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Blockchain technology-based business model: a case study of travel sites

Jian Ming Luo[1], Zong Wei Hu[2*]

[1] School of Liberal Arts, Macau University of Science and Technology, Macau, China
[2] Faculty of International Tourism and Management, Macau University of Science and Technology, Macau, China

E-mail: Zoneyviin@163.com

Abstract

Using emerging technologies is considered a source of competitiveness for the larger travel and tourism industry. One of these is blockchain technology (BCT), which is a disruptive technology being applied to the travel and tourism industry. However, a proper framework explaining how the tourism industry uses BCT remains to be established. This study uses the case study of travel websites, and qualitatively studies the Reports and Blogs data of Travala.com, LockTrip and XcelTrip. Researchers, based on the Resource-Based View (RBV), determined that blockchain technology can bring resources to websites in the areas of Products, Marketing, Financial Transactional Factors, and Customer and Supplier Relationships. The technical characteristics of blockchain technology can be applied across various departments. Building upon this, we proposed a business model and made certain theoretical contributions.

Keywords: Blockchain Technology (BCT); Travel and Tourism Industry; Business Models; Resource Based View (RBV)

1. Introduction (Section Heading)

Innovation plays an increasing role in the service sector, especially in the tourism industry and is one of the industries which most frequently use technological innovation (Law, Buhalis, & Cobanoglu, 2014). The emergence of strategies and competitiveness herein also depends on technological innovation— the rapid development of tourism in the past two decades years largely hinged on the use of Internet technology (IT) (Ramos & Rodrigues, 2013). IT has also increasingly contributed to the tourism industry in integrating both Internet and tourism (Buhalis, 1998). This shortens the time it takes for people to search for a wide range of products and subsequent obtain a better quality of information or product availability (Werthner & Klein, 1999).

Online travel agencies (OTAs) is a revolutionary model which emerged more than a decade ago and were seen as able to consolidate various travel resources and reduce the time it took for travel consumers to search and book (Oskam & Zandberg, 2016). Traditional OTA platforms put the original offline travel agency sales model onto an online platform, which then delivers itinerary information on a wider and more interactive communication to make it easier for guests to inquire and order (Manu, Sreejesh, & Paul, 2021). OTAs are widely regarded as having fundamentally transformed the travel and tourism industry, making significant contributions to its growth(Ampountolas & Chiffer, 2022).

Blockchain technology(BCT)has been highly recognised for its decentralised structure and nature (Sanka, Irfan, Huang, & Cheung, 2021) and is considered to be a disruptive core technology (Xu, Chen, & Kou, 2019). BCT is defined as a technology that is decentralized, disintermediated, immutable, open, transparent, collectively maintained, and provides a reliable database (Treiblmaier, 2018). Its pioneering and different business operating model (Madaan, Kumar, & Bhushan, 2020) has led to it being widely studied in various fields, such as economics (Hawlitschek, Notheisen, & Teubner, 2018; Tapscott & Tapscott, 2017; Treleaven, Brown, & Yang, 2017), medicine (Agbo, Mahmoud, & Eklund, 2019; De Aguiar, Faiçal, Krishnamachari, & Ueyama, 2020), supply chains (Durach, Blesik, von Düring, & Bick, 2021), education (Bhaskar, Tiwari, & Joshi, 2020) and industrial appliance (Alladi, Chamola, Parizi, & Choo, 2019)etc. In research on the travel and tourism industry, the decentralized nature of BCT has led to a focus on its negative impact on travel and tourism intermediaries(OTAs)(Rashideh, 2020; Treiblmaier, 2020).

On the other hand, Ampountolas and Chiffer (2022) has put forward a different perspective: OTAs can leverage BTC to maintain their influence in the industry and become the primary distribution channels for travel and tourism(Ampountolas & Chiffer, 2022). Blockchain technology is regarded as a valuable resource(Treiblmaier, 2018). As far as researchers are aware, there seems to be a lack of studies attempting to understand the specific resources that blockchain technology brings to the tourism and travel website industry. In order to address this research gap, this study conducted a case study of three tourism companies to investigate how travel and tourism websites use blockchain technology to disrupt the industry and maintain competitive advantage. The study aims to explain this phenomenon through the lens of the resource-based view theory. It elucidates how travel and tourism websites leverage blockchain technology to gain competitive advantage and provides a theoretical foundation for business development. The following research questions are proposed:

RQ1： What is BCT used for in the travel and tourism sector?

