MODUL UNIVERSITY
PRIVATE UNIVERSITY VIENNA

The impact of blockchain technology on consumer behavior in the hospitality industry.

Master Thesis submitted in fulfilment of the Degree

Master of Science

in Management

Submitted to Prof. Dr. Horst Treiblmaier

Amir Feras Sabha

1511078

Vienna, 31.08.2023

AFFIDAVIT

I hereby affirm that this Master's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

The thesis was not submitted in the same or in a substantially similar version, not even partially, to another examination board and was not published elsewhere.

03.10.2023

Date	Signature

ABSTRACT

The hospitality industry is slowly adapting to the rapid advancements of technology. In 2008, with the introduction of Bitcoin, blockchain technology began to emerge as a mysterious, confusing term that everyone was talking about. It is an invention that has found its place in many different industries and is expected to shift the hospitality sector to a new paradigm. It is important for decision-makers to learn and understand the upcoming changes and the implied potential benefits of blockchain technology. This research paper will explore these benefits and their implications on consumer behavior. Understanding the cognitive processes of consumers and how consumer actions can be influenced, could potentially offer a valuable competitive edge, especially in an emerging field. The key research question "How does blockchain technology impact consumer behavior in the hospitality industry?" covers a broad topic that can be further analyzed through other subsidiary research questions. Therefore, the goal of this research is to find possible impacts of blockchain technology on loyalty programs, payment systems, smart contracts, data privacy and other aspects that could influence consumer behavior in the hospitality industry. A quantitative research design (online survey) provides empirical data to answer the research questions and hypotheses. The results from the study indicate that customers are indeed more likely to prefer blockchain-based loyalty programs that offer better rewards and benefits. Furthermore, it appears that customers behavior is significantly influenced by the adoption of blockchain-based payment systems. Consumers highly value transparency, safety and rewarding payment systems. The study further confirms that blockchain technology influences credibility and trust of online reviews. This valuable information could help hospitality services, who are increasingly under pressure of fake or harmful reviews, to regain control over their reputation and improve customer trust. In addition, the results also suggest to adopt blockchain-based inventory and supply management to enhance transparency and to provide accurate real-time information.

By analyzing the underlying relationships of blockchain technology, consumer behavior and their applications in the hospitality industry, this thesis contributes to the growing science of blockchain technology adaptation in the hospitality management industry. It provides empirical evidences and summarize the relevant literature to possibly reshape the hospitality industry in future.

ACKNOWLEDGEMENTS

Sincere acknowledgments to my supervisor Prof. Dr. Horst Treiblmaier, for his patience, guidance, and support throughout the whole thesis.

A special and heartfelt thank you to my parents for supporting me and helping me graduate. Thank you for your endless patience, thank you for helping me to get through the tough times and thank you for everything you did for me. Your love and support made me the person I am today.

I would also like to thank my best friends and my family for their motivational and emotional support. Furthermore, I would like to thank my dog, for keeping me active to take care of my physical well-being through our daily walks.

Finally, my biggest gratitude to my partner who was nothing but supportive and who never stops believing in me.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

BT - Blockchain technology

LP - Loyalty program(s)

1 INTRODUCTION

1.1 Background of the Thesis

Technology is constantly shaping various businesses and has already arrived at the hospitality industry. The era of digitalization and technology has already shifted paradigms of how businesses operate. Tourism, in general, and the hospitality industry in particular, have not been spared from the immanent need to change and to adapt to new circumstances since advances in technology also impact consumer expectations. Thus, for businesses to remain competitive, it is crucial for them to constantly aim to explore innovative and suitable ideas.

The boom of cryptocurrencies has shed a light on the underlying technologies. The most popular cryptocurrencies facilitate blockchain technology. This decentralized approach to data management and storage provides unforeseen opportunities in unlocking new realms of efficiency, safety, transparency, customer satisfaction and innovation. In fact, numerous different industries have embraced blockchain technology. Banking and finance were among the first to recognize the potential of blockchain technology, claiming the title of “early adopters”. Still, considering the speculative nature of how cryptocurrencies have been utilized in the recent past, blockchain technology has become a very controverse issue, raising many concerns despite many people, even critics, lacking a clear understanding of its fundamentals and possibilities (Nam et al., 2019).

The current state of considerable ignorance in the general population regarding blockchain technology does not negate its potential to provide necessary solutions to future problems. Considering that increasing digitalization entails, among other things, a massive amount of data that must be properly managed and stored, blockchain technology can provide adequate answers. In tourism blockchain technology might be used, for example, to improve booking and reservation procedures, to increase security and safety or to personalize costumer experience.

However, there is a lack of research on the possible applications of blockchain technology and the tourism industry (Nam et al., 2019). To understand how blockchain technology can be used in the tourism industry, it is necessary to focus on the possible impacts. Understanding how consumer behavior in the hospitality industry is influenced by the adoption of blockchain technology will, thus, provide insight for tourism overall.

1.2 Aim of the Thesis

The aim of this thesis is to explore the impact of blockchain technology on consumer behavior, with specific focus on its potential in the hospitality industry. This research intends to get a comprehensive list of opportunities and challenges that arise by implementing blockchain, leading to a deeper understanding of how blockchain can shape the future of modern tourism. For this, the primary focus is to examine the already existing, as well as possible impact on consumer behavior of hospitality businesses using blockchain technology in various areas. Conclusions drawn from this research can provide reasons both in favor of and against the usage of blockchain technology in the hospitality industry. Lastly, this thesis shall be a contribution to filling the currently existing literature gap concerning blockchain technology in the tourism industry.

1.3 Outline of the Thesis

To provide a detailed analysis of the impact of blockchain technology on consumer behavior in the hospitality industry, this thesis takes the following steps in the order as shown. The literature review aims to provide an overview of the current state of research regarding the three main topics of this thesis, namely “hospitality”, “consumer behavior” and “blockchain technology”. This shall be the foundation for understanding the subsequent survey and discussion of its results. The methodology section states and explains the research approach of this thesis. Furthermore, the data analysis shows the research results, so that they can be used for the testing of the hypotheses outlined at the beginning of this thesis. The findings of the research are then discussed and further analyzed. Ultimately, this thesis concludes by providing not only a conclusion but also an outlook, as well as implications for the hospitality industry and future research.

1.4 Research questions

The primary goal of this thesis is to provide a solution to the question, "How does blockchain impact consumer behavior in the hospitality industry?" The main goal will be further analyzed using four sub research question described below.

Loyalty programs are an important tool for organizations to use to bind customers and strengthen their loyalty (Utz et al., 2023). Loyalty programs provide a variety of benefits, including rewards, personalization, and improved value. While the foundation of loyalty programs is actually highly useful, execution frequently leads to additional issues. Low redemption rates, significant time delays, high expenses, and low client retention are all challenges for organizations (Fromhart & Therattil, 2023). Blockchain technology may provide a solution to these challenges by allowing loyalty tokens to be exchanged with other programs, eliminating inefficiencies, and lowering costs, removing the need for intermediaries, and

improving the overall consumer experience (Fromhart & Therattil, 2023). Blockchain-based loyalty programs can also help to attract and retain new customers by offering significantly more benefits than traditional loyalty programs. Various customer behavior theories investigate the primary motivators behind loyalty programs. The Expectancy-Value Theory, for example, explains how perceived benefits values influence customer behavior (Conner & Armitage, 1998). As previously stated, blockchain technology has the potential to improve these advantages, potentially leading to increased customer engagement. To continue, blockchain technology offers many benefits for payment processes such as increased transparency, safety, and security in transactions (Gunter and Önder, 2020). Preventing fraud, scams, and unsafe transactions may benefit customers' experiences and spending behavior. Another integral component of blockchain technology to revolutionize the hospitality industry, are the so-called smart contracts. These are digital agreements, written in computer code, that automatically execute if certain criteria are met (IBM, n.d.). The sheer endless possibilities that smart contracts can offer could also potentially influence consumer behavior.

Furthermore, it is worth mentioning that online reviews and ratings play a crucial role on consumers' perception of trust and purchasing behavior (Sigalar, 2017). Blockchain technology can enhance the credibility and reliability of these reviews by ensuring transparency and immutability (Bickart & Schindler, 2001). Based on these information, four important research questions are formulated:

RQ 1: How does the integration of blockchain technology in loyalty programs impact customer engagement?

RQ 2: To what extent does blockchain-based payment systems influence the spending behavior of customers in the hospitality industry?

RQ 3: How does the integration of smart contracts in hospitality operations impact consumer experience and expectations?

RQ 4: How does the adoption of blockchain technology affect the credibility of consumers reading online reviews and ratings?

2 LITERATURE REVIEW

This section incorporates detailed information on the most recent and relevant literature in the fields of blockchain technology, consumer behavior, and the hospitality industry. Furthermore, the literature review connects potential theories and research papers to collect useful information on the effects of blockchain technology on consumer behavior.

2.1 Hospitality Industry

Tourism is estimated to have contributed 5.5 percent of global GDP in 2019 and employed 272 million people worldwide. For the ninth consecutive year, the industry grew by 3.5 percent, outpacing global economic growth. Notably, prior to the COVID-19 pandemic, tourism accounted for one out of every four new jobs created over a five-year period (Erol et al., 2022). The COVID-19 pandemic, on the other hand, caused a massive economic downturn in global tourism. In fact, the tourism industry's recovery is expected to be slower than the average expected recovery since the pandemic (Škare et al., 2021).

Tourism and hospitality tourism are related but distinct industries with many overlaps, as both involve many similar sectors such as hotels, restaurants, travel, events, and entertainment (Glion, 2023). In fact, hospitality is a component of the tourism industry in the sense that it provides tourists with services and amenities. Tourism, on the other hand, is a broader industry that includes transportation, lodging, and attractions (Glion, 2023).

“Hospitality” refers to providing friendly and welcoming treatment to guests, customers, or visitors (Lashley & Morrison, 2001). Given this, the hospitality industry offers services such as lodging, food and beverage, and entertainment in establishments like hotels, resorts, and restaurants (Lashley & Morrison, 2001). For purposes of this thesis, this understanding of “hospitality” is applied.

Exceptional customer service is a key focus of the hospitality industry (Lashley & Morrison, 2001). Therefore, understanding consumer behavior, including cultural background, personal values, and past experiences, is even more crucial for success in the hospitality industry (Taheri et. al., 2021). It is this understanding that allows organizations to adapt and make improvements, staying relevant and competitive in the market (Taheri et. al., 2021). Especially in the hospitality industry, technology plays a central role in enhancing customer experience by, among others, streamlining processes and improving efficiency (Önder & Treiblmaier, 2018). Meeting customer demands in each service encounter is particularly challenging due to the international dimension specific to the hospitality industry.

Given the nature of the industry, consumer experience during these service encounters is critical for organizational success and competitiveness (Mahak et al., 2021). Organizations can better

meet customer needs and expectations by focusing on the consumer experience, leading to increased customer satisfaction and loyalty (Mahak et al., 2021).

The impact of technology on the hospitality industry in general, and the consumer experience in particular, has led to the integration of money, technology, and knowledge, resulting in the development of new and innovative platforms in an effort to meet the evolving needs of customers (Mahak et al., 2021). This evolution has resulted in a more dynamic and competitive tourism landscape, with businesses leveraging technology to create unique and customer-centric experiences (Mahak et al., 2021). The complex environment of the industry, marked by risky capital expenditures and operational sensitivity, necessitates a disruptive technology to optimize operational efficiencies to further cater to the struggle of satisfying individual customer needs (Mahak et al., 2021).

The technological impacts in the tourism sector benefit hospitality giants like Airbnb, Uber, and Oyo. However, these businesses face difficult challenges such as data leaks, privacy concerns, and financial fraud (Khanna et al., 2020). To build a strong long-term relationship with customers, businesses must reduce consumer risks (Lujun et al., 2021). Tourist satisfaction and commitment can be significantly influenced by the level of perceived trust in a hospitality service provider (Lujun et al., 2021). The adaptations and benefits of blockchain technology in the tourism industry address these challenges by increasing transparency, improving customer trust perceptions, and ensuring data privacy for its users (Khanna et al., 2020). These advantages can be applied in a variety of hospitality sectors, including hotels, restaurants, and airlines. Despite the fact that blockchain technology is still in its early stages, the more companies and organizations that adopt and integrate it, the greater the benefits the entire system can generate (Dogru et al., 2018). These advantages and their potential effects on consumer behavior are discussed in the following sections.

