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Prospects and Challenges of Blockchain Technology in the Travel and Tourism Industry: An Empirical Study in Bangladesh

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Abstract:- This study is an attempt to discuss blockchain prospects and challenges for the travel and tourism sector of Bangladesh. In this research, the prospects include improved security and transparency, smoother payment processes, supply chain management, data sharing, and privacy. On the other side, legal and regulatory frameworks, scalability and performance challenges, interoperability, and standardization, trust, and adoption by industry stakeholders are challenges.The researchers conducted this research by applying mixed methods. Researchers collected 215 respondents' data and analyzed this data and got results of the reliability test(.893) based on using Cronbach's Alpha Technique. The authors reviewed and analyzed various existing literature, such as research articles, journals, and books, highlighting blockchain in tourism. The findings suggest that although blockchain has transformative potential, the actualization of this potential in tourism would require serious policy formulation and greater awareness among stakeholders. This research helps tourism policymaking authorities to make proper decisions for future tourism in Bangladesh.

Keywords*: Blockchain Technology, Travel and Tourism, Future Tourism, Bangladesh*

1. Introduction

In the digital age, advanced technologies have revolutionized organizations across multiple dimensions, including consumer interactions, human resource management, operational processes, and strategic planning (Ali & Johl, 2023). The existence of short life cycles of products in the international arena has put human-related factors in the spotlight for organizations to survive and prosper (Khan *et al.,* 2023). Accordingly, organizations are now putting increasing pressures on their stakeholders to come up with adoption strategies for emerging technologies. Moreover, the only way for a company to generate sustainable competitive advantage is through the horizontal implementation of new technology in all areas of an organization (Pilkington, 2016; Yaga *et al.,* 2019; Zheng *et al.,* 2017). The concept of digitalization or Industry 4.0 (I4.0), instituted in Germany in 2011, has since attracted considerable interest from researchers and practitioners alike. From recent years onward, I4.0 has been considered an umbrella term encompassing various transformative technologies, including big data, smart manufacturing, AI, and blockchain technology. Among these technologies that have been able to change the status quo of industries, processes, and markets is blockchain, which came into existence in 2008. Since its announcement in 2008 by Satoshi

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Nakamoto through the design of the first functioning cryptocurrency called Bitcoin, blockchain technology started gathering attention with implementation following in 2009 through an inaugural block containing transaction records. With technologies such as blockchain and other emerging digital solutions, one finds great opportunities available for the tourism industry to innovate and expand their service offerings while simultaneously augmenting service quality (Bolici *et al.*, 2019). Because blockchain technology is considered one of the biggest trends influencing the future of the tourism sector, it is capable of solving many of the channel problems the industry has put up with over time, such as poor infrastructure management, limited credit for businesses, and untransparent pricing mechanisms. Such challenges could be addressed through the noteworthy qualities that blockchain provides, including high transparency, resistance to tampering activity, data provenance, and traceability (Nam *et al.*, 2021). Adopting blockchain technology in hospitality and tourism thus not only serves to optimize the existing services but also lays the foundation for sustainable development.

2. Literature Review

Sharma *et al.*, (2021) identified the causes and impediments to the adoption of technology to the blockchain stage and have established cause-effect correlations so as to prevent occurrence of the same in instances of implementation failure.

Pilkington (2017) applied blockchain technology to the medical tourism industry in Moldova, thereby discussing its practical implications as regards supply chain management, customer reviews, and heritage protection in the context of medical tourism.

Mofokeng and Matima (2018) studied the adoption of blockchain technology in virtual environments for digital tourism marketing, finding that blockchain application in VR-based tourism may benefit the industry.

Willie (2019) emphasized that the adoption of blockchain technology should be debated more so on the destination level while stating that blockchain is already designed and put into use in the hotel industry, enjoying huge benefits such as operational efficiency, effectiveness, and overall profitability.

Kwok and Koh (2019) valued insights into how small island economies like the Caribbean and Aruba benefit from the use of blockchain technology. The researchers pointed to the potential of blockchain to increase stakeholder engagement, while also preferably enhancing data management practices, particularly in the face of privacy issues.

Bolici *et al.*, (2019) sought to capture and analyze the ongoing conversations on the dominant social network platform, Twitter, observing an increasing interest in blockchain and cryptocurrencies. The content of tweets gives preliminary, yet possibly important, insights into how blockchain and cryptocurrencies may be utilized in innovations for tourism services.

Halkiopoulos *et al.*, (2023) focused on the application of blockchain technology in tourism and its transformative effect on the traditional business models through transparency, security, and efficiency. Decentralized booking, payment systems, and smart contracts are emphasized as applications that can reduce the number of intermediaries and, hence, costs, allowing a direct

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interaction between the service provider and the customer. Expedia, Airbnb, and others are mentioned as examples that are stepping into the blockchain-based space. Innovative platforms like LockTrip, SmartTrip, and GOeureka show the immense potential of blockchain to join forces with travel into decentralized marketplaces, while applications like Etherisc and Beenest take blockchain further into insurance and property sharing. The discussion rounds up with possible transformations of Airbnb and Uber into blockchain-based models, suggesting a decentralized future for such platforms. Smart contracts prove to be self-executing and provide the most resilient and tamper-proof way to enforce agreements. The article outlined the growing trend for research and application of blockchain in the tourism industry, while also acknowledging some of the challenges, such as identity verification and standardization, that could hamper its full-scale adoption.