RQ2： How can travel and tourism companies use BCT to build their business models?

Given these research questions, this study explores the application of BCT in the travel and tourism industry through a case study. The objectives herein are as follows.

- Identify the application of BCT in the travel and tourism industry;
- Establish a travel and tourism business model based on BCT;
- Provide support for future travel and tourism companies using BCT.

2. Literature Review

2.1 BCT in travel and tourism studies

The current economic system could be transformed by BCT and cryptocurrencies (Swan, 2015). Clearly, numerous industries start experimenting with accepting BCT and cryptocurrency payments (Calvaresi, Leis, Dubovitskaya, Schegg, & Schumacher, 2019) along with other numerous applications in the tourism industry (Korže, 2019). BCT is well suited to meet this need— the rise of global tourism and the digitisation of transactions has increased the need for convenient, fast, free, and secure payment systems for consumers and travel agents(Liao & Yang, 2020).

An increasing amount of research is focusing on the application of BCT (BCT) in the travel and tourism industry. Researchers are exploring the use of BCT from various perspectives, including travel and tourism process optimization(Jain, Singh, Mishra, & Rana, 2023; Rashideh, 2020), consumer perspectives(Bodkhe et al., 2019; Önder & Treiblmaier, 2018; Radic, Quan, Ariza-Montes, Lee, & Han, 2022), cryptocurrency and token economics(Kwok & Koh, 2019; Sharma, Sehrawat, Daim, & Shaygan, 2021; Treiblmaier, Leung, Kwok, & Tham, 2021).Regarding the optimization of tourism processes, researchers believe that BCT can improve traditional tourism processes. The decentralization and distributed ledger of BCT may change the existing market structure and weaken intermediaries(Jain et al., 2023; Rashideh, 2020). From a consumer perspective, the potential role of BCT is to change the way travellers make payments(Radic et al., 2022). Önder and Treiblmaier (2018) argue that cryptocurrencies being widely used in the travel market facilitate the development of the C2C market and will lead to a new form of trustworthy evaluation. In addition, BCT can ensure the authenticity verification of online reviews for tourism products and services(Reyes-Menendez, Saura, & Filipe, 2019), track luggage(Muruganantham & Joseph, 2020), and enable transaction identification(Bodkhe et al., 2019). These measures enhance the benefits for consumers.

The application of BCT in cryptocurrency and token economics has received significant attention(Nakamoto, 2008; Treiblmaier et al., 2021). Some small island economies that rely on the travel and tourism industry are actively using cryptocurrencies(Kwok & Koh, 2019). According to Bulut (2022), initial coin offerings (ICOs) could bring a new financing method and system to the travel and tourism industry. The issuance of tokens can bring ample competitive advantages to the travel and tourism industry(Jain et al., 2023). Additionally, researchers have raised concerns about the social, technological, financial, and legal risks that may arise from the adoption of BCT in the travel and tourism industry(Sharma et al., 2021).

The existing research has thoroughly discussed the consumer perspective, decentralization, and the application of cryptocurrency and token economy. However, the adoption of BCT and cryptocurrencies for travel companies to revolutionize their business remains to be backed up by concrete success stories.

2.2 BCT and business model

A business model outlines how an organisation creates, delivers, and captures value (Bagnoli, Dal Mas, & Massaro, 2019). Innovation in business models creates economic value for shareholders is favoured (Gronum, Steen, & Verreynne, 2016). This includes the interests of other stakeholders who have also received attention

(Lozano, 2018; Wilson & Post, 2013). Emerging technologies are often the driving force behind economic, social, and business transformations (Cohen & Amorós, 2014) and are therefore critical to business model innovation. BCT is touted as one of the top five technologies (Panetta, 2018) given how it offers many possibilities for developing entirely new businesses and poses an immediate threat of disruption to traditional incumbents (Morkunas, Paschen, & Boon, 2019). Morkunas et al. (2019) anticipates that BCT will challenge existing business models and create new opportunities for value for a wide range of stakeholders.