2.2 Consumer Behavior Introduction

Schiffman & Kanuk (2008) defined consumer behavior as the actions displayed by consumers in searching for, purchasing, using, evaluating, and disposing of products, services, and ideas to satisfy their needs. Consequently, studying consumer behavior means looking at processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy needs and desires (Solomon et al., 2012). Needs and desires may concern a wide spectrum of items, from everyday products to intangible experiences (Solomon et al., 2012). Consumer behavior in the hospitality industry is especially complex and influenced by various factors (Jisana, 2014) like personal characteristics and environmental factors.

While the neoclassical economic theory of utility describes consumers as rational who constantly seek to maximize their utilities (Bray, 2008), Jisana (2014), for example, argued that

consumer purchases are influenced strongly by cultural, social, personal and psychological characteristics.

Alternatively, according to Cohen, Prayag & Moital (2014) the most important conceptual dimensions of tourism costumer behavior research are decision-making, values, motivations, self-concept and personality, expectations, attitudes, perceptions, satisfaction, and trust and loyalty.

Consumer behavior is a complex topic with multiple theories. The most relevant theories about consumer behavior for this research are discussed below.

2.2.1.1 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) attempts to explain how attitudes cause behavior via intentions. For this, intentions are understood as conscious plans to exert effort toward a behavior. They are determined by attitudes and subjective norms. Intentions themselves are viewed as proximal determinant of voluntary behavior. TRA primarily applies to behavior under volitional control (Conner & Armitage, 1998).

2.2.1.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPD) is an expectancy-value model widely used to predict attitude-behavior relationships. It focuses on how attitudes, subjective norms, and perceived behavioral control influence intentions and subsequently guide consumer behavior (Conner & Armitage, 1998).

TPB is considered an extension of the Theory of Reasoned Action (TRA) as it expands TRA by adding Perceived Behavioral Control (PBC) to predict non-volitional behaviors. PBC reflects an individual's perception of ease, as well as difficulty in performing a behavior. As it includes non-volitional behavior, TPB involves both intentions, similar to TRA, and PBC as direct determinants of behavior. PBC and intentions may interact in predicting behavior (Conner & Armitage, 1998).

While TPB incorporates non-volitional aspects of behavior, both TPB and TRA explain influences on behavior, emphasizing informational and motivational factors. Both models are deliberative, implying behavioral decisions based on careful consideration of information (Conner & Armitage, 1998). They also emphasize the centrality of an individual's intention to perform a behavior. Intentions are viewed as indicators of the motivational factors that influence behavior. Intentions reflect how much effort a person is willing to exert to carry out a behavior. Stronger intentions generally correlate with a higher likelihood of behavior performance (Ajzen, 1991).

However, the translation of behavioral intentions into actual behavior depends on the level of volitional control over that behavior. Thus, behaviors that are under volitional control can be enacted at will. In fact, many behaviors are influenced by factors beyond motivation, such as

availability of resources, skills, cooperation from others, etc. The concept of actual control over behavior encompasses the tangible factors influencing behavior (Ajzen, 1991).

2.2.1.3 Cognitive Dissonance Theory

The Theory of Cognitive Dissonance has been a foundational concept in social psychology for over 50 years (Cooper, 2012) and is highly influential in social psychology (Harmon-Jones & Mills, 2019). Cognitive Dissonance Theory explores how individuals reduce psychological discomfort due to conflicting cognitions by focusing on the discomfort between cognitions and the motivation to alleviate this discomfort (Harmon-Jones & Mills, 2019). It emphasizes the role of choice and commitment in inducing dissonance and subsequent attitude change (Cooper, 2012). The Cognitive Dissonance Theory provides explanations for phenomena like spreading alternatives, negative-incentive effects, and choice manipulation in inducing attitude change. It has applications in understanding decision-making, attitude change, and behavior rationalization (Harmon-Jones & Mills, 2019).

Dissonance arises from inconsistent or contradictory beliefs, attitudes, or behaviors (Harmon-Jones & Mills, 2019), meaning the perception of inconsistency between their cognitions leads to psychological discomfort (Cooper, 2012). Dissonance can be reduced through changing cognitions or adding new ones (Cooper, 2012), i.e., changing cognitions, attitudes, or beliefs (Harmon-Jones & Mills, 2019).

Different paradigms are employed to study cognitive dissonance. Some are listed below (Harmon-Jones & Mills, 2019).

- Free-Choice Paradigm: People experience dissonance after making a choice and tend to spread positive aspects of the chosen option and negative aspects of the rejected option.
- Belief-Disconfirmation Paradigm: Exposure to information inconsistent with beliefs leads to dissonance, resulting in misinterpretation, rejection of information, or seeking supportive beliefs.
- Effort-Justification Paradigm: Dissonance arises when individuals engage in unpleasant actions for desirable outcomes, leading to justification of effort and exaggeration of outcome desirability.
- Induced-Compliance Paradigm: Engaging in behaviors against beliefs creates dissonance; this is reduced by justifying the behavior through various means.
- Forbidden-Toy Paradigm: Threat of punishment for engaging in a desired activity leads to attitude change, based on choice and justification.
- Other paradigms involve dishonesty, moral concerns, and behaviors inconsistent with values.

Maslow's Hierarchy of Needs

The Hierarchy of Needs by Maslow is a theory of personality that has had a broad impact across various fields, including education. It emphasizes the practical aspects of personal experience whereas it rejects the idea that human behavior is solely driven by external stimuli or unconscious instincts. Rather it focuses on human potential and the pursuit of higher capabilities and personal growth (Pavelka et al., 2011).

The Hierarchy of Needs is often illustrated as a pyramid with five levels of needs. The lower levels are associated with physiological needs, while the top level represents growth needs related to psychological well-being. Deficiency needs (physiological, security, love, and esteem) must be fulfilled before growth needs become prominent. Only once a lower-level need is met, the individual's focus shifts to satisfying higher-level needs. Accordingly, when lower needs are unmet, attention may temporarily shift back to them, but individuals will not permanently regress to lower levels. Each level builds upon the fulfilment of the previous one (McLeoad, 2023).

FIGURE 1 - MASLOW'S HIERARCHY OF NEEDS

The ascending order of needs is as follows. Physiological needs involve biological needs for oxygen, food, water, and body temperature regulation. They are the most basic and therefore strongest needs; the first to be sought for satisfaction. Security or safety needs arise when physiological needs are met. They are concerned with personal safety, stability, and protection, and often become apparent during emergencies or social disorganization. The need for love, affection, and belongingness emerge when safety and physiological needs are satisfied. They describe the desire to overcome loneliness and alienation, involving giving and receiving love, affection, and a sense of belonging. The need for esteem becomes prominent when all the

lower-level needs above are fulfilled. They involve self-esteem and esteem from others, as well as a desire for self-respect, confidence, and value as an individual. The highest level of needs is for self-actualization. They represent the pursuit of one's full potential, which includes pursuing personal purpose, creativity, and meaning, as well as innate potential (Pavelka et al., 2011).

2.2.1.4 Social Cognitive Theory

Social Learning Theory, as proposed by Bandura (1977), explains learning through observing others' behaviors. It emphasizes learning through observation and modeling (Devi et al., 2017). Observational learning involves learning from models without direct performance with its key factors being attention, retention, reproduction, and motivation. Positive consequences for modelled actions influence observers' motivation (Bussey & Bandura, 1999).

Social Cognitive Theory is based on and has evolved from Social Learning Theory by considering broader aspects of human cognition and social learning. Social Cognitive Theory describes acquiring competencies through observational learning, where observed events shape future behaviors (Devi et al., 2017). It highlights human agency, where individuals actively engage in their own development and can shape the outcomes of their actions. Self-reflection stands out as a distinctly human capability and is a significant feature of social cognitive theory. It helps individuals make sense of experiences, explore thoughts and beliefs, engage in self-evaluation, and adjust behavior accordingly (Wigfield et al., 2009).

Social Cognitive Theory focuses on people's beliefs in their capabilities to perform specific actions. In fact, individuals strive for agency, believing they can influence important events (perceived self-efficacy). Self-efficacy, developed through self-reflection, is a key motivational process in the theory (Bussey & Bandura, 1999) and can be shaped by outcomes of behaviors (e.g., goal progress, achievement) and input from the environment (e.g., feedback from teachers, social comparisons, etc..) (Wigfield et al., 2009). On the other hand, low self-efficacy can lead to anxiety, stress, depression, and limited problem-solving approaches (Wigfield et al., 2009).

2.2.1.5 Expectancy-Value Theory

Expectancy-Value Theory focuses on individuals' beliefs about their ability to perform a task and the value they attach to it. Ability beliefs involve self-assessments and comparisons with others. For Expectancy-Value Theory, expectancies refer to beliefs about the future, while value signifies the relative attractiveness of an object or activity.

Atkinson (1957, 1964) formulated the first formal expectancy-value model, connecting achievement behaviors to expectancies and incentive values. Values include attainment value (importance of task success), intrinsic value (enjoyment from task), utility value (usefulness for future plans), and cost (effort and sacrifices required) (Wigfield et al., 2009).

Eccles, Wigfield, and Schiefele (1998) and Pintrich & Schunk (1996) discussed constructs to how motivation influences behavior. For example, Eccles et al. (1983) proposed an expectancy-value model of achievement, particularly in the mathematics domain. The model illustrates how expectancies and values directly influence choices, as well as performance, effort, and persistence. On the other hand, task-specific beliefs, goals, self-schema, and affective memories influence expectancies and values. These social cognitive variables are in turn influenced by perceptions of past experiences and various socialization factors (Wigfield & Eccles, 2000).

2.2.1 Consumer behavior relevance

Understanding consumer behavior is essential for marketing and has been a topic of interest for centuries (Stankevich, 2017). This is especially true for the hospitality industry as one of the most crucial components of the product and services provided by the hospitality industry is to cater to individual customer needs. However, consumer behavior is a complex subject, challenging for marketers to accurately predict (Jisana, 2014). Understanding consumer behavior is required for marketers to achieve their goal of influencing consumer behavior in order to achieve success in their marketing efforts and business outcomes (Stankevich, 2017). Nonetheless, research suggests that the contemporary world traveler is becoming increasingly hedonistic and self-indulgent. In fact, hospitality consumers have evolved to become qualitatively more discerning, more demanding, and more diverse (Hirschman and Holbrook, 1982).

Using integrated marketing communication campaigns leverages existing tools to effectively influence the behavior of target audiences. It must be noted that the communication process is circular, starting with potential consumers and identifying effective ways to develop communication programs. Designing communication requires considering factors impacting consumer attitudes, product choices, and buying behavior. In addition, changing market dynamics call for integrated marketing communication as relying solely on traditional marketing mix components leads to the loss of competitive value. Indeed, communication emerges as a key differentiator, allowing organizations to maintain customer relationships through a unified and effective message. Integrated marketing communication plays a pivotal role in shaping consumer attitudes towards products and driving effective buying behavior (Mihaela, 2015).

2.2.2 Trends and Patterns in Consumer Behavior

Multiplicity drives the need for hyper-efficiency, as people seek smarter and more efficient solutions to their problems (Stankevich, 2017). Increasingly advanced technology is tackling this need by enabling super-personalization, allowing businesses to understand consumers and meet their preferences (Stankevich, 2017). For example, digitalization and the internet have enabled e-commerce, which consumers are gravitating toward as a result of their constant online presence and technological integration (Stankevich, 2017).

Indeed, marketers aim to reach consumers at “moments that matter” or “touch points” where they are open to influence (Stankevich, 2017). Therefore, understanding consumer moments and underlying values allows companies to create meaningful and memorable consumer engagement opportunities (Stankevich, 2017). This can be achieved when creating connections with clients (Stankevich, 2017). Especially when connecting with customers, it can satisfy their experience, and it can influence future customer behavior (Oliver, 1997).

