly for high-risk projects that may struggle to secure support through conventional means (Schucht et al., 2020). By harnessing the power of social media and online platforms, crowdfunding has revolutionized fundraising, offering an interactive way for individuals to contribute to the projects they believe in (Estrin et al., 2018). This shift towards digital crowdfunding has democratized access to capital and enhanced collaboration and innovation in the entrepreneurial ecosystem.

Several key players and platforms are at the forefront of driving digital innovation and crowdfunding in the Asia-Pacific region. First, platforms such as Alibaba's Ant Financial and Tencent's WeChat Pay have revolutionized digital payments in China (CGAP, 2019). At the same time, JD Finance has become one of the significant players in equity crowdfunding in China (JD. Com, 2015). Second, in India, startups like Milaap and Ketto are leading the way in equity and social crowdfunding, respectively (Anupam, 2020). Third, platforms such as Funded-ByMe (Malaysia) and FundedHere (Singapore) are important equity and debt crowdfunding platforms that support SMEs and startups in Southeast Asia (Fong, 2023; Volopay, 2023).

Moreover, the regulatory environment in the Asia-Pacific region is evolving to support crowdfunding growth while ensuring investor protection. Malaysia and Singapore have introduced specific regulations to govern crowdfunding activities, creating a safer environment for investors and fundraisers. These regulatory frameworks are critical for building trust and credibility on crowdfunding platforms and encouraging participation from a broader population segment. However, challenges remain, including the need for enhanced digital infrastructure, improved financial literacy, and stronger regulatory frameworks to mitigate the risks associated with crowdfunding, such as fraud and project failure. Addressing these challenges is essential for sustaining crowdfunding growth and harnessing its potential to drive digital innovation in the region.

Furthermore, Digital innovation in Asia and the Pacific encompasses a broad spectrum of technologies, including

mobile internet, blockchain, artificial intelligence (AI), and the Internet of Things (IoT). However, when there is an opportunity, there is a challenge as well, since rising technology can also bring disruptive effects (SZAKOS, 2023). These technologies have driven significant changes across various sectors, from fintech and e-commerce to health-care and smart cities. Crowdfunding platforms have become critical in funding these innovations, allowing entrepreneurs to bypass traditional financial barriers and access a global pool of investors. Crowdfunding has emerged as a versatile and innovative financing mechanism that significantly impacts sustainable development by facilitating funding projects that comply with Sustainable Development Goals (SDGs).

Models for crowdfunding

Various crowdfunding models cater to different projects and stakeholders, each with unique characteristics that influence their suitability and effectiveness in supporting sustainable development initiatives (Ghobakhloo, 2021).

Donation-based Crowdfunding is primarily used for social, environmental, and humanitarian projects where funders donate funds without expecting any financial return. This model is particularly suited for initiatives that directly contribute to the SDGs, such as poverty alleviation (SDG 1), clean water and sanitation (SDG 6), and climate action (SDG 13). Projects leveraging donation-based crowdfunding often emphasize social impact and emotional appeal to attract funders. Reward-based Crowdfunding offers funders tangible or intangible rewards in exchange for their contributions. This model is effective for sustainable development projects offering products, services, or experiences, complying with goals such as responsible consumption and production (SDG 12) and sustainable cities and communities (SDG 11). Reward-based crowdfunding allows innovators to validate their ideas and build a customer base while contributing to sustainability.

Equity-based Crowdfunding involves exchanging equity shares of a startup or business venture for capital (Riswandi, 2023). It is suitable for sustainable development projects with a

clear business model and potential financial returns, such as renewable energy initiatives (contributing to SDG 7) and sustainable industrialization (SDG 9). This model complies with investors' financial incentives and the long-term success of projects that contribute to the SDGs. Debt-based Crowdfunding, or peer-to-peer (P2P) lending, allows individuals to lend money to project owners or businesses who repay the loan with interest. This model can support small and medium enterprises (SMEs) in developing countries in areas like sustainable agriculture (SDG 2) and affordable and clean energy (SDG 7), where traditional financing is limited.