More and more tourism companies claim to use BCT, and the academic community has also begun to develop business models for the use of BCT in the travel and tourism industry. Rashideh (2020) believes that the greatest impact of BCT on the travel and tourism industry is the level of decentralization. Through qualitative research methods, researchers identified five factors: decentralization, trust, security, cost reduction, and speed, which can improve the level of decentralization in the travel and tourism industry(Rashideh, 2020). Aghaei, Naderibeni, and Karimi (2021) has established a blockchain-based business model for the travel industry by focusing on four aspects: product and service, customer, infrastructure management, and finance. After analysing the benefits and risks of BCT for the travel and tourism industry, Jain et al. (2023) has identified several potential applications of BTC in travel and tourism, including smart tourism, digital payment, destination-focused tourism, token economy, traveller focuses, and tourism-related implementation and adoption.

Simultaneously, the role of BCT for data security and integrity has been certified (Sanka et al., 2021). Due to multiple contracts, number of transactions, and frequent data characteristics of the travel business, there exist many issues such as data security, disputes, and delays (Irannezhad & Mahadevan, 2020). Moreover, BCT benefits the tourism industry mainly through consumer experience (Kwok & Koh, 2019). The combined use of BCT and cryptocurrencies makes the travel transaction model simple, transparent, cost effective, and secure. Accepting the use of cryptocurrency builds up a well-established form of loyalty and offers certain travel discounts. Tourism companies using BCT can use cryptocurrency as a payment method to disintermediate, reduce transaction costs, and simplify payment for tourists (Rana, Adamashvili, & Tricase, 2022) which is critical for the entire process (Rashideh, 2020).

Undoubtedly, the impact of BCT on many traditional OTAs is significant(Rashideh, 2020). Researcher have put forward different viewpoints, Ampountolas and Chiffer (2022) suggests that OTAs can maintain their influence in the industry by integrating their online booking systems with BCT. However, it seems that there has not yet been any research or development of a framework for how travel sites can apply BCT.

2.3 Theory Foundation: Resource-Based View Theory

In the resource-based view (RBV), resources are considered the source of competitive advantage(Grant, 1991). In essence, RBV focuses on analysing the resources and capabilities that an organization currently possesses or can acquire to establish competitive advantage(Nandi, Sarkis, Hervani, & Helms, 2021). It provides a theoretical framework for examining the internal organizational potential to develop competitive advantage(Hagen, Risselada, Spierings, Weltevreden, & Atzema, 2022). Researchers recently found that the support of BCT can boost business performance (Lambourdiere & Corbin, 2020; Nandi, Nandi, Moya, &

Kaynak, 2020).Because BCT can be used as a resource to enhance an organization's competitive advantage (Singh, Mishra, Gupta, & Mukherjee, 2022; Treiblmaier, 2018).

In previous researches, numerous researchers have identified the competitive advantages offered by BCT in the travel and tourism industry. Rashideh (2020) proposed five advantages of applying BCT in the travel industry: decentralization, trust, security, cost reduction, and speed. Drawing on the main concepts of the business model canvas, Aghaei et al. (2021) explained how the travel industry utilizes BCT across four dimensions: product/service, customer aspects, infrastructure management, and finance. Despite numerous researchers identifying the competitive advantages that BCT can generate, there is still a lack of understanding regarding the resources brought about by BCT. This study aims to adopt a resource-based view theory to understand how travel websites apply BCT.

Previous studies have often conceptualized resources as a combination of tangible and intangible resources (Dwi, 2019; Galbreath, 2005; Mikalef & Gupta, 2021). In addition, factors such as human resources (Collins, 2021; Hagen et al., 2022; Progoulaki & Theotokas, 2010) and knowledge(Curado & Bontis, 2006; Sun, Shahzad, & Razzaq, 2022) are widely recognized as important resource elements. Some studies have started to adopt multidimensional approaches to measure resources. Six dimensions of company resources have been identified, including physical, financial, human intellectual, organizational, reputational, and technological resources (Julienti Abu Bakar & Ahmad, 2010).Hagen et al. (2022) highlighted the importance of physical resources, organizational resources, financial resources, and human resources for traditional marketing activities. The resource-based view theory predominantly describes resources as a crucial prerequisite for generating competitive advantage(Ganguly, 2022; Grant, 1991). This study aims to identify the resources that BCT can provide to travel websites to determine their competitive advantage. Conventional resources are conceptualized as tangible and intangible resources. We adopt this classical categorization and subsequently discuss it in detail.