In the hospitality and tourism industry, consumer experience is shaped by direct and indirect interactions between costumers and service providers (Klaus and Maklan, 2012). Traditionally, providing quality services through host-guest interactions has been crucial for creating a positive consumer experience (Shin et al., 2022). However, the advent of guest-facing technologies has transformed this dynamic, as interactions are now turning from human-to-human to guest-technology interactions. Hotel guests are increasingly engaging with technologies such as artificial intelligence chatbots and service delivery robots, replacing interactions with human concierges or door attendants (Shin & Jeong, 2020). Still, the focus on technology and its impact on consumer experience has not received enough attention, highlighting the need for further research in this area (Shin et al., 2022).

2.2.3 Digital Marketing

Digital marketing encompasses a wide range of business models that utilize digital technologies to reduce costs and grow businesses globally (Al-Azzam & Al-Mizeed, 2021). Using digital means for marketing purposes has evolved due to competitive markets and technological advancements, replacing traditional marketing strategies. However, present-day marketing has become permission-based due to changes in consumer behavior, meaning that brands need to be accepted by consumers to gain attention. In an attention-deficient world, the vastness of the digital world has also given rise to challenges such as competition from various brands and attention-grabbing apps. In this digitally driven era, technology enables finding, keeping, selling to, and co-creating with customers, fostering personalization, and creating communities (Ghoshal, 2020).

2.3 Blockchain Technology

2.3.1 Blockchain Introduction

Blockchain technology is a decentralized and transparent database to record data, the so-called transactions. This section will provide a comprehensive overview of the key features and characteristics of blockchain technology.

Information is digitally stored in a set of blocks on multiple computers, and each information block is chained to another in a chronological order. Each new information that is stored in a blockchain, is added to the previous block and the next data block is added to this block. This

creates a chain of data sets, hence the name blockchains. To validate and secure newly added information, each block consists of timestamps, hash values and nonces (Nofer et al., 2017). Time stamps allow users to check when the new information was added to the blockchain. Hash values are publicly visible and consist of unique numbers that are given to each set of blocks. Data that is stored in a block cannot be changed and altered without replacing the hash value. They are used to ensure that the block has not been tampered. This creates a highly secure and transparent system to record and store data (Pierro, 2017).

Additionally, blockchain uses peer-to-peer transactions to negate intermediaries of official authorities. New transactions are not automatically added to the previous blockchain and must be validated by most of the network users instead. In a regular, centralized database, users are dependent on intermediaries if they want to retrieve information. Intermediaries are known to be vulnerable to attacks, errors, and fraud. In contrast, blockchain networks can only be taken down if all nodes break down at the same time (Nofer et al., 2017).

Without the need of middlemen to control, secure and check data, users in a blockchain can interact in a faster, cheaper, and more secure way with each other (Nofer et al., 2017). The procedure of checking and confirming new data blocks is called mining. The so-called “miners” are constantly validating new blocks in a blockchain with extensive computing power to solve complex mathematical algorithms. To reward the effort of a miner, they receive a set amount of fees for each valid transaction. Once a new block has been confirmed, it can no longer be manipulated or changed (Boucher, 2017).

Blockchain technology is a highly disruptive business opportunity which is already used in various industries, despite the lack of scientific research and unclear potential impacts. More and more businesses, especially IT companies, already consider or actively use blockchain technology to gain competitive advantages. It is expected that the potential uses of blockchain technology will continue to evolve and disrupt numerous different industries (Treiblmaier, 2018).

2.3.1.1 Cryptocurrencies

Cryptocurrencies were firstly introduced to the world by Satoshi Nakamoto in 2008. He is seen as the inventor of Bitcoin and the pioneer of blockchain technology. Satoshi Nakamoto wanted to create a payment or exchange system that is completely decentralized, secure and transparent (Ashford, 2023).

Bitcoin and other cryptocurrencies are digital tokens with no intrinsic value, instead, they are priced at what buyers are willing to pay for them (Reserve Bank of Australia, 2021). These tokens can be exchanged with other users or can be used to pay for services or products; it acts as a digital currency (Reserve Bank of Australia, 2021). Cryptocurrencies could potentially influence consumer behavior, as they highly value the beneficial attributes of the digital tokens (Zheng et

al., 2021). Crypto tokens offer benefits such as transparency, security, speedy transactions, and anonymity (Bunjaku et al., 2017). These benefits, or characteristics, are further explained in detail in the following section.

2.3.2 Characteristics of Blockchain

Blockchain has attracted significant media and academical research attention over the past few years. Due to the disruptive potential in various industries such as supply chain management, healthcare, finance, tourism and hospitality, numerous companies started to invest, research, and implement blockchain technology (Treiblmaier, 2018). In the following section, advantages and disadvantages are analyzed and explored to provide a deeper insight of the potential impact on different industry sections. Treiblmaier (2019) listed and explained six main characteristics and advantages of blockchain technology:

2.3.2.1 Immutability

The tamper-proof nature of blockchain-based solutions ensures immutability of processed data since new information can only be added to existing blocks. Previous blocks cannot be edited whereas in centralized databases, intermediaries can manipulate and delete stored information. Furthermore, advanced algorithms verify the authenticity and validity of new transactions before adding them to the blockchain. Thus, tampering with existing data in a blockchain is highly unlikely but technically possible with significant capital, resources, and computational power. Therefore, blockchain technology reduces the risk of data loss due to human errors, fraud, or malicious intentions.

2.3.2.2 Transparency

Transparency is closely related to immutability in blockchain networks. Not only is it difficult to change or delete transactions in a blockchain, but public blockchain networks also allow tracking and viewing existing data from all users. In public blockchain networks, all users can follow every transaction’s information. Supply chain management benefits from tracking product origins to combat counterfeiting and improve trade goods' authenticity.

2.3.2.3 Programmability

Programmability is a unique and revolutionary feature of blockchain. For example, this feature allows blockchain to create smart contracts that enable automation based on specific actions or conditions. Smart contracts have computer code uploaded directly to a blockchain and executed when programmed criteria are met. Virtual machines execute smart contracts, allowing blockchain systems to work automatically. Smart contracts reduce the need for intermediaries and are secure from malicious attacks. Blockchain-based smart contracts also offer benefits like speed, accuracy, lower execution risk, fewer intermediaries, and lower costs.

2.3.2.4 Decentralization

The entire blockchain network is regulated by the computing power and consensus of all participants. This assures the decentralization attribute of blockchain, which means no entity is solely able to control the data. This means, decentralization enhances the security of its users by eliminating the need for centralized authorities. In fact, centralized solutions by service providers are inefficient and can lead to misuse of user information and data breaches. On the other hand, decentralized networks are more resistant to attacks because blockchain-based decentralized networks, for example, improve the efficiency and security of authenticating individuals and protecting their private information. This is of special interest for businesses as consumers are increasingly concerned about the handling of their private information, creating the need for service providers to offer multiple authentication systems for enhanced security.

2.3.2.5 Anonymity

Another key characteristic of blockchain is anonymity. Without the need of third parties, blockchain technology offers the possibilities to keep private information hidden (Zheng et al., 2018). Furthermore, blockchain offers pseudonymity, which is a concept that hides user's identities, including names (Bitstamp, 2022). Even though, users are anonymous and hide behind pseudonyms, blockchains are transparent and act as public ledgers. Every transaction detail in public blockchains can be seen, including the address of sender and receiver (Medium, 2022). There are specific technologies in place that confirm and verify transactions, without revealing any private data (Bitstamp, 2022). However, since every transaction is public and can be tracked, once a user's identity is exposed, their privacy becomes compromised (Medium, 2022).

2.3.3 Applications of blockchain technology

Inspired by the suggestions of Laroiya et al. (2020) and Treiblmaier (2020), the following examples showcase possible applications of blockchain technology in the hospitality industry.

2.3.3.1 Inventory Management

"Inventory" in the hospitality industry refers to the available rooms (Önder & Gunter, 2020). Blockchain technologies can provide real-time information on inventory availability and rates and share this information with various stakeholders in the industry (Treiblmaier, 2020). Such blockchain-based solutions can replace proprietary property management systems (PMS) and central reservation systems (CRS) in the hospitality industry by, e.g., synchronizing data with sales outlets, such as online travel agencies (OTAs) and traditional travel agencies, fostering coordination (HTNG, 2018). Another advantage is the elimination of intermediaries in the inventory supply chain, reducing costs and commissions for inventory owners (HTNG, 2018).

2.3.3.2 Maintenance and Tracking

Supply chain management is a significant application area of blockchain technology, enabling the tracking and tracing of food and other products to certify their origin and handling procedures (Goudarzi & Martin, 2018). In the food industry, for example, blockchain technology can be used to ensure the use of organic, local, authentic, or sustainable products (Authena, 2021). In the airline industry, blockchain can be employed to track the status and location of important assets like aircraft spare parts along the supply chain, streamlining processes and creating more resilient value chains (Goudarzi & Martin, 2018). From these examples it can be inferred that blockchain technology can maintain consistent and uncorrupted lifecycle documentation of assets, ensuring compliance with mandatory maintenance requirements in industries like aviation (Irvin, 2018). By using blockchain, organizations can avoid inconsistencies, keep credentials secure, and verify that all maintenance regulations have been adhered to, enhancing the overall efficiency and transparency of supply chain management (Goudarzi & Martin, 2018).

2.3.3.3 Booking and reservations:

Blockchain technology can lower overall operation costs by reducing costs for middlemen and putting online travel agencies (OTAs) under pressure, leading to an environment where power is returned to customers and hotels (Braun, 2018).

Besides expanding payment method options for costumers, such as cryptocurrencies in addition to traditional payment methods like debit and credit cards, blockchain technology is expected to bring transparency and honesty to the transactions (Blenkinsop, 2018). Transparency and honesty in the review system, for example, can be improved and sustained as blockchain technology can hinder manipulated feedback, preventing fake and malicious reviews, benefiting both businesses and customers in the travel industry (Blenkinsop, 2018). This works with the help of the decentralized system of blockchain technologies, enabled by digital signatures, distributed consensus, and cryptographic hashes (Pilkington et al., 2018; Poorigali, 2018). This approach allows constant recording and storage of transaction and booking information by each user within the network (Önder & Treiblmaier, 2018), positively contributing to a more transparent and trustworthy environment, providing equality of power between product and service providers and consumers (Blenkinsop, 2018).

For example, Travala.com and its crypto coin “Travala (AVA)” is a booking platform that allows users to buy and book hotel rooms with crypto currencies. The main focus of this platform is to make travelling more affordable and accessible, with the help of blockchain technology. The platform offers many of the blockchain benefits that are discussed in this thesis, for example, secure and transparent payment procedures, cost efficient personalized packages, loyalty reward programs and more (Cryptonews, n.d.). According to Cryptonews.com (n.d.), Travala considers itself as the cheaper travel option with enhanced transparency and more benefits for

its' users. As discussed in the literature above, blockchain-based booking platforms remove the need for intermediaries to reduce costs for consumers and hotels (Braun, 2018).

2.3.3.4 Customer loyalty program

Existing "conventional" loyalty programs often involve significant administrative overhead and leave the benefits of participation unclear to customers, resulting in many accumulated points never being redeemed (Utz et al., 2023). A way to mitigate this issue is to allow loyalty tokens that can be freely exchanged with others, across industries, for example, creating a competitive market that provides organizations with valuable feedback on their performance while allowing for seamless integration and transferability between different loyalty programs (Fromhart & Therattil, 2023). Blockchain technology can facilitate typical loyalty program transactions, such as transferring loyalty points between accounts, exchanging points between loyalty programs, and bundling redemption offers across multiple partners, as well as help in overcoming these issues by having automated processes (Fromhart & Therattil, 2023). Blockchain loyalty programs can attract new customers by providing significantly more benefits (Rejeb & Rejeb, 2019).