Thees *et al.,* (2020) studied possible implications that blockchain technology may have on tourism, focusing in particular on how it can take over the role usually performed by conventional intermediaries and on how it might speed up much time-consuming backstage processes. This is tied to decentralization, which is one foundational and generalizable concept pertaining to the blockchain adoption in travel and tourism. The article performs a content analysis of 175 newspaper articles dealing with blockchain and tourism, so as to conceptually study the benefits that blockchain brings in along the value system in the tourism industry. Through this lens, it contends that blockchain applications might give even more value to the traveler by way of transforming these processes. Furthermore, it brings attention to the obstacles and regulations that come with blockchain technology in the tourism sector, thereby providing, at best, a synoptic view of the current situation and the prospects its future entails.

3. Research Objectives

RO1: To discuss blockchain and blockchain technologies in tourism.
RO2: To discuss the prospects and challenges of blockchain technology in the travel and tourism industry and how it's helpful for the Bangladeshi tourism industry.

4. Theoretical Framework

4.1. What is Blockchain ?

Blockchain combines the words "block" and "chain," hinting at how it works (Chang *et al.*, 2022; Vacchio & Bifulco 2022). "As the name suggests, a blockchain can be considered as a database where digital information ("Blocks") is stored in a distributed network as a chain of blocks" (Hassija *et al.*, 2021). This means blockchain is a series of blocks linked together (Das *et al.*, 2022). It's a digital (Abooleet & Kinnett, 2023) decentralized (Demirel *et al.*, 2021) distributed (Ahmad & Shah, 2021) database without a central authority to check transactions (Das *et al.*, 2022; Cobanoglu *et al.*, 2021). Instead, all participants can see and share all transactions (Demirel *et al.*, 2021). People also call it a ledger (AlShamsi *et al.*, 2022; Balasubramanian *et al.*, 2022; Antoniadis *et al.*, 2020; Ertemel 2018), which can record all transactions (entries) between network members. It has specific guidelines for creating transaction chains and getting data (Arbatskaya & Khoreva, 2021). "We can imagine the blockchain network as the accounting books kept by a central bank to record all transactions,

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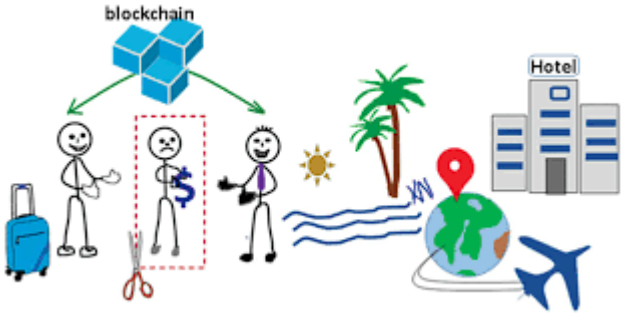
with the difference that the blockchain does not belong to any central authority but it is public and accessible to everyone. Everyone can have a "copy of this book" at any time while the user's personal information is not obvious but encrypted" (Varelas *et al.*, 2019).

4.2. Tourism

At present, tourism stands as a fast-growing industry that boosts the economy of most countries worldwide (Hossain *et al.*, 2025). People now see tourism as a key part of the economy and a way to spend free time (Hossain *et al.*, 2025). Tourism also draws in visitors from other countries by offering pure foods (Hossain et al. 2025). E-Tourism links business management, IT, and tourism (Hossain *et al.*, 2025). The tourism industry added $8.9 trillion to world GDP in 2019 making up about 10.3% of the global economy (WTTC, 2020). Tourism acts as a main driver of foreign exchange income moving money from international tourists to developing countries. This helps to cut down poverty and increase GDP growth (Hossain, 2025).

4.3. Blockchain Technology in Tourism

Applications of blockchain technologies have been in various different forms. Processes of the tourism industry are enhanced by the cost-cutting, time-saving, risk-reduction of data fraud and elimination of middlemen through BCT (Willie, 2019). As a result, correct forecasting of tourism is possible using BCT(Hughes *et al.*, 2019; Rashideh, 2020) and because of the diversity and complexity of tourism processes, there are numerous possible applications. It is argued that by adopting the new technologies, the industry will be able to accommodate, accommodate quickly and bring stakeholders together (Valeri and Baggio, 2021) and as noted earlier, the lack of third parties and related costs arises with the application of cryptocurrency. In this context, the greater adoption of cryptocurrencies promotes tourism advantages through enhanced assistance for public relations, lower travel costs, customer support for loyalty platforms and even by attracting tourists to new tourist destinations (Kwok and Koh, 2019).