- Tangible resources typically refer to the material assets that can be directly observed and quantified by a company (Galbreath, 2005). Tangible resources are considered essential for meeting the basic needs of target customers(Enright & Newton, 2004). Therefore, tangible resources are seen as important factors that influence customer experience(Hagen et al., 2022).

- Products: products are considered crucial resources for gaining a competitive advantage, as their features and advantages can help a company stand out in the market and attract consumers (Skordoulis et al., 2020). BCT is known for its important characteristic of decentralization (Treiblmaier, 2018), which can help blockchain-based travel websites establish heterogeneous products compared to traditional travel websites. This heterogeneity in products can quickly attract customers, thereby creating a competitive advantage (Dirisu, Iyiola, & Ibidunni, 2013; Sellitto, Camfield, & Buzuku, 2020).

- Intangible resources refer to the non-physical resources owned by a company that are often not directly observable or tangible (Galbreath, 2005). Intangible resources are generally considered important influencing factors for generating company value(Amit & Schoemaker, 1993; Galbreath, 2005; Hall, 1993). Therefore, in this study, we aim to identify the intangible resources generated by travel websites through the application of BCT: marketing, transactional resources, and customer/supplier relationships.

- Marketing: As resources do not possess self-promotion capabilities, marketing using BCT has become an important intangible resource in the current context (Collins, 2021). Similar to physical products, travel websites also require sufficient promotional means to enhance their visibility (Miller & Henthorne, 2007). This includes achieving higher click-through rates, which can subsequently lead to performance conversion. In terms of marketing strategies, traditional methods such as television advertisements and rebate campaigns are commonly used (Collins, 2021). With the integration of BCT, special incentive measures can be implemented to attract more visitors and encourage usage.

- Financial transactional factors: In the tourism industry, most financial transactions, such as remittances, are processed through banks or financial institutions, which are centralized entities or organizations(Laroiya, Saxena, & Komalavalli, 2020). This operational form is associated with high costs and low efficiency, as it typically involves complex processes and procedures for transaction verification and processing. Additionally, traditional transactions often require providing complex processes for verification, leading to the risk of information leakage or fund theft (Wang, Wang, Cao, Li, & Xiong, 2019). Globally, BCT is witnessing a revolution (Xu et al., 2019). Blockchain-based travel websites are generating a new intangible resource wherein the decentralized and encrypted nature of BCT ensures transaction security, speeds up transaction processes, and reduces costs (Treiblmaier, 2018).

- Customer and supplier relationships: Intangible resources refer to assets that cannot be directly observed or touched but can create value and competitive advantage for organizations (Galbreath, 2005). Customer/supplier relationships are intangible assets built on long-term cooperative relationships and good business performance(Gouthier & Schmid, 2003). They can help organizations obtain better trading conditions, provide high-quality products and services, and enhance customer/supplier trust in the websites. Through the traceability and transparency offered by BCT, transaction records can be publicly available and verified, significantly reducing information asymmetry (Treiblmaier, 2018). Additionally, the application of smart contracts contributes to building trust in customer/supplier relationships(Aghaei et al., 2021; Xu et al., 2019).

3. Methodology

Case study is a type of qualitative research (Jenner, Flick, von Kardoff, & Steinke, 2004). The method is widely used in the tourism industry (Çakar & Aykol, 2021). Case study investigates a contemporary phenomenon in a real-life context, especially when the boundaries between phenomenon and context are unclear (Jennings, 2001). During a specific period of time, researchers collect the contents of various data (Creswell & Creswell, 2017). Generally, diaries, statistics are seen as some of the documents which researchers may use (Wolff, 2004). A case study may be used as the research method if the following conditions are met: (a) when the main research question is a “how” or “why” question; (b) when the researcher has little control over the behavioural event; and (c) when the focus of the study is a contemporary phenomenon (Yin, 2014). Because the current study primarily aims to understand how the tourism industry can successfully apply BCT and establish a tourism business model based on it, a case study was used as the research method. Three travel companies that use BCT were selected for this study. They include Travala.com; LockTrip; and XcelTrip.