2.3.3.5 Secure Payments

Blockchain technology can be applied to payment systems to increase transparency, safety, and security in transactions (Gunter and Önder, 2020). It enables secure cashless payments and interactions with customers, suppliers, and intermediaries in the hospitality sector (Gunter and Önder, 2020). Globally, digital money, including transactions processed through internet banking, mobile apps, and online payments, represents the majority of payment transactions (Turkay et al., 2019). Cryptocurrencies, a subset of digital currencies, are based on blockchain technology and use cryptography for secure transactions verified by nodes in the network (Turkay et al., 2019). Payment via cryptocurrencies is not yet widely established in the tourism industry, and it may take time for both consumers and suppliers to feel comfortable and familiar with using them frequently (Leung and Dickinger, 2017).

2.3.3.6 Reviews

Customers' tendency to write reviews and post their experiences has a significant impact on the hospitality and tourism industry, putting service providers under increasing pressure (Sigalar, 2017). Research suggests that information from peer customers has a more significant impact on customer perception than advertising (Constantinides & Fountain, 2008). Indeed, peer customer information is seen as more reliable and trustworthy than sponsored brand content (Bickart & Schindler, 2001).

However, the rise of fake and unfair consumer comments in reviews poses a threat to the industry, particularly given the competitive nature of the market (Calvaresi et al., 2019). By utilizing blockchain's way of managing credentials and proof of individuals' real identity,

hospitality businesses can protect themselves from unfair and fake online reviews (Vieira, 2017). In such a transparent and honest environment, users can be more than passive consumers; they can actively contribute by providing reviews, enhancing quality, and earning rewards (Vieira, 2017).

2.3.3.7 ID and verification

Blockchain technology makes it possible to securely store personal information and identification data of guests, ensuring privacy and data integrity (Consensys, n.d.). This can be achieved by encrypting and linking each guest's identity and credentials to a unique digital identifier (ID) on the blockchain (Consensys, n.d.). Such a feature is enabled by the decentralized and immutable nature of blockchain, ensuring that guest information is tamper-proof and cannot be altered without proper authorization (Kriptomat, n.d.). Additionally, the use of blockchain technology can not only streamline check-in processes, reducing paperwork and waiting times (Solleder, n.d.), but also facilitate seamless integration of ID verification across different hospitality platforms, such as hotels, airlines, and rental services (Dock, 2023).

2.3.3.8 Personalization

Utilizing data collected from applying blockchain technology renders tailoring of offers and packages for individual customers (Lacalle, 2023). Given its decentralized nature, data storage based on blockchain technology does not need to be centrally administered and managed by businesses (Tatavarty, n.d.). Not only does this approach relieve the burden on businesses stemming from the responsibilities centrally storing data, but it also enhances personalization. As customers increasingly seek individualized services and experiences, personalization becomes crucial in the tourism industry for differentiation. Consequently, blockchain technology allows tourism and hospitality entities to target customers more specifically and offer personalized experiences and packages (Lacalle, 2023).

2.4 Blockchain influences consumer behavior

Empirical evidence supports the idea of applying blockchain-based tracing systems to enhance supply chain transparency and process management (Schlegel et al., 2018). Doing so improves both transparency and process management, leading to better customer service and increased consumer trust (Wang, et al., 2021). In order to make decisions, costumers rely on indications provided by producers or retailers for credence attributes. Credibility of these indications depends on consumer trust in the overall system. Blockchain technology can offer transparency and traceability (Mejer, et al. 2020) and reduce disputes with consumers (Wang, et al., 2021).

This is crucial for business as increased consumer service and trust can result in higher product sales and increased customer satisfaction, which is, e.g., indicated by reduced product returns (Wang, et al., 2021). Businesses should therefore aim to avoid anything that might tarnish

consumer trust, especially privacy breaches because they can have a lasting impact on consumers' trust (Rejeb et al., 2020). However, in neither academia nor practical experience the potential impacts of blockchain technology on consumer behavior are fully known (Wang et al., 2021). Nevertheless, this does not hinder the call for businesses to explore ways leveraging blockchain technology to enhance communication and interaction with consumers, improving pre- and after-sale services (Wang et al., 2021). After all, one of the greatest strengths of blockchain technology is its immutability, making data nearly impossible to remove or modify (Schlegel et al., 2018) by utilizing a decentralized approach in storing and managing data (Schlegel et al., 2018). Furthermore, blockchain-based approaches not only increase trust but can also enable faster and higher-quality solutions by displaying the efficiency of the blockchain (Schlegel et al., 2018).

2.5 Hypotheses Development

Following the research questions above and taking both literature on the impact of blockchain technology on consumer behavior, as well as the abilities of blockchain technology into account, the following hypotheses are developed.

Rejeb & Rejeb (2019) argued that blockchain technology can significantly influence consumer behavior by enhancing attractiveness of service providers. One way to increase attractiveness is to implement incentives that benefit consumers. For example, loyalty tokens can be freely exchanged across industries for seamless integration and transferability between different loyalty programs. These benefits could influence consumer behavior (Fromhart & Therattil, 2023). Therefore, Hypothesis 1 (H1) is postulated as follows:

Hypothesis 1 (H1)*: Consumers are more likely to participate in blockchain-based loyalty programs when they perceive benefits compared to traditional loyalty programs in the hospitality industry.*

H1a*: Consumers are more likely to participate in blockchain-based loyalty programs when they can exchange loyalty tokens with other loyalty programs.*

The decentralized nature of blockchain technology can be applied to payment systems to increase transparency, safety, and security in transactions. Thus, it can enable secure cashless payments and interactions with customers, suppliers, and intermediaries in the hospitality sector (Gunter and Önder, 2020). Leung and Dickinger (2017) suggested that customers are unwilling to pay with cryptocurrencies and that there is a need for guides and rewards to make crypto-payments more attractive. Therefore, Hypothesis 2 (H2) was proposed as follows:

Hypothesis 2 (H2): *The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior.*

***H2a**: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for **secure** payment methods.*

***H2b**: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for **transparent** payment methods.*

***H2c**: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for **earning rewards** when paying with a blockchain-based payment system.*

Reviews and ratings significantly influence consumer decision-making as peer customer information is considered as reliable and trustworthy (Bickart & Schindler, 2001). However, the rise of fake and unjustified negative reviews does not only pose pressure on service providers but also undermine the trust of customers. Blockchain technology is characterized by its ability to ensure immutability and transparency of data (Treibmaier, 2019). This can help in enhancing the credibility of reviews (Vieira, 2017). Therefore, Hypothesis 3 (H3) was formulated as follows:

***Hypothesis 3 (H3):** The adoption of blockchain technology improves the credibility of online reviews and ratings and has a positive impact on consumer behavior.*

***H3a**: The adoption of blockchain technology improves the credibility of online reviews and ratings, as the transparency of blockchain enhance the trustworthiness of the information provided.*

Blockchain technology can safely and transparently provide and streamline real-time information on inventory availability and rates to all relevant stakeholders such as the service provider itself, customers, and partners like travel agencies (Treiblmaier, 2020). As inventory is the main product of the hospitality industry, efficient inventory management directly influence customer experience. It can be argued that improved efficiency often translates to enhanced service quality and customer satisfaction. Therefore, Hypothesis 4 (H4) was proposed as follows:

***Hypothesis 4 (H4):** Blockchain-based inventory management systems can enhance efficiency in the tourism and hospitality industry, resulting in improved customer experience.*

Blockchain technology enables tracking and tracing of supplies to certify origin and handle procedures (Goudarzi & Martin, 2018) while maintaining consistent and uncorrupted lifecycle documentation of assets (Irvin, 2018), avoiding inconsistencies, as well as keeping credentials secure (Goudarzi & Martin, 2018). The immutability and transparency of data is the basis for building trust in the origin and quality of products. Thus, blockchain technology possesses the necessary features to enhance consumer confidence, making it more likely that an informed and

trusting consumer engages positively with a brand. Therefore, Hypothesis 5 (H5) was theorized as follows:

Hypothesis 5 (H5): *Blockchain supply chain management can enhance consumers' trust in the hospitality product and service.*

Stankevich (2017) argued that customer seek smarter and more efficient solutions to their problems. Blockchain technology can be applied to streamline processes, especially identity verification procedures that comprise a variety of different steps, thus, rendering faster and more efficient results (Solleder, n.d.). Furthermore, the ability to facilitate seamless integration of ID verification across different hospitality platforms (Dock, 2023) can also accelerate and improve processes. Therefore, Hypothesis 6 (H6) was devised as follows:

Hypothesis 6 (H6)*: Costumers prefer faster and automated methods of identity verifications when using hospitality services.*

Since catering to personal consumer experience is essential for success in the hospitality industry, personalizing services allows to better meet customer needs and expectations, allowing for improved satisfaction and loyalty (Mahak et al., 2021). Thus, customization is a crucial in being and staying competitive. In fact, blockchain-based solution can tailor offerings to individual and unique customer demands (Lacalle, 2023). This shows that blockchain technology might be used for personalization, leading to enhanced customer experience. Therefore, Hypothesis 7 (H7) was proposed as follows:

Hypothesis 7 (H7): *Using blockchain's data collection can lead to an enhanced customer experience because of personalized packages in the hospitality industry.*

3 METHODOLOGY

3.1 Introduction

This research was conducted to investigate the impact of blockchain technology on consumer behavior in the hospitality industry. The next sections describe the research design, justification for methodology, data collection processes, sample design and research ethics.

3.2 Research Design

The most dominant types of research design are qualitative, quantitative and mixed methods design (Cresswell, 2009). While qualitative research explores the meaning of a topic or groups through extensive data collection and interpretation, quantitative research designs test objective theories. These theories are statistically tested by validating and examining the relationship between measurable variables. Mixed method designs combine both qualitative and quantitative research designs (Cresswell, 2009). They are ultimately the base strategy of exploring and answering the research questions by using empirical data. It is important to choose the correct type of research design to ensure that the correct data are analyzed for the research (McCombes, 2021).

Sreejesh (2014) explained that there are 3 methodology approaches to investigate research questions, based on achieving different goals and objectives: namely exploratory, descriptive, and causal design. Exploratory research is often qualitative but can be quantitative as well (George, 2023). It aims to find new insights into an issue or topic, and tries to explore the answers to specific questions or hypotheses. Furthermore, it is often used when the topic has not been researched yet and thus, results might tend to be subjective or biased (Stone & Shinn, 2023).

A descriptive research design is used to describe a phenomenon and find correlations of variables. This type of research is typically a quantitative survey. It could either be a cross-sectional study, taken at a specific point in time, or a longitudinal study that takes place over a longer time period and is tested multiple times. To conduct a descriptive research design, it is necessary to gather enough knowledge to prepare research problems and variables that are not manipulated or controlled (Surbhi, 2017).

Causal research aims to establish cause-and-effect relationships between variables. Researchers manipulate an independent variable and observe its impact on a dependent variable. It is also often referred to explanatory research (Indeed Editorial Team, 2023).

3.3 Justification for methodology

For this research paper, a descriptive research approach was used. To be more precise, a cross-sectional research design was conducted to collect data from a sample group, at a single point in time. The quantitative data were analyzed by a statistical software to gain a better understanding of relationships, preferences, and behavior tendencies. The main purpose of this survey is to either accept or reject the hypotheses and to then answer the research questions.

To ensure collecting relevant data efficiently, the survey followed a fixed design strategy. This required a preparation period in which the data collection and survey approach was planned (Bouma, 1994).

3.4 Data collection

3.4.1 Online Survey design

As mentioned above, for this research approach a cross-sectional research survey was used. The survey included a set of variables that cannot be influenced by the researcher, namely: demographics, blockchain adoption and awareness, loyalty program engagement, secure payment and cryptocurrency, identity verifications, personalization, trust and credibility towards blockchain and its implications, consumer behavior and preferences. The descriptive survey design can link possible relationships and patterns on the impacts of blockchain on consumer behavior.

The survey was created using Google Forms that automatically imported all responses into a different sheet. By using online surveys, it is possible to quickly reach a large set of people. It is a cheap and convenient method of data gathering, with precise results. Additionally, respondents do not have to worry about data privacy or anonymity because surveys are usually completely anonymous, unless stated otherwise. Furthermore, surveys offer the advantage of representing a large study population. However, it is impossible to know whether respondents were able to understand the questions correctly or if they were engaged enough to provide their answers to the best of their capabilities (Sincero, 2012).