Crowdfunding has the potential to directly affect several SDGs by providing much-needed capital for sustainable development projects. For example, renewable energy projects funded through equity-based or debt-based crowdfunding contribute to achieving SDG 7 (Affordable and Clean Energy) by increasing the share of renewable energy in the global energy mix. Similarly, donation-based crowdfunding campaigns for clean water projects directly support SDG 6 (Clean Water and Sanitation), addressing critical infrastructure needs in underserved communities. Hence, the government must encourage crowdfunding growth by implementing integrity policies to look after the stability of the internal market and facilitate the creation of competitive market conduciveness (Riswandi, 2023).

Case studies

1. "Solar Home" Project, Myanmar

One notable example is the "Solar-Home" project in Myanmar, which utilized a pay-as-you-go financing model funded through crowdfunding (Petrova, 2018). This initiative aims to provide affordable solar home systems to off-grid households, significantly affecting energy access in rural areas. The success of SolarHome can be attributed to its innovative business model, which complies with the local context and needs, demonstrating the critical role of market understanding in

crowdfunding success. The business model of SolarHome is based on a pay-as-you-go scheme. This model allows households to pay for their solar home systems in instalments, making them financially viable for families that may not afford the upfront costs of solar installations. The pay-as-you-go scheme is enabled by technological advancements that allow for the remote control and monitoring of solar units, ensuring that payments are made before the service is provided. This mitigates financial risk for project operators and investors, thereby encouraging more significant investment in such initiatives. Crowdfunding not only garners the necessary capital for project implementation but also enhances public awareness and engagement in renewable energy solutions, as well as reflects a deep understanding of the market dynamics and financial capabilities of the target demographic.

2. Milaap Platform, India

The "Milaap" platform has facilitated numerous successful crowdfunding campaigns focused on healthcare, education, and women's empowerment in India (FinDev Gateway, 2013). A stand-out project funded by Milaap was the setup of microgrid solar installations in several off-grid villages, showcasing the power of crowdfunding in mobilizing resources for sustainable energy solutions. The identified success factors include a strong narrative that resonates with a broad audience and the effective use of digital marketing strategies to reach potential funders. Strategies such as employing emotionally appealing visuals, showcasing digital marketing expertise, and providing regular updates play a pivotal role in the triumph of crowdfunding initiatives (Kubheka, 2020). The digital landscape offers crowdfunding platforms the opportunity to reach a wider audience and engage with funders at a more personal level, thus enhancing the visibility and impact of projects. A strong narrative that resonates with a broad audience can significantly amplify interest in and support for a cause (Macht and Weatherston 2014). Besides, digital marketing tools offer the advantage of targeted advertising, where campaigns can reach individuals based on their interests, behaviors, and online activi-

ties, making the outreach efforts more efficient and effective (Ordanani et al., 2011). Furthermore, the digital nature of these campaigns enables the collection and analysis of data on funder behavior and preferences, which can inform the optimization of future campaigns for better performance (Belleflamme et al., 2014). Hence, underlying digital technologies allow businesses to improve inter-functional collaboration and integrate better with internal and external stakeholders (Ghobakhloo, 2021).

3. EcoMatcher Initiative, Philippines

Another case is the "EcoMatcher" initiative, which utilizes crowdfunding to finance tree-planting activities in various countries, including Indonesia and the Philippines. (EcoMatcher, 2024). This project successfully capitalized on the growing global concern for climate change, offering funders the opportunity to contribute directly to reforestation efforts. The initiative's success can be attributed to its clear and measurable impact, which gives contributors a tangible sense of the environmental benefits of their investment.

4. Hamri Bahini, Nepal

In Nepal, the "Hamri Bahini—The Green Angels" social enterprise used crowdfunding to expand its environmentally sustainable waste management services (Emotive, 2023). This project addressed urban waste issues and empowered marginalised women by providing them with employment opportunities. The key success factors included a compelling social and environmental mission, strong community involvement, and effective storytelling, which highlighted the dual impact of the initiative on both the environment and women's empowerment.

Examining these case studies reveals several key factors contributing to the success of crowdfunding campaigns for sustainable development projects in the Asia-Pacific region. Projects that actively engage with the community and stakeholders tend to build trust and credibility, which are essential for attracting crowdfunding support. In addition, campaigns that maintain high

levels of transparency regarding their goals, progress, and use of funds are more likely to gain and retain funders' trust (Riswandi, 2023).