Tellis (1997) states that by using a case study approach, researchers can use data from multiple sources and examine details from the perspective of the participants. This is because case studies require multiple sources of data to describe and interpret the subject of the study to gain confidence (Stake, 2008). Triangulation of data can also provide more rigorous evidence and increase the internal validity of the data (Hoorani, Nair, & Gibbert, 2019; Luo & Lam, 2016). Therefore, the data herein was obtained from three sources: Travala.com(https://www.travala.com/); LockTrip(https://locktrip.com/) and XcelTrip(https://www.xceltrip.com/).

Firstly, the three aforementioned travel websites disclose their operational performance over a certain period through reports or blogs. The researchers screened and selected the relevant content from these reports and blogs. Secondly, like other qualitative studies that use secondary data, Nvivo11.0 was used to analyse the data from the three sources. Content analysis of text data. Text is encoded one by one and thus divided into meaningful units(Fan & Luo, 2022; Luo & Lam, 2016). Content analysis allows researchers to study text without the interference of any "a priori" theories or concepts(Luo & Ren, 2020; Luo, Fan, & Shang, 2022). By collecting and analysing this data, the researchers attempted to establish a conceptual framework to address several research questions, with the most important research question being how BCT is used in travel websites.

4. Results

The results shown in Table 1 were obtained through screening reports and blogs from blockchain tourism companies, and can be explained using the Resource-Based View theory.

4.1 Tangible resources

Products

Traditional forms of payment such as credit cards and PayPal rely on financial intermediaries, which are not conducive to building a stable ecosystem for travel and tourism websites. However, using native cryptocurrencies can help establish a stable ecosystem for the website. This can encourage holders to hold native cryptocurrencies for the long term, increase their value, and promote the platform's development. It also encourages more suppliers to join the blockchain travel platform.

> Travala (2017) *report: "……Founded in 2017 as a travel utility token, AVA enables travellers from around the globe to book various travel products and provides several incentives that encourage the use of the Travala.com platform, including discounts and loyalty rewards."*

In addition, decentralized tourism products have been established, providing a decentralized travel experience where travellers and suppliers can directly communicate and transact. In certain environments, travel and tourism websites can understand the genuine needs of customers without relying on intermediary organizations.

LockTrip (2020d) report: "*The system will gather all relevant information from hosts that have been on boarded through suppliers and enable custom logic to leverage on that asset. The main goal of this phase is to bypass the mainstream media as an expensive intermediary for establishing contact, and instead build a channel of direct communication.*"

Travala (2021a) explain: "*Upon validating both valuable synergies with the existing Travala.com platform and market demand for a decentralized home sharing platform……which will be connected by a new token called TRVL, aims to secure a direct supply of vacation properties to build a new world for the home-sharing economy — one that puts hosts and guests on an equal playing field with network operators."*

4.2 Intangible resources

Marketing

BCT brings more innovation and possibilities to customer relationships and supplier relationships in the tourism industry. In addition, the application of BCT in tourism website marketing is also significant and cannot be ignored. When it comes to token-based loyalty rewards, it usually refers to using tokens as a feedback mechanism to encourage user behaviour within a particular platform or ecosystem. Travel websites offer a certain number of tokens to their customers as a reward for making purchases, sharing, commenting, or participating in community activities.

Travala (2018b) shows: "Underpinned *by a token-powered incentivization economy which gives real rewards for valuable acts such as user referrals and key-opinion-leader content.*"

XcelTrip (2020) also shows: "Cash *Back offer is a user beneficial offer! Grab 15% cash back in terms of XcelToken Plus (XLAB) at $0.01 rate on every booking of flights and hotels, booked on both web and app of XcelTrip*."

On the other hand, NFT-based rewards refer to using non-fungible tokens as a reward mechanism. Unlike regular tokens, NFT tokens are a unique digital asset with a unique identifier and attributes for each token. In the travel industry, NFT tokens can be used to reward users for specific travel experiences, attraction tickets, or other unique travel products. Users can collect these NFT tokens on the platform to showcase their achievements and travel experiences.