Source: google photo

Fig.1. Blockchain technology in tourism

4.4. Why do Travel and Tourism need Blockchain?

In this modern world, there are various types of misunderstanding and frauds that exist in the travel and tourism industry. Without blockchain technology, it is slow to complete the user's booking process, and it takes a lot of time to assign a room or hotel. Sometimes, the international payment greeting is stuck due to third-party payment vendors, and successful

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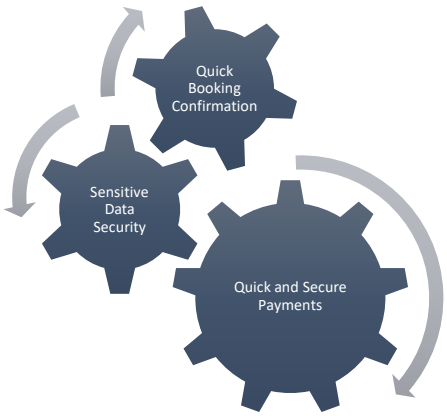
payment can take longer. So, here are a few points for why use blockchain technology in the travel industry:

1. Quick and Secure Payments

In the first one, blockchain provides faster payments at a low-cost fee, and it can make transactions secure for payments. It provides smart contracts by which users can make faster international payments, and users can even transfer cryptocurrencies instead of digital assets. Thus, it can enhance the travel agents' experience of accepting payments securely.



Source: Developed by corresponding author's

Fig.2. Travel and tourism need blockchain

2. Sensitive Data Security

Let's move to the second point, i.e., travelers do travel payments with credit cards or debit cards, and that data is kept in the centralized database. Therefore, those data can be hacked and third-party unauthorized access. Therefore, blockchain uses cryptography to keep the data in a secure database, and no one can use it without authorization.

3. Quick Booking Confirmation

The third point is that blockchain enables users to connect directly with service providers, and it can reduce or eliminate third-party agencies or vendors.

5. Research Model

Blockchain technology, a decentralized ledger that records all transactions across a network of computers, has grown from its initial application in cryptocurrency to influence a range of industries. It has prospects and challenges these are following

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Source: Developed by corresponding author's

Fig.3. Research model of blockchain in tourism

5.1. Prospects in Adopting Blockchain in Tourism

1. Enhanced Security and Transparency

It can provide secure, traceable transactions and transparent business practices, which can assist in building trust between businesses and consumers. Additionally, the tamper-proof nature of blockchain ensures the data is reliable and not tinkered with unauthorized changes. This level of transparency and security has the potential to build trust, one of the most important aspects of the tourism industry.

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RQ1: Blockchain enables secure, tamper-proof transactions in tourism.

2. Streamlined Payment Processes

Blockchain has the ability to revolutionize payments in the tourism industry. Traditional payment systems will usually involve intermediaries, which will lead to hefty expenses as well as delay. In blockchain, however, the transactions are direct to parties involved, reducing the involvement of intermediaries and leading to faster and less expensive processes. Use of cryptocurrencies can also prevent foreign exchange issues, making cross-border transactions more seamless.

RQ2: Blockchain supports faster and efficient processing of tourism payments.

3. Efficient Supply Chain Management

Supply chain management of the tourism industry involves managing a number of stakeholders such as hotels, travel agencies, airlines, and restaurants. Blockchain technology can be used to facilitate coordination between them, which results in an effective supply chain. Blockchain technology can provide real-time tracking and traceability of transactions, which can result in transparency and accountability in the supply chain. Blockchain can also automate processes through smart contracts, which can result in operational effectiveness.

RQ3: Blockchain can provide better coordination among hotels, airlines, and travel agencies.

4. Improved Data Sharing and Privacy

Blockchain has the potential to deliver the correct information to the appropriate people at the right time, thereby increasing coordination and decision-making. Moreover, through decentralization, blockchain has the ability to give more control over data privacy. Blockchain can guarantee that sensitive information is safe in storage and transportation, thereby earning the trust of consumers and adhering to data protection regulations.

RQ4: Tourist information can be securely shared with related parties using blockchain.

5.2. Challenges in Adopting Blockchain in Tourism

1. Regulatory and Legal Frameworks

Despite the possible benefits, blockchain adoption in tourism can be frustrated by regulatory and legal challenges. The novelty of the technology means that the majority of nations lack clear-cut laws for the application of blockchain. Such regulatory uncertainty may deter companies from applying blockchain for fear of confronting legal issues. It's also critical to evolve appropriate legislation and regulations for protecting consumers and facilitating equitable application of the technology.

RQ5: Governments should develop policies to support blockchain in tourism.

2. Scalability and Performance Issues

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Current blockchain networks support only a handful of transactions per second, and that might be inadequate for grand tourism applications. Furthermore, the time taken to validate and add transactions to the blockchain can lead to delays, which would impact customers' satisfaction. Therefore, increasing the scalability and efficiency of blockchain networks is critical for their use in tourism.

RQ6: The present blockchain technology is not able to handle the massive volume of tourism transactions.

3. Interoperability and Standardization

Another challenge in adopting blockchain in tourism is interoperability – the way various blockchain systems can speak to each other. With a range of blockchain platforms available, the lack of standardization can lead to complexity in integrating these systems. Standardization can also give assurance that blockchain applications across tourism can be ensured compatibility with existing systems and processes. Therefore, there should be an attempt at establishing industry standards for deploying blockchain in tourism.

RQ7: Lack of integration with existing systems makes it difficult to adopt blockchain technology for tourism.

4. Trust and Adoption by Industry Stakeholders

While blockchain can improve confidence in transactions, it may be challenging to secure the confidence of industry participants to tap into the technology. The majority of the tourism companies may not be willing to switch because they believe blockchain is complex and costly to adopt. Moreover, to make blockchain a success, there must be mass participation from all stakeholders. It is, therefore, imperative to raise awareness of the benefits of blockchain and its application across the industry.

RQ8: Because of the complexities, many in the tourism trade are unwilling to adopt blockchain technology.