Furthermore, projects that offer clear and measurable environmental, social, and economic impacts are more likely to attract funders. Demonstrating how each contribution makes a difference engages potential supporters on a personal level. Additionally, initiatives that involve the community and relevant stakeholders in the project planning and execution phases benefit from deeper engagement and support. This involvement increases the sense of ownership between the funders and beneficiaries, enhancing the project's credibility and appeal. Successful projects often exhibit high adaptability and respond to challenges and feedback in real time. This flexibility allows projects to overcome unforeseen obstacles and maintain momentum toward their crowdfunding goals. Moreover, effective use of digital marketing tools, social media, and crowdfunding platforms can amplify a project's reach and attract a wider pool of potential funders. Tailoring messages to different platforms and audiences can enhance engagement and support.

Therefore, exploring successful crowdfunding campaigns for sustainable development in the Asia-Pacific region highlights the significant potential of this financing mechanism. The success factors identified, from precise impact measurements and community involvement to strategic communication and adaptability, offer valuable insights for future initiatives. As the digital economy continues to grow and evolve, crowdfunding becomes a powerful tool for mobilizing resources and supporting sustainable development projects, thereby increasing the region's sustainable, equitable, and prosperous future. Conversely, the factors contributing to the failure of crowdfunding campaigns often include a lack of clear objectives, poor communication strategies, failure to engage the target audience, and unrealistic goals or rewards. Moreover, projects that overlook the importance of the local context and stakeholder involvement may struggle to achieve their crowdfunding goals.

Challenges and opportunities

The expanding fields of crowdfunding and digital innovation present a complex landscape of challenges and opportunities, particularly in the sustainable development and incorporation of Islamic financial principles (Pratono, 2020). These dynamics are particularly pronounced in regions that strive to balance rapid technological advancement with equitable and sustainable growth. Understanding these challenges and opportunities is crucial for policymakers, entrepreneurs, and investors aiming to harness crowdfunding and digital innovation to achieve positive social and environmental outcomes.

One of the challenges for crowdfunding and digital innovation is navigating diverse and often stringent regulatory environments across jurisdictions (Valiante, 2022). Regulatory frameworks can enable or inhibit the growth of crowdfunding platforms and digital ventures, particularly those aimed at cross-border operations. In some cases, the lack of specific crowdfunding regulations can create uncertainty for platforms and investors, thereby affecting overall market confidence. Despite the high penetration rate of mobile and Internet technologies in many regions, disparities in market readiness and access to technology can limit the effectiveness of crowdfunding and digital innovation projects. In rural or underprivileged areas, limited digital literacy and access to Internet infrastructure can restrict the participation of a broader audience in crowdfunding campaigns, thereby affecting the fundraising process for projects aimed at sustainable development. The success of crowdfunding and digital initiatives depends on their cultural and social acceptance. In some regions, skepticism may exist towards online financial transactions or a preference for traditional financing methods, posing challenges for adopting crowdfunding models, especially those less familiar, such as equity-based or debt-based crowdfunding.

Despite these challenges, crowdfunding and digital innovation offer significant opportunities for promoting

sustainable development (Chi Wei Su, 2023). Crowdfunding platforms can mobilize resources from a global pool of funders, providing essential funding for projects that may not qualify for traditional financing. This democratization of finance can accelerate the implementation of projects conforming to the SDGs, from renewable energy initiatives to social enterprises. Crowdfunding not only raises funds but also serves as a powerful tool for market validation and community engagement. By involving the community in the funding process, project initiators can gain valuable insights and increase the sense of ownership among funders, thereby increasing a project's chances of success and sustainability. Digital innovation, supported by crowdfunding, can drive entrepreneurship and the development of new technologies and business models (Chenglei Xu, 2023). This is particularly important for addressing complex sustainability challenges and enabling innovative solutions that can be scaled up and replicated in various contexts.