The survey was posted online on multiple social media platforms and was also shared by friends and family members. Respondents were also asked to share the survey with other relatives to quickly spread the survey over the internet.

Google automatically saves all data in the Google Cloud, which is highly unlikely to be tampered or hacked. Before the data could be analyzed, Microsoft Excel was used to clean, organize, and prepare for the results. Incomplete, outliers or missing data was addressed. The statistical software PSPP was used to analyze, compare, and test the survey responses. Depending on the hypothesis and variable, different statistical tests and models were used, such as correlation

analysis, regression tests and descriptive tests. Descriptive statistics were used to summarize and describe the key variables to identify trends and patterns. Further explanation of the tests are in the section below.

Demographic questions

The first section of the survey included demographic questions, such as gender, age, education, residency, level of knowledge using technology and internet, and amount and purpose of traveling. The demographic questions are an important part of the survey as they provide essential information about the participants and help in segmenting and analyzing the data more effectively.

Perceptions of cryptocurrencies

The second section was focused on the perceptions and preferences related to secure payments and booking procedures in the hospitality industry. Questions were designed to explore their levels of comfortableness and willingness to accept blockchain-based payment systems in hospitality.

Impact of reviews and ratings

The next session explored the perceptions of reviews and ratings, especially focusing on credibility and trustworthiness of online reviews. They were asked how much they rely on online reviews, how aware they are of potential fake reviews, and how likely they are to trust blockchain-based review systems.

Importance of inventory management

The fourth section explored the importance of transparent inventory availability and tracking systems in the hospitality industry. Questions aimed to understand how real-time information about room availability, rates, and other services influences their booking decisions.

Data privacy concerns

Questions in this section aimed to understand how blockchain's features influence participants' perceptions of security and trustworthiness, by choosing their own data privacy settings.

Maintenance and tracking options

The next session focuses on perspectives on maintenance procedures and tracking systems within the hospitality industry. The questions aimed to assess the importance of transparent maintenance regulations and the impact of efficient tracking mechanisms on their overall experience.

ID and verification

These questions explored the views on identity verification processes within the context of the hospitality industry and explored the preferences of ID verifications. The focus was to analyze participants' preferences for automated and secure methods of identity verification when using hospitality services.

Personalization

This section dives into the concepts of personalization and their likelihood of acceptance. It describes perceptions of the importance of personalization and how offering a range of choices can influence an individual's experience.

Loyalty programs

The last section of the survey focused on the engagement of respondents in loyalty programs and their behavior towards them in the hospitality industry. The questions aimed to understand the factors that influence participants' engagement with loyalty programs and their impact on consumer behavior.

3.5 Population and sample

A quantitative research approach was used for collecting and analyzing data. A survey of 122 randomly chosen participants provided informative insights on how blockchain technology might influence consumer behavior in the hospitality industry. The goal of the survey was to understand if consumers are more likely to purchase hospitality related products or services when blockchain technology is implemented in the company. The survey was restricted to people above 18 years old.

3.6 Research ethics

Before the survey was handed out, a short introduction was sent to the participants to ensure a high standard of ethical research. First, respondents were assured that their participation is entirely voluntary and everybody can withdraw from the study at any time without facing any negative consequences. They were also assured that disagreeing to participate in the survey would not result in any physical, emotional, or psychological harm. Secondly, participants were assured that their interests and opinions are highly valuable in the research study. Furthermore, it was very important to emphasize that their anonymity and confidentiality were ensured. Anonymity is required that nobody can link a specific response to a particular participant. Confidentially means that any kind of personal information and data (if they wanted to submit it) are kept secure and in private. Finally, the analyzed data and results were fully disclosed and no negative or challenging result were kept hidden. It would be unethical to not include any results or relationships that would stand in contradiction to the goals of the research paper. Furthermore, shaping data into expected values to confirm the hypotheses or goals were not

tolerated in this paper. It was also considered unethical to produce interesting results that could lead to new theories or hypotheses after the analysis has been completed. Before analyzing the results, all hypotheses and research objectives were developed.

4 RESULTS

4.1 Introduction

To test the reliability of the survey results, it was necessary to prepare and clean the data. Numerical values were used for responses like “very likely” = 5 and “very unlikely” = 1. Similar methods were used for responses such as “totally agree” = 5 and “not agree” = 1. Yes/No responses were numerically grouped into 1 = yes and 0 = no. Age groups were grouped by calculating the midpoint. A dummy variable was created “Age_Midpoint” and respondents were grouped as follows: Age 18-24 = 21, 24-34 = 29.5, 35-55 = 45, and 55+ = 55. Gender was given a numerical value as well, male = 1, female = 2, “others” and “I prefer not to say” = 0.

To test the reliability of the results, Cronbach’s alpha was calculated for the sections with more than 2 variables. For the sections with only 2 variables, a correlation analysis was used. The hypotheses were tested for validity later. 122 online survey responses were collected. The next section analyses the demographics of the participants.

4.2 Demographics

In the online survey, questions 1 to 5 cover demographics and social status questions, which are presented graphically, as well as through deeper textual analysis within this section.

4.2.1 Gender

The participants chose between “Male,” “Female,” “Other” and “I prefer not to say.” 22 respondents (18%) were female, 97 respondents (80%) were male, 1 respondent (0.8%) was non-binary and 3 respondents (2 %) preferred not to say. There is a high distribution towards the male gender. Therefore, it is important to understand that there might be gender related biases. The results are exhibited in Figure 02.

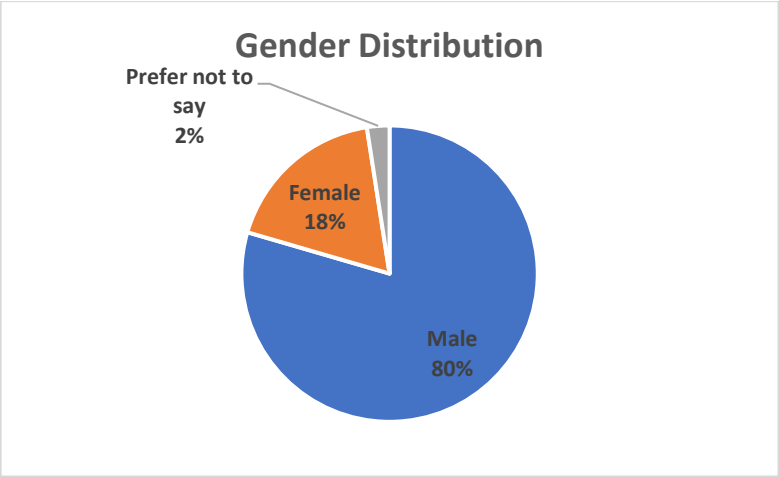


FIGURE 2 – GENDER DISTRIBUTION

4.2.2 Age

In any research paper, age is a crucial variable. The participants had 5 age groups and a prefer not say option.

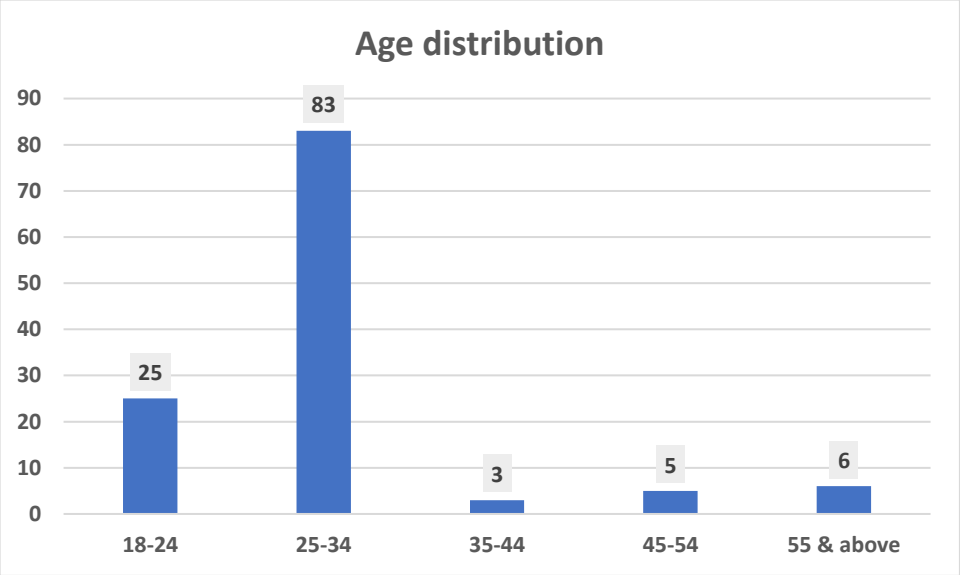


FIGURE 3 - AGE DISTRIBUTION

The age distribution is shown in Figure 3. Out of 122 participants of the online survey, 25 people (20.5%) were between 18-24 years, 83 people were between 25-34 (67.2%) years, 3 people were between 35-44 (1.6%) years, 5 people were between 45-54 (4.1%) years, 6 people were between 55 and above (5.7%), and 1 person preferred not to mention his age (0.8%). Respondents were grouped into age midpoints to be given a numerical value. It is highly likely that young people are technologically more advanced.

4.2.3 Education

Educational qualifications are another factor in the modern technological world.

Educational demographics was summarized in bachelor's degree 57 people (45.9%), doctoral degree 4 people (3.3%), high school 30 people (24.6%), master's degree 26 people (19.7%), invalid or incomplete responses from 5 people (4.1%) and 3 people preferred not to say (2.5%).

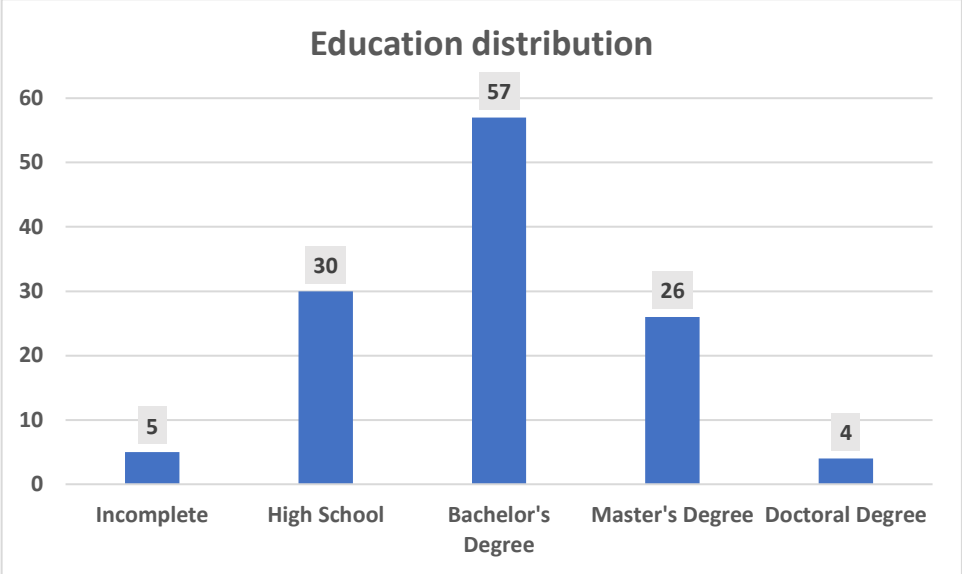


FIGURE 4 - EDUCATION DISTRIBUTION

4.2.4 Residence

The top two nationalities of the respondents were from Austria and the United States, followed by the United Kingdom and Australia. The residence distribution in Figure 5 shows that most respondents, apart from Austrian citizens, were living in English-speaking countries. This could also indicate that responses mainly came from western countries with a higher probability of better education and technological know-how.