6. Methodology

This study is mainly descriptive statistics and seeks to understand about blockchain in tourism. Data is collected through primary and secondary sources. The primary data is collected using Google Form for the survey. In this research, the authors use Likert Scales where 1= Strongly Disagree and 5= Strongly Agree. It also forms the foundation of secondary studies as a methodological basis for research. The authors reviewed and analyzed various existing literature such as research articles, journals, and books, highlighting blockchain in tourism, which the authors considered as the methodological basis for research. Using SPSS 25 and MS Excel 2019, the analysis of the data will, therefore, provide the findings of this study. Moreover, researchers apply unique data collection techniques are following.

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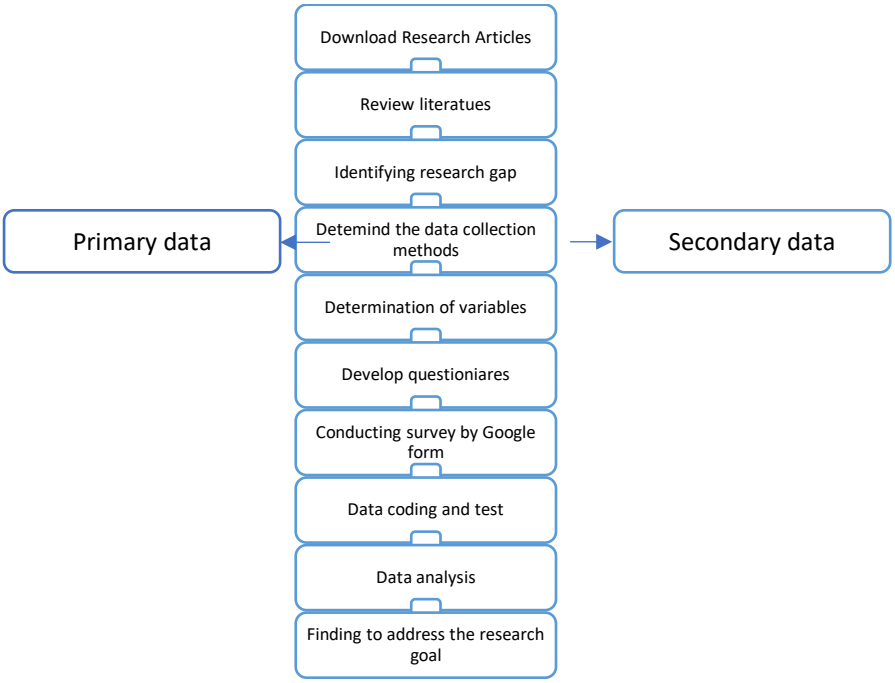


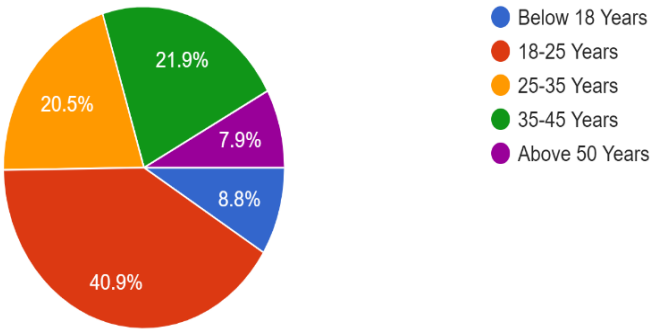
Source: Developed by corresponding author's

Fig.4. Data collection techniques and methods

7. Results and Discussion

7.1. Demographic profiles

A survey questionnaire was developed to gather data from the population. Only 215 respondents took part in the survey. The survey questionnaire was sent to randomly and collect data. The following table summarizes the demographic profiles of respondents:



The figure 5, represent the finding the frequency and proportion of respondents' ages. Analysis of the figure indicates that below 18 is 19 (8.8%), 19-25 is 88 (40.9%), 26-35 is 44 (20.5%), 36-45 is 47 (21.9%) and 50-up is 17 (7.9%). The total number of respondents is 215.

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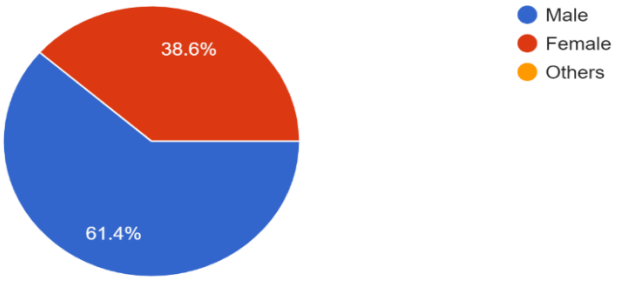
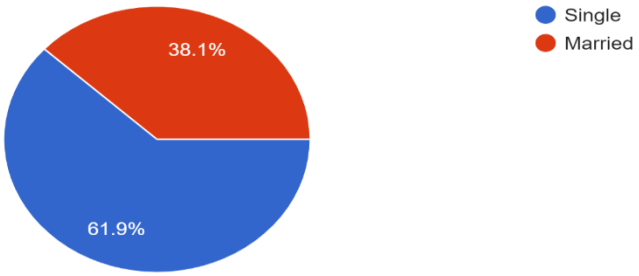
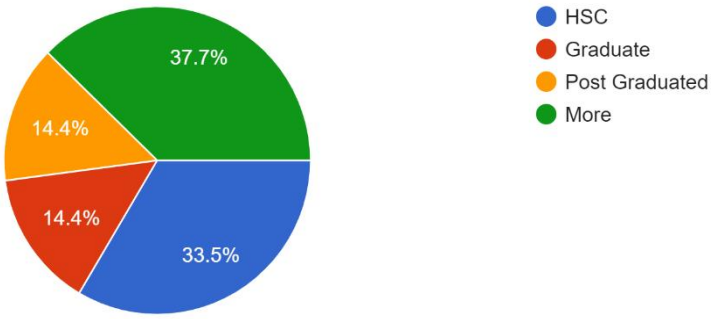