Hence, while crowdfunding and digital innovation face several challenges, including regulatory hurdles, market readiness, and cultural barriers, they also present unprecedented opportunities to drive sustainable development. Integrating Islamic finance principles further enhances these efforts by offering ethical and socially responsible investment opportunities that uphold global sustainability goals. Addressing these challenges and leveraging opportunities will require concerted efforts from governments, industry players, and global communities to create an enabling environment that increases innovation, inclusivity, and sustainability.

Policy recommendations

In leveraging crowdfunding and digital innovation for sustainable development, policymakers play a crucial role in creating a conducive environment that nurtures these activities while ensuring investor protection and project accountability (Chenglei Xu, 2023). The convergence of crowdfunding, digital

innovation, and sustainable development presents unique opportunities and challenges that require thoughtful regulatory and policy responses. International cooperation and partnership models can amplify the impact of such efforts by promoting global best practices and shared learning.

Policymakers should focus on establishing clear, transparent, and flexible regulatory frameworks for crowdfunding and digital innovation. These regulations should protect investors from fraud and ensure the integrity of crowdfunding platforms while increasing an environment that encourages innovation and supports the growth of startups and SMEs that comply with development goals. Tailored regulations can also address the specificities of different crowdfunding models—donation-based, reward-based, equity-based, and debt-based—each of which may require different mechanisms of oversight. To maximize the reach and effectiveness of crowdfunding and digital innovations, governments should invest in improving digital infrastructure, particularly in underserved areas. This includes expanding Internet access, enhancing cybersecurity measures, and promoting digital literacy among the population. Such efforts can democratize access to crowdfunding platforms and digital marketplaces, thereby widening the scope of sustainable development projects.

Policies aimed at increasing financial inclusion can significantly benefit crowdfunding ecosystems. By simplifying the process of opening bank accounts, enhancing mobile banking services, and supporting fintech innovations that offer alternative financial services, governments can ensure that a broader population participates in crowdfunding both as contributors and beneficiaries. Encouraging partnerships between public institutions, private sector entities, and crowdfunding platforms can lead to the development and implementation of sustainable projects on a larger scale. In addition, it can leverage the strengths of each sector by combining public oversight and resources with the agility, innovation, and funding capabilities of the private sector and crowdfunding communities.

Although there are suggestions for international cooperation and partnership models, crowdfunding platforms' international networks or coalitions can facilitate the exchange of best practices, regulatory experiences, and success stories. These networks can also work towards harmonizing regulatory standards across borders, making it easier for projects to attract international funding and for platforms to operate in multiple jurisdictions. International frameworks that address legal and tax implications for funders can be developed to encourage cross-border investments in crowdfunding projects, especially those targeting the development goals. Such frameworks can mitigate risk for investors and make them more attractive to funding projects in other countries, thereby increasing the pool of available capital for sustainable initiatives.

International development agencies and financial institutions can play a pivotal role by partnering with crowdfunding platforms to match the funds raised for projects that adhere to specific SDGs. These partnerships can provide additional funding and lend credibility to projects, thereby attracting more funders and increasing their overall impact. International cooperation can also promote ethical and impact investments. By developing shared standards and certifications for ethical and socially responsible projects, stakeholders can increase the global market for investments that support sustainable development.

By implementing these policy recommendations and increasing international cooperation, governments and international bodies can enhance the environment for crowdfunding and digital innovation, driving progress towards sustainable development goals. These efforts require a multi-stakeholder approach involving governments, industry players, international organizations, and civil society to create synergies that maximize the benefits of crowdfunding and digital innovations for global sustainable development.

Future directions

The digital finance and innovation landscape is rapidly evolving, with emerging trends and technologies poised to significantly impact sustainable development efforts in the Asia and Pacific regions. It has become a new driver of economic development (Romdhane, 2024). These advancements offer new opportunities to address longstanding challenges related to financial inclusion, environmental sustainability, and economic growth. As these technologies continue to develop, they also present potential areas for future research, aiming to fully understand their implications and harness their potential for positive impacts.