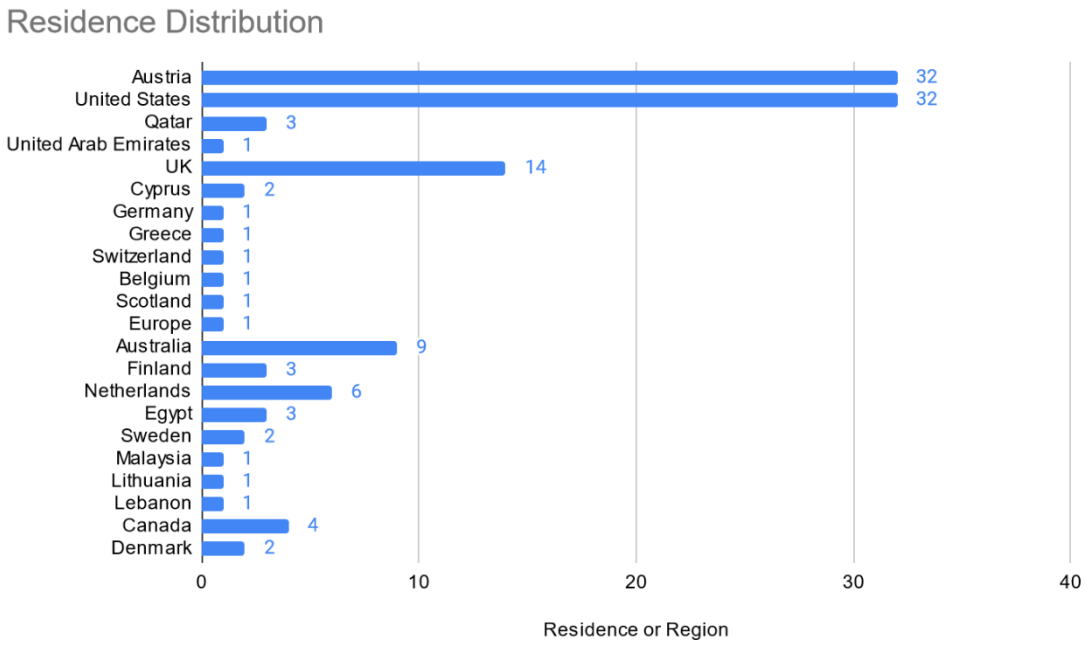


FIGURE 5 - RESIDENCE DISTRIBUTION

4.2.5 Comfortability of technology and internet

Figure 6 shows a very high distribution of excellent technological know-how (73.8%). Only one respondent claimed he feels uncomfortable using technology and the Internet. There is a natural bias towards better comfortability of using technology, because an online survey was used to ask respondents, implying that everybody had some sort of access to the Internet.

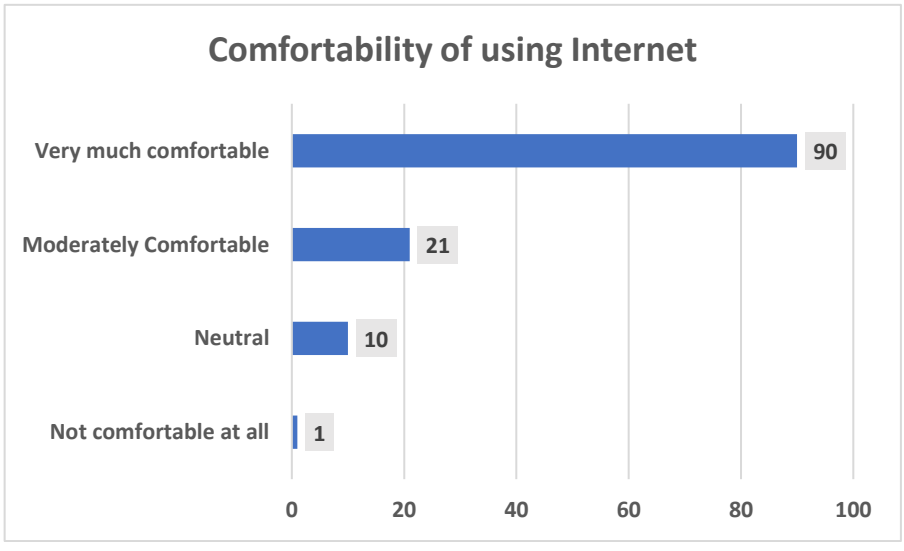


FIGURE 6 - COMFORTABILITY OF TECHNOLOGY DISTRIBUTION

4.2.6 Frequency of Traveling

Like education, traveling frequency is another factor that is indirectly or directly related to income status. Most respondents selected that they were traveling 1-3 times a year (60.7%). The amount of travel and average age of respondents indicate that the majority of respondents are probably either time or financially constrained. Another implication would be, that respondents have other preferences, rather than traveling. Thus, the results suggest that the respondents are well aware of the hospitality and service industry as almost all travel every year. Consequently, their insights and opinions are therefore, of high relevance.

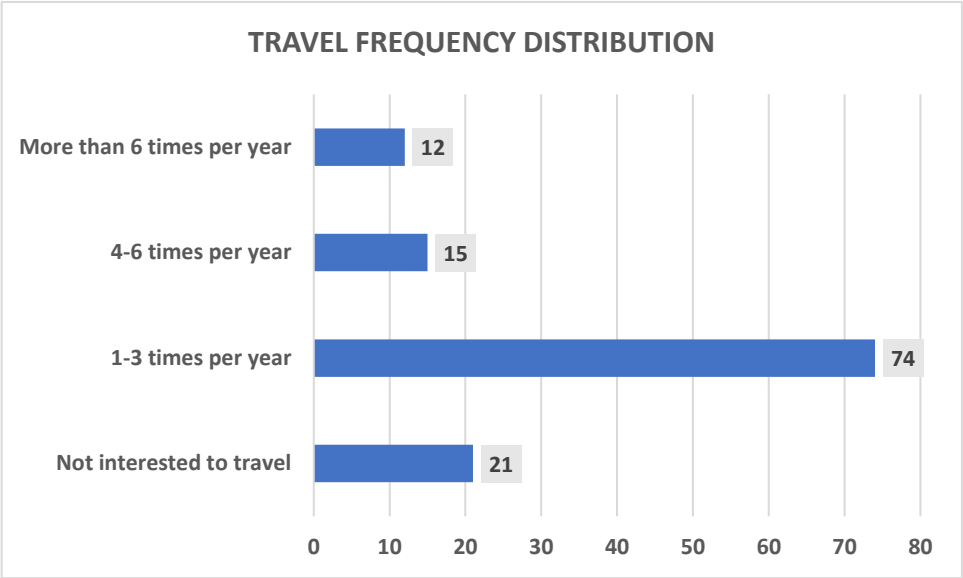


FIGURE 7 - TRAVEL FREQUENCY DISTRIBUTION

4.2.7 Travel purpose

As expected, most respondents travel for leisure purposes, followed by family visits. There are not many business travelers, explained by the relatively young age demographics of respondents. Figure 8 displays the distribution of the travel purpose.

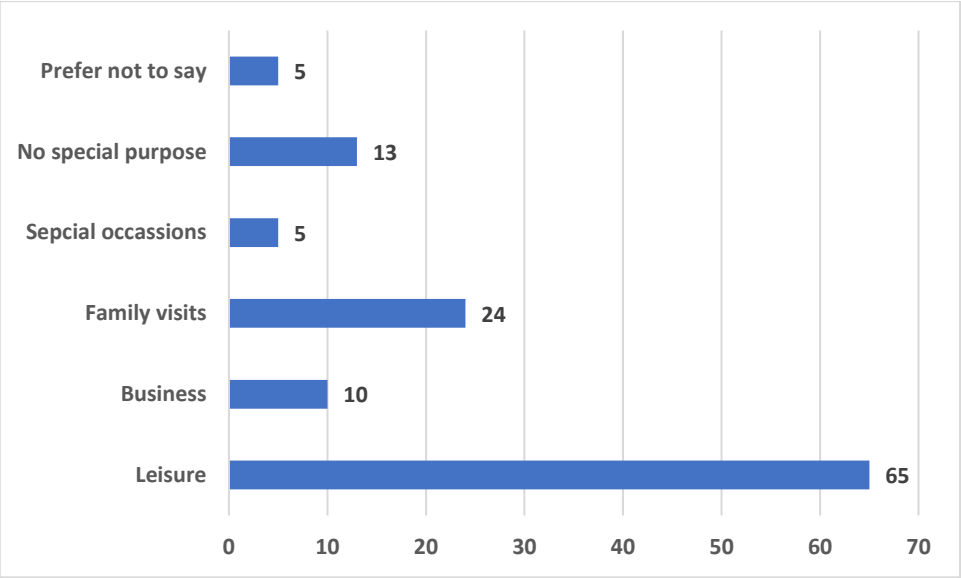


FIGURE 8 - TRAVEL PURPOSE DISTRIBUTION

4.3 Conceptual Constructs

Willingness to Use Cryptocurrencies for Payments

This construct investigates how likely respondents would choose using cryptocurrencies to make payments in the hospitality industry.

Survey question: How likely are you going to pay for a hospitality service with cryptocurrencies, such as Bitcoin, when the payment option is available (Likert scale 1-5).

Payment Attributes Importance

This construct investigates how important various attributes are related to payment methods for hospitality services.

Questions:

- "How important are the following attributes to you when paying for a hospitality service?" (Likert scale 1-5)
    - Various payment options (e.g., cash, credit card, cryptocurrencies)
    - Transparent payment procedures (e.g., all relevant information is easily accessible and understandable)
    - Safe and secure payment options (e.g., protect data from being tampered)
    - Cash payments
    - Digital payments
    - Cryptocurrency payments

Willingness to Use Cryptocurrencies with Guidance and Support

This construct investigates how likely respondents would pay with cryptocurrencies for hospitality-related services if there were incentives.

Questions:

- "Would you be willing to use cryptocurrencies for payment if you received proper guidance and support on how to do so?" (Likert scale 1-5)
- “Would you be more likely to use cryptocurrencies for hospitality-related payments if there were incentives such as discounts or loyalty rewards?” (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Likelihood of paying with cryptocurrencies	121	1.82	1.28
Importance of various payment options	121	3.31	1.32
Importance of transparent payment procedures	122	3.86	1.27
Importance of safe and secure payment options	122	4.30	1.17
Importance of cash payments	122	2.89	1.30
Importance of digital payments	122	3.94	1.09
Importance of cryptocurrency payments	122	1.90	1.17
Likelihood of paying with crypto with guides	122	2.75	1.50
Likelihood of paying with crypto with rewards	122	3.30	1.49

TABLE 1 - DESCRIPTIVE STATISTICS OF PAYMENTS

The descriptive statistics in Table 1 display the average responses related to blockchain-based payment systems. The most important attribute is “Importance of safe and secure payment options” with a mean score of 4.30. “Importance of digital payments” is the second most important attribute with a mean score of 3.94. Both “Likelihood of paying with cryptocurrencies” and “Importance of cryptocurrency payments” are highly unimportant with a mean score of only 1.82 and 1.90. That means they believe that cryptocurrencies are not important. The standard deviation scores indicate some room for variability, but respondents mostly agree on the statements. The importance of transparent payment systems with a mean score of 3.86 is close, but below 4, which indicates significant agreement of participants. Every other response or attribute have a lower mean score than 3.5, indicating a neutral point of view. “Importance of cash payments” and “Likelihood of paying with crypto with guides” have a mean score below 3, indicating disagreement with the attributes. One missing response was recorded in the analysis.

Reviews and ratings importance

This construct investigates how important reviews are when booking or choosing a hospitality service.

Questions:

- "How important is the impact of reviews and ratings posted from other customers on your purchase decision?" (Likert scale 1-5)
- "How likely are you to trust online reviews and customer feedback if identities of users are verified? This would increase the authenticity of reviews and remove fake reviews and bots." (Likert scale 1-5).

Descriptive Statistics

	N	Mean	Std Dev
Importance of reviews and ratings	122	3.82	1.13
Likeliness to trust verified reviews	122	3.89	.98

TABLE 2 - DESCRIPTIVE STATISTICS OF REVIEWS

Table 2 shows the descriptive statistics of respondents valuing reviews and blockchain-based reviews that are verified. It can be concluded that there is a high value placed on the importance of reviews and ratings, with a mean of 3.82, and a high likelihood to trust reviews that are verified through blockchain technology, with a mean of 3.89. The standard deviation of "Likeliness to trust verified reviews" attribute displays a 0.98, which implies that most respondents somewhat agree on the same level. Similarly, the attribute of "Importance of reviews and ratings" also suggests that respondents tend to have a consistent opinion.