The figure 6, represents the finding the frequency and proportion of respondents' genders. Analysis of the figure indicates that males are 132 (61.4%) and females are 83 (38.6%). The total number of respondents is 215.



The figure 7, represents the finding the frequency and proportion of respondents' marital status Analysis of the figure indicates that single is 133 (61.9%) and married is 82 (38.1%). The total number of respondents is 215.



The figure 8, represents the frequency and proportion of respondents' educational qualifications. Analysis of the figure indicates that HSC is 54 (33.5%), graduate is 31, post graduate 31, and more is 81 (37.7%). The total number of respondents is 215.

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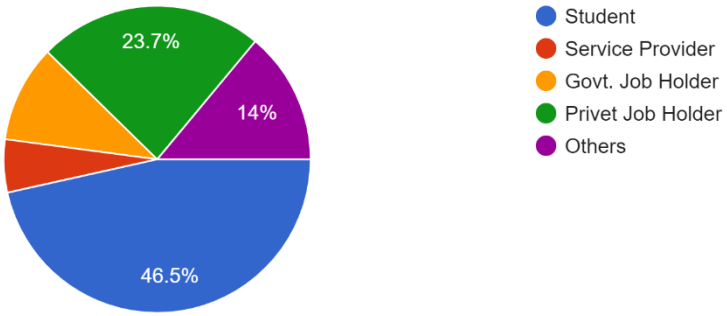
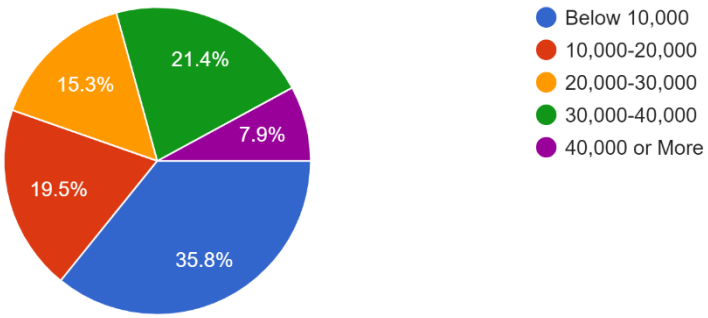


The figure 9, represent the frequency and proportion of respondents' occupation. Analysis of the figure indicates that student are 100 (46.5%), the service provider is 12, Govt. Job Holder is 22, Privet Job Holder is 51 and others are 30 (14%). The total number of respondents is 215.



The table 10, represent the frequency and proportion of respondents' income. Analysis of the figure indicates that below 10,000 is 77 (19.5%); 10,000-20,000 is 42; 20,000-30,000 is 17; 30,000-40,000 is 33 and 40,000 or more is 17 (7.9%). The total number of respondents is 215.

7.2. Reliability Test (Using Cronbach's Alpha Technique)

The relevance of the data was evaluated by utilizing the Cronbach's alpha statistics obtained from processing the data set. The following shows reliability analysis through the technique of Cronbach Alpha:

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.893	.894	8

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Source: Cronbach's Alpha technique (SPSS 25).

Table 1: Reliability Test.

The Cronbach's Alpha test was employed to calculate and confirm the consistency of the items (Zikmund and Babin, 2020). A Cronbach's Alpha score of 0.70 or higher is considered acceptable for any exploratory study to ensure the reliability of the data (Malhotra, 2010). As per the results of the study, the reliability score of the 8 items identified stands at .893, indicating that the data is highly reliable.

7.3. Descriptive Statistics

Descriptive statistics is a term that refers to measures that describe and present data meaningfully such that the underlying information is much easier to interpret. Among measures of central tendency, the Mean or average method is more popular for indicating the center of distribution (Malhotra, 2010). Standard deviation is a term used to observe how the data varies from the mean value (Boone, H.N. and Boone, D.A., 2012). They represent 5-Point Scale Mean Classification. They indicate 1.00-1.80 is strongly disagree; 1.81-2.60 is disagree; 2.61-3.40 is neural; 3.41-4.20 is agree; 4.21-5.00 is strongly agree.