Travala makes good use of this as Travala (2021b)"*The NFT program was conceived as a "Proof of Travel" concept: a blockchain-based record of a person's global travels booked via Travala.com.* "

Support for multiple cryptocurrency payments refers to travel websites accepting multiple different cryptocurrencies as a payment method to increase user choice and convenience. For example, users can use Bitcoin, Ethereum, or other cryptocurrencies for payments without worrying about currency conversion or international remittance issues. This can help travel websites attract more cryptocurrency users and increase the platform's globalization level.

XcelTrip (2023)supports: "the *payment of cryptocurrencies such as BTC, ETH, XLD, XLAB, USDT, BNB, XDC, LTC, BCH on the official website*."

Travala (2022) also claims: "*Travala.com is a champion of cryptocurrency adoption, accepting over 50 leading cryptocurrencies along with traditional payment methods.*"

LockTrip (2020b) report: "*The full list of supported payment methods is as follows: Maker's Dai (DAI); Circle (USDC);Bitcoin (BTC); Bitcoin Cash (BCH);Ethereum (ETH);Litecoin (LTC)* ."

Financial transactional factors

In the travel and tourism industry, payment security is a crucial element. BCT can provide a more secure payment solution for travel and tourism intermediary websites. Traditional payment methods usually require processing through centralized institutions such as banks or payment platforms, which can result in risks such as data leaks and hacker attacks. However, BCT can avoid the risks of centralized institutions through decentralized means. Moreover, with the existence of smart contracts, tourism participants can make payments more securely. Once the transaction conditions are met, smart contracts are self-executing code that can automatically execute predefined logic and are tamper-proof.

XcelTrip (2022) reports: "*Secure and seamless transactions due to the easy availability of data by the parties over the network. You don't need to worry about fraud, errors, or losing documents. Smart contracts secure the documents and ensure transparent transactions.*"

LockTrip (2020c) also states: "*Wallets created within our marketplace fully belong to users as we do not store the private keys on our servers. Only the users themselves have access. In the worst-case scenario of a breach, attackers would end up with encrypted files without the corresponding keys. This makes our service fundamentally secure.*

In traditional travel and tourism transactions, intermediaries usually required to process transactions. These intermediaries can increase transaction time and costs and may introduce security risks. However, BCT can avoid the interference of intermediaries by decentralizing the transaction process, directly connecting travellers and suppliers, and reducing human intervention in the transaction process, thereby improving transaction speed.

XcelTrip (2021a) asserts that: "*Blockchain thus enables a fair travel system with mutual benefits for both travellers and service providers.*"

LockTrip (2020a) shows *"LockTrip is a blockchain-based travel marketplace that allows users to save up to 60% on their bookings by cutting out middlemen.*"

In addition, each intermediary will charge a certain commission fee. These fees can become part of the cost of travel and affect the experience. BCT could reduce transaction fees by cutting out the middleman and reducing the number of transactions. This allows for more direct and efficient transactions between travellers and suppliers, while reducing intermediary and switching costs.

> XcelTrip (2021a) reports: *"Blockchain helps to connect travellers directly with the service providers through smart contracts. ……BCT helps to substitute middlemen, making travel cost-effective without any commissions. This will eventually result in lower prices for travel and payments.*"

Customer and supplier relationships

On traditional intermediary websites, information such as comments and ratings may be affected by fraud, rating manipulation, and malicious attacks, which can affect consumer decision-making and trust. To address these issues, BCT can provide a trustworthy verification and protection process for tourism information such as comments, ratings, and other forms. BCT can ensure that every user has equal rights and participation, and therefore guarantees the authenticity of comments.

> Travala (2018b) reports: "*Validated through blockchain-verified reviews for 100% feedback authenticity.*"

Traditional travel and tourism identity verification faces many challenges, including difficulty in verifying authenticity, high security risks, low verification efficiency, and risks associated with centralized institutions. These problems may lead to unfair and unreliable identity verification in the tourism industry. BCT can improve identity verification mainly because it can provide decentralized, tamper-proof, and transparent identity records. These records can help verify the authenticity, legality, and credibility of identities, thereby enhancing the security and efficiency of identity verification.