Inventory management importance

This construct investigates the significance of inventory management. This relates to blockchain-based booking procedures and real-time information of rates and inventory.

Questions:

- "How likely would you book directly at the service provider, such as hotels, if it is cheaper than booking via intermediaries, such as booking.com?" (Likert scale 1-5)
- "How important for you are real-time information on inventory availability and rates, such as hotel rooms and airline seats?" (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Likeliness to book without intermediaries	121	4.36	.96
Importance of real-time information of rates and inventory	122	4.16	.94

TABLE 3 - DESCRIPTIVE STATISTICS OF INVENTORY MANAGEMENT

The descriptive statistics in Table 2 display very high means for both responses. "Likeliness to book without intermediaries" has a mean of 4.36 and a standard deviation of 0.96, which indicates that respondents are very likely to book hotels or hospitality services without intermediaries if prices are cheaper. Similarly, the "Importance of real-time information of rates

and inventory" attribute has a mean of 4.16 and a standard deviation of 0.94, implying that up-to-date real-time information is a very important aspect when choosing hospitality services.

Data privacy importance

This construct investigates the importance of transparent data privacy and privacy configurations.

Questions:

- "When selecting a tourism location (such as restaurant, hotel, event, ...) how important is transparent data privacy for you?" (Likert scale 1-5)
- "How important is it for you to select your own data privacy settings?" (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Importance of transparent data privacy	122	3.98	1.12
Importance of configuring data privacy settings	122	4.04	1.06

TABLE 4 - DESCRIPTIVE STATISTICS OF DATA PRIVACY

Table 4 shows a high importance of selecting own data privacy settings, with a mean of 4.04 and a standard deviation of 1.06, followed closely by the "Importance of transparent data privacy" attribute with a mean of 3.98 and 1.12 standard deviation. Respondents highly value transparent data privacy and configuring their own data privacy settings.

Maintenance and tracking importance

This concept investigates the implication of transparent supply-chain management and maintenance regulations. Questions:

- "How likely would you choose a hospitality service, such as restaurants and hotels, where you can clearly trace and certify the origin and handling procedures of a product? For instance, being able to easily understand how your food was prepared and track the sources of its ingredients" (Likert scale 1-5)
- "How likely would you choose a hotel that provides transparent and easily visible maintenance regulations, such as room renovations? You can easily check when and how maintenance was performed." (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Likelihood to trust transparent tracking procedures	122	3.38	1.24
Likelihood to trust maintenance regulations	122	3.53	1.19

TABLE 5 - DESCRIPTIVE STATISTICS OF MAINTENANCE AND TRACKING

The descriptive statistics in Table 5 indicates that respondents have a neutral opinion on "Likelihood to trust transparent tracking procedures" with a mean of 3.38. The participants showed a more favorable opinion with the attribute "Likelihood to trust maintenance regulations", with a mean score of 3.53.

ID and Verification importance

This construct investigates the importance of ID Verification processes.

Questions:

- "How satisfied are you with the current speed and methods of traditional identity verification processes when visiting hospitality locations? For instance, checking into a hotel with your passport/ID or waiting in line with your tickets to enter a concert/event" (Likert scale 1-5)
- "How likely would you use a hospitality service which has automated and secure methods of identity verifications across different hospitality platforms, such as hotels, airlines, and rental services? Automated methods of identity verification could be a mobile application or biometric scanner that approves your identity for various facilities, such as hotels, events, cinema, etc.." (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Satisfaction of traditional ID Verifications	122	3.31	.95
Likelihood to prefer automated ID Verifications	122	3.71	1.18

TABLE 6 - DESCRIPTIVE STATISTICS OF ID AND VERIFICATION

"Satisfaction of traditional ID Verifications" show a neutral opinion with a mean score of 3.31, indicating that respondents accept the traditional ID verification processes but do not show any positive nor negative experience. "Likelihood to prefer automated ID Verifications" showed a closer to 4 mean score, which means respondents tend to lean towards preferring automated ID verification systems.

Personalization importance

This construct investigates how important personalization is and if respondents are willing to choose blockchain-based personalization processes.

Questions:

- "How important do you believe personalization and offering a range of choices are within the hospitality industry to guarantee a unique individual experience? For instance, think about personalized hotel room preferences such as bed type, diverse restaurant options catering to dietary preferences, or transportation choices including bicycle rentals or car sharing." (Likert scale 1-5)
- "Would you agree to a system that securely stores each transaction or purchase made by you, to enhance your personalized experience and automate processes? Only you can access the data and it cannot be tempered or hacked. For instance, automatically select your hotel preferences, automatically let restaurants be aware about food allergies, etc. " (Likert scale 1-5)

Descriptive Statistics

	N	Mean	Std Dev
Importance of personalised packages	122	3.89	.96
Likelihood to agree to an automated personalisation process	122	3.67	1.28

TABLE 7 - DESCRIPTIVE STATISTICS OF PERSONALIZATION

Both attributes "Importance of personalized packages" and "Likelihood to agree to an automated personalization process" have a mean score above 3.65, leaning towards positive agreement. The small standard deviation indicates some variability in responses.

Loyalty Program Attitudes and Preferences

This construct investigates the different attitudes and preferences of respondents towards loyalty programs.

Questions:

- "How much do you agree with following arguments when joining a new loyalty program?" (Likert scale 1-5)
- It is convenient to create an account and go through registration processes
- It is convenient to fill out forms during registration
- I am fully aware of restrictions and limitations of loyalty programs
- Rules are clearly visible and/or I always understand them
- There is enough time to spend all my loyalty point
- There are enough reward options to spend my points on
- I am very satisfied with my loyalty program(s)

- How likely would you choose a loyalty program where you can spend your rewards on various hospitality services, such as hotels, restaurant, flights, concerts, etc.…

Descriptive Statistics

	N	Mean	Std Dev
It is convenient to fill out forms during registration	92	3.18	1.28
It is conventient to fill out forms during registration	92	2.76	1.29
I am full aware of restrictions and limitations of loyalty programs	92	3.05	1.25
Rules are clearly visible and/or I always understand them	92	3.08	1.34
There is enough time to spend all my loyalty points	92	2.92	1.21
There are enough reward options to spend my points on	92	2.93	1.24
I am very satisfied with my loyalty program(s)	92	2.98	1.08
How likely would you choose a loyalty program that offers exchangeable tokens with other LP	92	3.97	1.09

TABLE 8 - DESCRIPTIVE STATISTICS OF LOYALTY PROGRAMS

First, it is important to mention that 30 responses were missing, indicating a large amount of uncertainty among respondents. The question might have been unclear or required more explanations.

All attributes lean very close the mean score of 3 indicating a neutral opinion, except the attribute “How likely would you choose a loyalty program that offers exchangeable tokens with other LP”, with a very close to mean score of 4. The standard deviations also indicated some sort of uncertainty among respondents.

4.4 Reliability of Scale

To test the reliability of the results, Cronbach’s alphas were calculated for the sections with more than 2 variables. For the sections with only 2 variables a correlation analysis was used. Later, the hypotheses were tested for validity.

Secure payments and bookings

Reliability Statistics

Cronbach's Alpha	N of Items
.77	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted
Likelihood_Crypto_Payment	26.22	38.61
Payment_Options	24.75	37.70
Payment_Transparency	24.16	39.18
Payment_Safety	23.74	38.84
Payment_Cash	25.17	41.59
Payment_Digital	24.11	40.45
Payment_Crypto	26.16	38.33
Crypto_with_Guide	25.30	35.06
Crypto_with_Rewards	24.73	35.88

TABLE 9 - RELIABILITY TEST SECURE PAYMENTS AND BOOKINGS

This table shows the dependencies among different variables and how consistently they can measure the intended construct. The Cronbach’s alpha (0.77) is a measurement value that indicates how closely related the tested variables are. A higher Cronbach’s alpha implies greater value and consistency among the variables. Because the Cronbach’s alpha is above 0.7, it can be

implied that the items in the scale are moderately strongly correlated. The Item-Total statistics summarizes that most items have a moderate correlation with the total scale score. Removing any individual item from the test would not increase the reliability of the scale ("..if Item Deleted"). To summarize, most of the items tested have a good to strong correlation.

Reviews

It is difficult to test for reliability with only two Likert-scale-questions for this section, thus, a Cronbach reliability test was not recommended. Furthermore, the Kendall's tau b test, a nonparametric measure to test strength and direction of a relationship between two variables on an ordinal scale or higher, was used. The test statistic (τ_{xy}= 0.472; p-value: <0.01) with a 1% level of significance, shows that there is a positive monotonous association between the value of reviews while making a booking for a hospitality business and the chance that reviews may be trusted because of the implementation of blockchain technology.

To sum up, there is a moderate positive monotonic relationship relationship between the tested variables (Importance of review when booking a hospitality service and the likelihood of trusting reviews that are authentic due to BT) as the test statistic are τ_{xy}= 0.472; p-value: <0.01 (as shown in Table 10). This means, if the importance of reviews increases, the likelihood of trusting BT reviews also increases.

Symmetric Measures				
		Value	Asymptotic Standard Errora	Approximate Tb
Ordinal by Ordinal	Kendall's tau-b	0.472	0.074	6.157
	Kendall's tau-c	0.414	0.067	6.157
N of Valid Cases		122		
a Not assuming the null hypothesis.				
b Using the asymptotic standard error assuming the null hypothesis.				

TABLE 10 - CORRELATION ANALYSIS OF REVIEWS

Inventory Management

The Kendall's tau b is 0.293 and p-value is <0.01 (as shown in Table 11), indicates a statistically significant relationship. This result could imply that individuals who value cost saving options also appreciate access to real-time information, as it allows them to make quick decisions to find better deals. There is a significant and moderately monotonic relationship between the two tested variables (Booking_without_Intermediary and Booking_Real_Time).

The likelihood of choosing direct bookings with service providers instead of booking with intermediaries (if it offers discounts) increases, the significance of real-time information about inventory and prices/rates also tends to increase. The significance level of 0.000 indicates the relationship is highly correlated and statistically significant.

Correlations				
			Booking_without_Intermediary	Booking_Real_Time
Kendall's tau_b	Booking_without_Intermediary	Correlation Coefficien	1	.293**
		Sig. (2-tailed)	.	0
		N	122	122
	Booking_Real_Time	Correlation Coefficien	.293**	1
		Sig. (2-tailed)	0	.
		N	122	122

TABLE 11 - CORRELATION ANALYSIS OF INVENTORY MANAGEMENT

Data Privacy

The next correlation analysis shows statistically significant and moderately monotonic relationship between the variables "Data_Privacy" and "Data_Settings". "Data_Privacy" measures the perspectives on the significance of data privacy. "Data_Settings" measures how important it is to configure and manage personal data settings. Kendall's tau b was used with a result of τ_{xy}= 0.487 and p-value of lower than 0.01. The result indicates a moderate correlation between these variables. The significance level of 0.01 means this relationship is highly correlated and is not likely to have appeared by chance.

This could imply that individuals who are concerned about their private information, are more likely to actively engage in blockchain-based systems that allow them to control how their data is used.

Correlations				
			Data_Privacy	Data_Settings
Kendall's tau_b	Data_Privacy	Correlation Coefficient	1	.487**
		Sig. (2-tailed)	.	0
		N	122	122
	Data_Settings	Correlation Coefficient	.487**	1
		Sig. (2-tailed)	0	.
		N	122	122

TABLE 12 - CORRELATION ANALYSIS OF DATA PRIVACY

Maintenance and tracking

The variable "Tracking" measures the likelihood of participants choosing a hospitality service who offer blockchain technology to trace and certify the origin and handling procedures of a product. The second variable "Maintenance" shows how likely respondents will choose a hotel that provides transparent and visible maintenance regulations. The correlation analysis confirms a moderate correlation between these variables. The significance level of 0.000 implies a strong relationship and very unlikely to have arisen by chance. This correlation could imply that transparency in both handling of products and maintenance provides a sense of trust, which is valuable for customers.