Descriptive Statistics	Mean	Std. Deviation
RQ1: Blockchain enables secure, tamper-proof transactions in tourism	4.67	.640
RQ2: Blockchain supports faster and efficient processing of tourism payments	4.34	.744
RQ3: Blockchain can provide better coordination among hotels, airlines, and travel agencies	4.57	.745
RQ4: Tourist information can be securely shared with related parties using blockchain	4.56	.687
RQ5: Governments should develop policies to support blockchain in tourism	4.40	.696
RQ6: The present blockchain technology is not able to handle the massive volume of tourism transactions	4.62	.651
RQ7: Lack of integration with existing systems makes it difficult to adopt blockchain technology for tourism	4.63	.627
RQ8: Because of the complexities, many in the tourism trade are unwilling to adopt blockchain technology	4.58	.792

Source: (SPSS 25)

Table 2: Descriptive Statistics

Table 2, It was a table of descriptive statistics that aimed to communicate the Mean and standard deviation estimates for the variables. The Mean value of other variables such as

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RQ1: Blockchain enables secure, tamper-proof transactions in tourism is 4.67 that indicates strongly agree with statement.
RQ2: Blockchain supports faster and efficient processing of tourism payments is 4.34 that indicates strongly agree with statement.
RQ3: Blockchain can provide better coordination among hotels, airlines, and travel agencies is 4.57 that indicates strongly agree with statement.
RQ4: Tourist information can be securely shared with related parties using blockchain is 4.56 that indicates strongly agree with statement.
RQ5: Governments should develop policies to support blockchain in tourism 4.40 that indicates strongly agree with statement.
RQ6: The present blockchain technology is not able to handle the massive volume of tourism transactions is 4.62 that indicates strongly agree with statement.
RQ7: Lack of integration with existing systems makes it difficult to adopt blockchain technology for tourism 4.63 that indicates strongly agree with statement.
RQ8: Because of the complexities, many in the tourism trade are unwilling to adopt blockchain technology is 4.58 that indicates strongly agree with statement.

Discussion

There exists a sunk-alike consensus among the participants on the ability of blockchain technologies to secure transactions (RQ1), making payments faster (RQ2), and performing functions when there exists a coordination problem amongst tourism actors (RQ3). These have been global trends with blockchain being one such technology that ensures transparency and pushes the third-party intermediaries almost to extinction. Conversely, technical aspects such as scalability (RQ6) and interoperability (RQ7) are common concerns in all areas and so require advancements in technology.

The resistance of stakeholders (RQ8) appears as one of the major barriers; indeed, while benefits are recognized, the industry does not ensure acceptance due to perceived complexity. This contradiction lets one feel that awareness and ease of use are the two factors germane to adoption. Appealing for government support (RQ5) gives way to the need for an enabling environment de-risking and rewarding innovation.

8. Contributions

This study presents several remarkable contributions to academy as well as the actual field of travel and tourism with regard to blockchain technology, especially in the context of a developing nation such as Bangladesh. Firstly, this study addresses a serious oversight in the body of literature by presenting empirical data on the perceptions of different stakeholders concerning the adoption of blockchain in tourism. Up until this point, most of the global debate on blockchain has focused on developed economies. The study provides a localized perspective taking into consideration the distinctive opportunities and barriers existing in Bangladesh's tourism sector.

Secondly, concerning theoretical contribution, the study integrates key dimensions of the benefits and constraints of blockchain into a framework for academic reference in future research. Organizing stakeholder perceptions into themes with security, transparency, supply

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chain efficiency, and legal barriers as the backdrop enables creation of a model that could be replicated elsewhere in other emerging markets. This study fulfills a practical function of giving data-driven recommendations for use by policymakers and industrialists in charting a digital strategy. The identification of regulatory uncertainty or lack of technological readiness as major challenges points to some areas that require possible intervention. The use of a valid methodological approach, together with a high Cronbach's alpha reliability score and descriptive statistical analysis, bolsters the validity and reliability of the findings.

9. Recommendations

1. Policy Making: Governments need to develop clear regulatory frameworks to support the adoption of blockchain in the field of tourism, so as to curb any legal ambiguities and encourage innovation.

2. Collaboration within the Industry: All stakeholders comprising hotels, airlines, and travel agencies should work together in evolving standardized blockchain solutions for the sake of interoperability.

3. Awareness Campaigns: Educational activities and pilot projects can dispel the myth around blockchain and provide avenues for adoption to discuss and dispel doubts about its supposed complexity and cost constraints.

4. Scalability Solutions: It is to be ensured that adequate finances go toward research and development in the area of making blockchain scalable to handle high volumes of transactions as found in tourism.

5. Public-Private Partnership: The government can partner with private enterprise in ensuring fast integration of blockchain with shared resources and expertise.

10. Acknowledgment

The researcher would like to thank my (corresponding author’s) academic supervisor for his advice and insightful thoughts this research study.

11. Conflict of interest

This article's publication does not present any conflicts of interest. For this project, no outside funding has been obtained.

12. Conclusion

Blockchain adoption in travel and tourism in Bangladesh can bring modernity to the whole system with respect to transparency, operational efficiency, and customer satisfaction. The empirical findings confirmed that blockchain is, according to major stakeholders, suitable for making trustful payments, supply-chain coordination, and information protection during transactions. However, there exist bottlenecks, including regulatory, technical, and even perceptual. Major trouble with blockchain adoption in tourism will be seen in multi-stakeholder partnerships, technological readiness, and clear regulatory framework. If these roadblocks are

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not solved, then most of the benefits to the infrastructure of tourism will be left unsupported by blockchain applications.