Blockchain and Distributed Ledger Technology (DLT) are revolutionizing how financial transactions and asset management are conducted, offering unprecedented transparency, security, and efficiency. In the context of sustainable development, these technologies can facilitate more effective tracking and verification of sustainable practices and outcomes. For instance, blockchain can be used to verify the authenticity of products in supply chains, thereby ensuring that they meet sustainability standards. In addition, DLT can support innovative financing mechanisms, such as the tokenization of assets, to mobilize funds for sustainable development projects. AI and big data analytics transform decision-making processes by providing deeper insights into complex issues. In sustainable development, AI can optimize resource allocation, enhance energy efficiency, and predict environmental trends, thereby contributing to informed policy and investment decisions. Big data analytics can also improve credit risk assessment for underserved populations, expanding access to finance for smallholder farmers and SMEs in sustainable sectors.

The rise of digital currencies and advanced payment systems is reshaping the financial landscape, potentially enhancing financial inclusion and transaction efficiency. Central Bank Digital Currencies (CBDCs) and mobile payment solutions can offer secure and accessible financial services, particularly in rural and underserved ar-

eas, support economic participation, and pursue sustainable development goals. Internet of Things (IoT) technologies connect the physical and digital worlds, enabling real-time monitoring and management of resources and environments. In sustainable development, IoT applications can support smart agriculture, water management, and energy systems, contributing to more efficient use of natural resources, reducing environmental footprints, and reshaping transportation operations (Tondro, 2023).

As digital finance and innovation tools are increasingly deployed to support sustainable development, research on effective impact measurement and verification methods is needed. This includes exploring how blockchain and AI can enhance the reliability and transparency of impact reporting for sustainability projects and investigating how digital finance innovations can be designed and implemented to promote financial inclusion and support the economic empowerment of marginalised communities (Charles, 2023). This research area explores the roles of mobile banking, digital currencies, and peer-to-peer lending platforms in providing accessible financial services. With the rapid adoption of emerging technologies, there is a critical need for research on developing regulatory and ethical frameworks that ensure that these innovations are used responsibly and equitably. This includes examining the implications of AI and big data for privacy and data protection and the governance of blockchain systems, and exploring the potential for cross-sectoral synergies between digital finance, sustainable development, and other areas such as healthcare, education, and disaster risk reduction.

Conclusion

This study explored the complex landscape of crowdfunding, digital innovation, and Islamic finance, elucidating their significant contributions and potential to drive sustainable development in Asia and the Pacific. This exploration has revealed key findings on how these financial and technological innovations can impact the SDGs and the challenges and opportunities they

present. Crowdfunding has emerged as a mechanism for mobilizing resources for sustainable development projects, enabling access to capital for initiatives that may otherwise struggle to secure funding through the traditional financial system. Digital innovation through technologies such as blockchain, AI, and IoT has the potential to revolutionize the efficiency, transparency, and impact of projects targeting SDGs. These technologies offer novel solutions to longstanding challenges, from enhancing financial inclusion to optimizing resource use and improving decision-making processes to support sustainability objectives.

The integration of crowdfunding and digital innovation presents a unique opportunity to address the SDG financing gaps in Asia and the Pacific. These mechanisms can catalyze the implementation of sustainable projects by providing innovative funding solutions, enhancing project accountability, and increasing community engagement. Moreover, emphasis on ethical and sustainable investments can attract a wider pool of investors interested in contributing to positive social and environmental outcomes. Crowdfunding and digital innovation hold considerable promise for achieving development goals by democratizing access to capital and leveraging technology to solve complex sustainability challenges. However, realizing this potential requires supportive regulatory frameworks, digital infrastructure, literacy investments, and initiatives to promote financial inclusion. Policymakers, entrepreneurs, and investors must collaborate to create an ecosystem that nurtures these innovations and maximizes their impact on sustainable development. The challenge lies in integrating crowdfunding and digital innovation platforms to ensure that these financial models are accessible and attractive to various investors and projects. Future research and policy development should focus on harnessing the synergies between crowdfunding and digital innovation and exploring innovative models that can finance sustainable development projects effectively and ethically. Hence, the integration of crowdfunding and digital innovation offers a pathway to mobilize resources, engage communities, and drive inno-

vation to pursue SDGs for advancing sustainable development in Asia and the Pacific. The. As the region continues to face environmental, social, and economic challenges, leveraging these tools in a coordinated and strategic manner is crucial for building a sustainable, inclusive, and prosperous future.

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