> XcelTrip (2021b) states: "*Blockchain inherently has the potential to transform processing and identifying travellers. …… Travellers can digitize their personal information, such as biometric data or citizenship cards, and share it with airports, hotels and government bodies before travelling globally*."

BCT can help travel and tourism websites improve reputation verification mainly because it can provide decentralized, tamper-proof, and transparent transaction records. These records can help verify the authenticity, legality, and credibility of transactions, thereby improving transaction reputation and security. These functions can help improve the efficiency, security, and credibility of tourism transactions, thereby enhancing the competitiveness of the entire tourism industry.

> Travala (2018a) reports: "*Trevalla is implemented on the NEO blockchain ……allows user and supplier reputation to be verified and be maximally-trusted*.

Overall, the results in Table 1 indicate that blockchain travel websites possess a range of unique and valuable resources and capabilities through their use of BCT. By leveraging these resources and capabilities, these websites are in a favourable position for innovation and the creation of new products.

Table 1. Blockchain Travel and Tourism sites: About the application of BCT

Recourse	Second-order	Description	Sites		
			A	B	C

Tangible resources	Products	Native cryptocurrency	√	√	√
		Decentralized products	√	√	√
Intangible resources	Marketing	Token based loyalty rewards	√		√
		Rewards based on NFT	√	√	
		Multiple cryptocurrency payments are supported	√	√	√
	Financial transactional factors	Guarantee payment security	√	√	√
		Speed up transactions	√	√	√
		Reduce transaction costs	√	√	√
	Customer and supplier relationships	Guarantee the authenticity of comments	√		√
		Authentication			√
		Reputation verification	√	√	√

5. Conclusion and discussion

This study examines how travel websites adopt BCT as a resource application. The researchers utilized the Resource-Based View (RBV) as the initial framework and conducted a qualitative analysis of reports and blogs from three successful blockchain-based travel companies to gain a deeper understanding of how these companies utilize BCT to build their resources. By identifying the impact of BCT on OTA organizations within the current industry, recommendations are provided for the appropriate utilization of BCT in the tourism sector. This section discusses the research findings and presents the corresponding theoretical contributions.

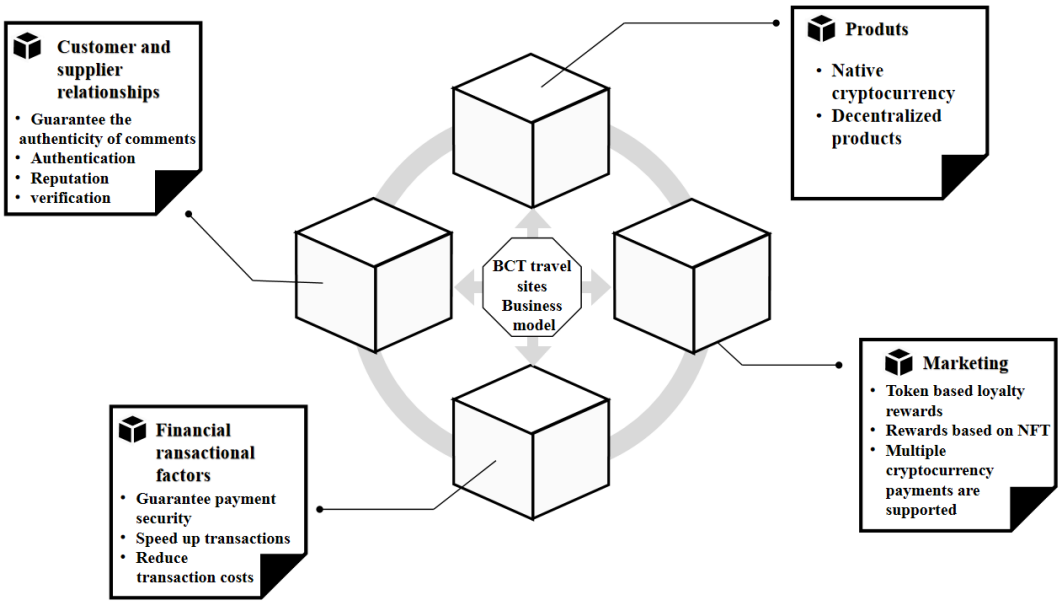

Figure 1 Tourism blockchain based business model

Previous studies have indeed suggested that BCT can serve as a resource for travel companies, bringing various benefits (Radic et al., 2022; Rashideh, 2020; Schmidt & Wagner, 2019). However, they have overlooked the specific dimensions in which travel websites apply BCT to gain differentiated resources. This study discovers that travel websites achieve notable effects in terms of products, marketing, finance, and customer/supplier relationships when applying BCT. This explanation addresses the first research question.