References

[1] Abooleet, S., & Kinnett, S. (2023). A Systematic Review of Blockchain-based Loyalty Programs. *Proceedings of the 56th Hawaii International Conference on System Sciences*, 5323-5332. https://hdl.handle.net/10125/103284

[2] Ahmad, M. S., & Shah, S. M. (2021). Moving Beyond the Crypto-Currency Success of Blockchain: A Systematic Survey. *Scalable Computing: Practice and Experience*, 22(3), 321–346. doi:10.12694cpe.v22i3.1853

[3] Ali, K., & Johl, S. K. (2022). Soft and hard TQM practices: Future research agenda for industry 4.0. *Total Quality Management & Business Excellence*, 33(13-14), 1625-1655.

[4] AlShamsi, M., Al-Emran, M., & Shaalan, K. (2022). A Systematic Review on Blockchain Adoption. *Applied Sciences* (Basel, Switzerland), 12(9), 4245. doi:10.3390/app12094245

[5] Antoniadis, I., Spinthiropoulos, K., & Kontsas, S. (2020). Blockchain applications in tourism and tourism marketing: A short review. Strategic Innovative Marketing and Tourism. In A. Kavoura, E. Kefallonitis, & P. Theodoridis (Eds.), *Strategic Innovative Marketing and Tourism. Springer Proceedings in Business and Economics (*pp. 375–384). Springer. doi:10.1007/978-3-030-36126-6_41

[6] Arbatskaya, E., & Khoreva, L. (2021). Blockchain as an innovative digitalization achievement in logistics of eco-tourism. *E3S Web of Conferences*, 258. https://doi. org/ doi:10.1051/e3sconf/202125802016

[7] Balasubramanian, S., Sethi, J. S., Ajayan, S., & Paris, C. M. (2022). An enabling Framework for Blockchain in Tourism. *Information Technology & Tourism*, 24(2), 165–179. doi:10.100740558-022-00229-6

[8] Bolici, F., Acciarini, C., Marchegiani, L., & Pirolo, L. (2019). Blockchain acceptance and adoption in the tourism industry. *Conference Proceedings*, 43-56.

[9] Boone, H.N. and Boone, D.A. (2012). Analyzing Likert Data. *The Journal of Extension*, 50, 1-5. https://joe.org/joe/2012april/tt2.php

[10] Chang, M., Arachchilage, C. S. M. W., Kim, M., & Lim, H. (2022). Acceptance of Tourism Blockchain Based on Utaut and Connectivism Theory. *SSRN Electronic Journal*. doi:10.2139/ssrn.4017406

[11] Cobanoglu, C., Dogan, S., Berezina, K., & Collins, G. (2021). *Hospitality and Tourism Information Technology*. USF M3 Publishing, LLC. https://doi.org/ doi:10.5038/9781732127593

[12] Das. S. Rout. J. Priyadarshini. R. Mishra. M. (2022). A Comparative Analysis of the Consensus Algorithms in Blockchain Technology. SSRN. Retrieved from doi:10.2139/ ssrn.4091413

[13] Demirel, E., Karagöz Zeren, S., & Hakan, K. (2021). Smart contracts in tourism industry: A model with blockchain integration for post pandemic economy. *Current Issues in Tourism*, 1–15. DOI:10.1080/13683500.2021.1960280

[14] Ertemel, A. V. (2018). Implications of Blockchain Technology on Marketing. *Journal of International Trade. Logistics and Law*, 4(2), 35–44.

Power System Technology
ISSN:1000-3673
Received: 16-03-2025 Revised: 05-04-2025 Accepted: 22-05-2025

[15] Halkiopoulos C., Antonopoulou H., Kostopoulos N., (2023). "Integration of blockchain technology in tourism industry", *Tourism, Travel, and Hospitality in a Smart and Sustainable World, Springer Proceedings in Business and Economics,* pp 353-368, [Online] DOI: 10.1007/978-3-031-26829-8_22

[16] Hassija, V., Zeadally, S., Jain, I., Tahiliani, A., Chamola, V., & Gupta, S. (2021). Framework for determining the suitability of blockchain: Criteria and issues to consider. *Transactions on Emerging Telecommunications Technologies,* 32(10). Advance online publication. doi:10.1002/ett.4334

[17] Hossain, M. S. (2025). Sustainable Ecotourism in Bangladesh: A SWOT Analysis of Ecotourism Destinations. *International Journal of Multidisciplinary Research and Growth Evaluation*, *6*(2), 1146–1163. https://doi.org/10.54660/.ijmrge.2025.6.2.1146-1163

[18] Hossain, M. S., Khatun, M. P., Taskin, T., Sany, M. K. A., & Hossain, M. M. (2025). Opportunities and Challenges of gastronomy in tourism and Hospitality industry: A Conceptual Study on Bangladesh. International Journal of Research and Innovation in Social Science, IX(I), 1787–1799. https://doi.org/10.47772/ijriss.2025.9010146

[19] Hossain, M. S., Sheikh, P., & Islam, P. (2025). The Role of Social Media Marketing in the Tourism and Hospitality Industry: A study on Bangladesh. *American Journal of Tourism and Hospitality*, *3*(1), 14–23. https://doi.org/10.54536/ajth.v3i1.4082

[20] Hossain, S., Gain, N., & Hossain, S. (2025). The role of the internet in the tourism and hospitality industry: An empirical study on Kushtia District, Bangladesh. *Research Journal in Business and Economics.*, *3*(1), 22–30. https://doi.org/10.61424/rjbe.v3i1.232

[21] Hossain, S., Sheikh, P., Islam, P., & Sany, K. A. (2025). Enormous Benefits of the Blue Economy and Blue Tourism (Coastal and Marine) Destinations in Bangladesh: A Conceptual Study on Bangladesh. *Research Journal in Business and Economics*, *2*(1), 25–39. https://doi.org/10.61424/rjbe.v2i1.170

[22] Hughes, A., Park, A., Kietzmann, J. and Archer-Brown, C. (2019), "Beyond Bitcoin: what Blockchain and distributed ledger technologies mean for firms", *Business Horizons,* Vol. 62 No. 3, pp. 273-281.

[23] Khan, S., Kaushik, M.K., Kumar, R. and Khan, W. (2023). Investigating the barriers of blockchain technology integrated food supply chain: a BWM approach. *Benchmarking: An International Journal*, 30 (3), pp. 713-735. https://doi.org/10.1108/BIJ-08-2021 0489

[24] Kwok, A. O., & Koh, S. G. (2019). Is blockchain technology a watershed for tourism development? *Current Issues in Tourism,* 22(20), 2447-2452.

[25] Kwok, A.O. and Koh, S.G. (2019), "Is blockchain technology a watershed for tourism development?", *Current Issues in Tourism,* Vol. 22 No. 20, pp. 2447-*2452.*

[26] Malhotra, N. K. (2010). Marketing Research: An Applied Orientation (6th Ed.). Upper Saddle River, NJ: PearsonPrenticeHall,Pearsonhttps://www.scirp.org/reference/referencespapers?referenceid=2989267.

[27] Mofokeng, N. E. M., & Matima, T. K. (2018). Future tourism trends: Virtual reality based tourism utilizing distributed ledger technologies. *African Journal of Hospitality, Tourism and Leisure*, 7(3), 1-14.

Power System Technology
ISSN:1000-3673
Received: 16-03-2025 Revised: 05-04-2025 Accepted: 22-05-2025

[28] Nam, K., Dutt, C. S., Chathoth, P., & Khan, M. S. (2021). Blockchain technology for smart city and smart tourism: Latest trends and challenges. *Asia Pacific Journal of Tourism Re*search, 26(4), 454-468.
[29] Pilkington, M. (2016). Blockchain technology: principles and applications. In Olleros, F. A. & Zhegu, M. (Eds.) *Research handbook on digital transformations* (pp. 225-253). Edward Elgar Publishing.
[30] Pilkington, M., Crudu, R., & Grant, L. G. (2017). Blockchain and bitcoin as a way to lift a country out of poverty-tourism 2.0 and e-governance in the Republic of Moldova. *International Journal of Internet Technology and Secured Transactions*, 7(2), 115-143.
[31] Rashideh, W. (2020), "Blockchain technology framework: current and future perspectives for the tourism industry", *Tourism Management*, Vol. 80, p. 104125.
[32] Sharma, M., Sehrawat, R., Daim, T., & Shaygan, A. (2021). Technology assessment: Enabling blockchain in hospitality and tourism sectors. *Technological Forecasting and Social Change*, 169, 120810.
[33] Thees H., Erschbamer G., Pechlaner H., (2020). "The application of blockchain in toursim: Use cases in the tourism value system", *European Journal of Tourism Research*, pp 1-21, [Online] DOI: 10.54055/ejtr. v26i.1933
[34] Treiblmaier, H., & Önder, I. (2019). The impact of blockchain on the tourism industry: A theory-based research framework. *Business Transformation through Blockchain*: Volume II, 3-21.
[35] Vacchio, E. D., & Bifulco, F. (2022). Blockchain in Cultural Heritage: Insights from Literature Review. *Sustainability (Basel),* 14(4), 2324. doi:10.3390u14042324
[36] Valeri, M. and Baggio, R. (2021), "A critical reflection on the adoption of Blockchain in tourism", *Information Technology and Tourism*, Vol. 23 No. 2, pp. 121-132.
[37] Varelas, S., Georgitseas, P., Nechita, F., & Sahinidis, A. (2019). Strategic Innovations in Tourism Enterprises Through Blockchain Technology. In A. Kavoura, E. Kefallonitis, & A. Giovanis (Eds.*), Strategic Innovative Marketing and Tourism* (pp. 885–891). Springer International Publishing. doi:10.1007/978-3-030-12453-3_102
[38] Willie, P. (2019), "Can all sectors of the hospitality and tourism industry be influenced by the innovation of blockchain technology?", *Worldwide Hospitality and Tourism Themes*, Vol. 11 No. 2, pp. 112-120.
[39] Willie, P. (2019). Can all sectors of the hospitality and tourism industry be influenced by the innovation of blockchain technology? *Worldwide Hospitality and Tourism Themes.*
[40] World Travel & Tourism Council (WTTC). (2020). *Economic impact reports*. Retrieved from https://wttc. Org
[41] Yaga, D., Mell, P., Roby, N., & Scarfone, K. (2019). *Blockchain technology overview*. arXiv preprint arXiv:1906.11078.
[42] Zheng, Z., Xie, S., Dai, H., Chen, X., & Wang, H. (2017, June). An overview of blockchain technology: Architecture, consensus, and future trends. *IEEE International Congress on Big Data* (BigData congress), 557-564.
[43] Zikmund, Ben Lowe, Steven D'Alessandro, Barry J. Babin (2020). Edition, 5. Publisher, Cengage Learning, 2020. ISBN, 0170288803, 9780170288804. Length, 650 pages