Firstly, in terms of products, the decentralization and application of cryptocurrencies brought about by BCT provide travel websites with distinctive products compared to traditional websites. This enables more efficient and direct transaction methods for travel products. In marketing, BCT can transform the promotion and advertising models of travel websites. Innovative forms such as using ETF and cryptocurrencies as loyalty rewards can attract more customers. In financial transactional factors, BCT can enhance the payment and settlement systems of travel websites. By utilizing cryptocurrencies and smart contracts, travel websites can achieve faster and more secure payment methods, reducing uncertainty and costs in the payment process. In terms of customer and supplier relationships, BCT can strengthen trust and collaboration between travel websites and suppliers. Through the distributed ledger and smart contract functionalities of blockchain, the reputation and credibility of customers and suppliers can be better verified and demonstrated, thereby increasing customer trust in suppliers.

In summary, when applying BCT, travel websites can gain differentiated resources in terms of products, marketing, finance, and customer/supplier relationships, thereby enhancing their competitiveness and business efficiency. Based on this, the second research question is addressed.

This study holds several theoretical significances. Previous research has established that BCT can be considered as a resource(Treiblmaier & Önder, 2019), but existing studies have not delved into a detailed understanding of these resources. The first major contribution of this paper is to identify the distinctive resources possessed by blockchain-based travel websites compared to conventional businesses. It explains how travel websites utilize BCT. Additionally, these distinctive resources are derived from certain characteristics of BCT (e.g., decentralization, smart contracts), which can help blockchain-based travel websites establish competitive advantages and bring new development opportunities to the travel industry. Similar viewpoints have been proposed by Treiblmaier (2018) and Rashideh (2020).Furthermore, the explanatory power of this study positions the Resource-Based View (RBV) as an appropriate framework for future theoretical development regarding the integration of BCT and the tourism industry. It confirms the applicability of traditional theoretical frameworks under BCT, building upon the research by Treiblmaier and Önder (2019) and Treiblmaier (2018).

This study has also presented some practical significance for the tourism industry. It emphasizes the application of BCT in travel websites. Previous studies have tended to focus on the potential of BCT in eliminating intermediaries (Rashideh, 2020). However, this study suggests that BCT can promote the development of travel and tourism websites. This finding aligns with similar research(Aghaei et al., 2021). The study identifies that the implementation of BCT can contribute to the product offerings, marketing strategies, financial transactional factors, as well as customer and supplier relationships in travel and tourism websites. The integration of BCT enriches the products of travel and tourism websites, which are decentralized. Moreover, novel marketing approaches, such as the utilization of ETFs, can be introduced.

Additionally, the transaction processes of travel websites will be streamlined, as BCT allows for direct transactions without the involvement of financial intermediaries, resulting in improved transaction speed and security. Lastly, the trustworthiness of customers and suppliers in travel and tourism websites does not need to be re-evaluated, as they can confidently select and engage with each other, fostering mutual trust. In conclusion, BCT has the potential to facilitate the development of the travel and tourism industry.

6. Limitation and future research

First, this article identifies a number of applications of BCT in the travel industry, but it remains uncertain whether this success story is suitable for different businesses. Particularly, there are some differences between each business which may lead to the failure of the business model.

Second, this paper focuses on the application of BCT and the construction of the model while largely ignoring the role of BCT in influencing financial performance. This should ultimately be reflected in the financial value of a successful business model, although the paper ignores this point.

Further, as the data source for this study is secondary data, time span and validity become key limitation issues. Therefore, this paper suggests that future research could be conducted on the application of BCT and the financial performance of tourism companies to explore the impact of technology application on financial performance. Data in the form of interviews or questionnaires can also be obtained for further studies which will subsequently expand the findings and results found herein.

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