Correlations				
			Tracking	Maintenance
Kendall's tau_b	Tracking	Correlation Coefficient	1	.520**
		Sig. (2-tailed)	.	0
		N	122	122
	Maintenance	Correlation Coefficient	.520**	1
		Sig. (2-tailed)	0	.
		N	122	122

TABLE 13 - CORRELATION ANALYSIS OF MAINTENANCE AND TRACKING

ID Verification

The next two variables test the satisfaction level of traditional ID verification processes ("ID_Verification") and the likelihood of choosing automated ID verification technology ("ID_Automated"). The correlation analysis (as shown in Table 14) provides extremely weak and insignificant relationships between the two variables. The correlation coefficient of 0.023 implies no meaningful association between them. The p-value of 0. 763 further proves that the correlation is not statistically significant and any relationship between the variable might have occurred due to random variation or chance.

Correlations				
			ID_Verficiatior	ID_Automated
Kendall's tau_b	ID_Verficiation	Correlation Coefficient	1	0.023
		Sig. (2-tailed)	.	0.763
		N	122	122
	ID_Automated	Correlation Coefficient	0.023	1
		Sig. (2-tailed)	0.763	.
		N	122	122

TABLE 14 - CORRELATION ANALYSIS OF ID VERIFICATION

Personalization

"Personalization" measures the importance of choosing hospitality services that offer personalized packages. "Personalisation_Automated" shows how likely respondents would choose a hospitality provider that offers blockchain technology to automate various processes with focus on personalization (as shown in Table 15). There is a statistically significant and moderate positive correlation between the two variables. The p-value of less than 1% also confirms a statistical significance. This relationship could imply that respondents who value personalized packages and services, also may find value in the convenience and efficiency of blockchain technology that offers automated processes.

Correlations				
			Personalisation	Personalisation_Automated
Kendall's tau_b	Personalisation	Correlation Coefficient	1	.488**
		Sig. (2-tailed)	.	0
		N	122	122
	Personalisation_Automated	Correlation Coefficient	.488**	1
		Sig. (2-tailed)	0	.
		N	122	122

TABLE 15 - CORRELATION ANALYSIS OF PERSONALIZATION

Loyalty Programs

Reliability Statistics					
Cronbach's Alpha	Cronbach's Alpha Based on	N of Items			
0.885	0.88	8			
Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LP_Registration	23.27	39.24	0.704	0.525	0.866
LP_Forms	23.62	38.749	0.715	0.546	0.864
LP_Limitation	23.34	39.285	0.693	0.535	0.867
LP_Rules	23.33	37.495	0.779	0.65	0.857
LP_Time	23.42	39.849	0.653	0.51	0.871
LP_Rewards	23.47	38.73	0.738	0.611	0.862
LP_Satisfaction	23.43	39.62	0.764	0.631	0.861
LP_VariousOpt	22.65	48.181	0.172	0.077	0.909

TABLE 16 - RELIABILITY ANALYSIS OF LOYALTY PROGRAMS

Various loyalty program variables were tested and compared with the Cronbach's alpha value. It is approximately 0.89, implying a good to excellent level of reliability. Thus, more items have a high correlation with the total scale score.

"LP_Registration" refers to the satisfaction level of respondents when creating an account. "LP_Forms" measures the easiness of filling out various forms when joining a LP. "LP_Limitation" measures how clear individuals are about the limitations of their LP. "LP_Rules" stands for the awareness level of rules of their LP. "LP_Time" measures if there is enough time for participants to spend all their loyalty points. "LP_Rewards" refers to the satisfaction level of different reward options of their LP. "LP_Satisfaction" shows how satisfied respondents are on their current LP. "LP_VariousOpt" measures how likely individuals would choose a blockchain-based LP if they can transfer their loyalty tokens to other LP.

The findings suggests that the attributes of LP, such as clean and fast registration, rule awareness, reward satisfaction, LP flexibility, etc., contribute to a positive overall satisfaction of a blockchain-based LP.

4.5 Testing hypotheses

The first hypothesis is related to the question "How much do you agree with following arguments when joining a new loyalty program?". There are a few variables to test the experience from consumers when signing up for a loyalty program, such as convenience level to create an account, convenience level to fill out forms, awareness level of restrictions and limitation, visibility and understanding level of rules, time to spend all points, sufficient reward options, and satisfaction level of current loyalty programs.

The assumption based on literature is that consumers prefer loyalty programs that offer more benefits compared to traditional loyalty programs. These benefits include fast and automatic registration processes, transparent rules and regulations, personalized offers, and rewards. Therefore, the first hypothesis was as follows:

Hypothesis 1: Consumers are more likely to participate in blockchain-based loyalty programs when they perceive benefits compared to traditional loyalty programs in the hospitality industry

Linking different loyalty programs together is a distinctive attribute of blockchain technology and enables more options for consumers. Therefore, a sub-hypothesis was created:

***H1a**: Consumers are more likely to participate in blockchain-based loyalty programs when they can exchange loyalty tokens with other loyalty programs.*

To test H1, it was important to firstly analyze and calculate measure such as means, standard deviation and the distribution of responses. This is used to understand the characteristics of the sample and correlated variables.

To calculate the strength and directions of the relationships between variables, a regression analysis was conducted. The correlation analysis was used to reveal possible connections between perceived benefits of blockchain-based loyalty programs.

4.5.1 Hypothesis 1

Statistics					
	Mean	Median	Std. Deviation	Minimum	Maximum
LP_Registration					
LP_Forms	3.38	4	1.229	1	5
LP_Limitation	3.02	3	1.263	1	5
LP_Rules	3.30	3	1.239	1	5
LP_Time	3.32	4	1.300	1	5
LP_Rewards	3.23	3	1.238	1	5
LP_Satisfaction	3.18	3	1.233	1	5
LP_VariousOpt	3.21	3	1.115	1	5
	4.00	4	1.004	1	5

TABLE 17 - DESCRIPTIVE STATISTICS OF LP

The descriptive statistics in Table 17 show a relatively neutral mean (average mean 3.33) for every variable tested. In this case, a low mean (lower than 3) on a Likert-type scale from 1-5

would indicate strong negative views about traditional loyalty program systems, while a high mean (higher than 3) would imply agreements with traditional loyalty program systems.

The tested variables were satisfaction of processes when joining a new loyalty program (LP_Registration), the convenience level of filling out forms when joining a new loyalty program (LP_Forms), how easy it is to understand limitations (LP_Limitation), if rules and regulations are easily understandable (LP_Rules), the satisfaction level of various reward options (LP_Rewards), the overall satisfaction level of the current loyalty program (LP_Satisfaction), how likely respondents would choose a loyalty program in which they can exchange loyalty tokens with other loyalty programs (LP_VariousOpt), and how likely they are using all points before the points are invalid (LP_Time).

Respondents displayed neutral feeling about traditional loyalty program systems but the standard deviation (>1) suggested that some individuals might strongly disagree with traditional loyalty programs, while others might strongly agree. Further analysis must be conducted to corroborate H1.

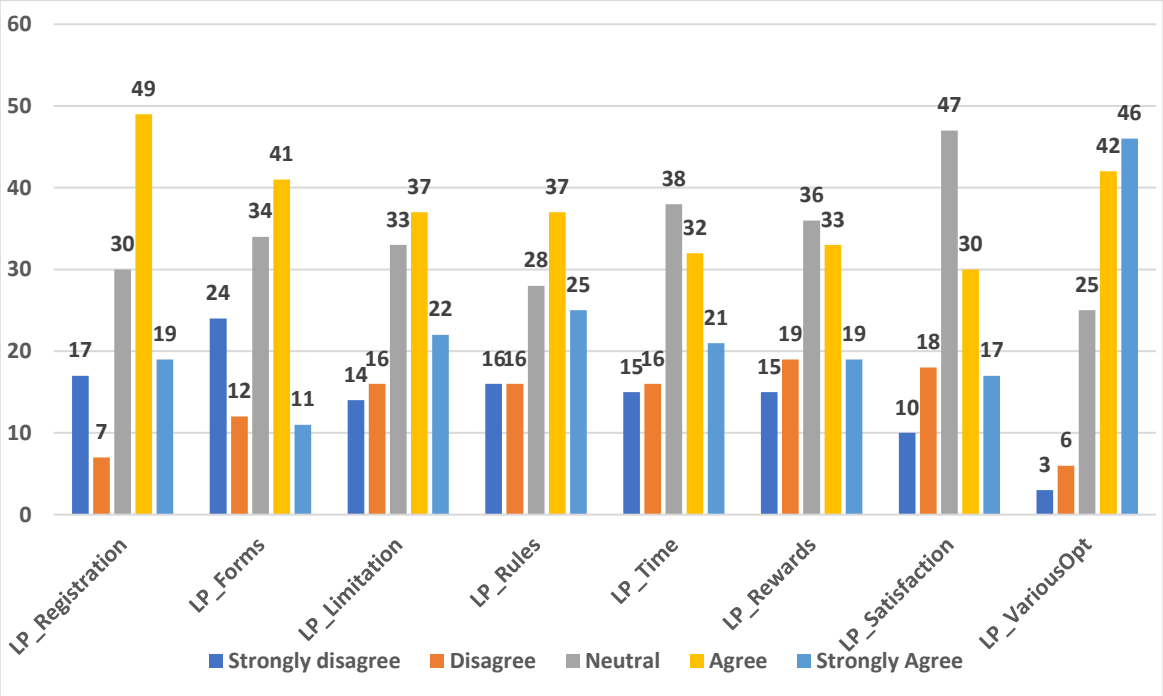


FIGURE 9 - LOYALTY PROGRAM DISTRIBUTION

Correlations										
			LP_Registration	LP_Forms	LP_Limitation	LP_Rules	LP_Time	LP_Rewards	LP_Satisfaction	LP_VariousOpt
Kendall's tau_b	LP_Registration	Correlation Coefficient	1	.495**	.433**	.482**	.401**	.421**	.431**	.168*
		Sig. (2-tailed)	.	0	0	0	0	0	0	0.029
	LP_Forms	Correlation Coefficient	.495**	1	.439**	.495**	.392**	.435**	.452**	0.138
		Sig. (2-tailed)	0	.	0	0	0	0	0	0.071
	LP_Limitation	Correlation Coefficient	.433**	.439**	1	.583**	.342**	.444**	.473**	.150*
		Sig. (2-tailed)	0	0	.	0	0	0	0	0.049
	LP_Rules	Correlation Coefficient	.482**	.495**	.583**	1	.442**	.542**	.535**	0.064
		Sig. (2-tailed)	0	0	0	.	0	0	0	0.396
	LP_Time	Correlation Coefficient	.401**	.392**	.342**	.442**	1	.502**	.522**	0.011
		Sig. (2-tailed)	0	0	0	0	.	0	0	0.887
	LP_Rewards	Correlation Coefficient	.421**	.435**	.444**	.542**	.502**	1	.604**	0.07
		Sig. (2-tailed)	0	0	0	0	0	.	0	0.358
	LP_Satisfaction	Correlation Coefficient	.431**	.452**	.473**	.535**	.522**	.604**	1	0.105
		Sig. (2-tailed)	0	0	0	0	0	0	.	0.171
	LP_VariousOpt	Correlation Coefficient	.168*	0.138	.150*	0.064	0.011	0.07	0.105	1
		Sig. (2-tailed)	0.029	0.071	0.049	0.396	0.887	0.358	0.171	.

TABLE 18 - LOYALTY PROGRAM CORRELATIONS

Before the results of the following statistical analyses are discussed, a short explanation is written below to understand the meaning of the table and its' values.

Each cell shows the correlation coefficient between two variables. The value of the correlation coefficient ranges from -1 to +1 and a positive value would indicate a positive correlation. A higher positive correlation (close to +1) means that, if one variable increases, the other variable is more likely to increase as well. The "Sig. (2-tailed)" value is the p-value linked with the correlation coefficient. A small p-value is a number below 0.005, which indicates that the correlation is statistically significant. The "N" value represents the number of observations used for calculating the correlation.

The tested variables show moderate to strong positive correlations (based on Spearman's rho and Kendall's tau-b). Both tests show similar correlations; the notable significant correlations ($p < 0.005$) are as follows:

- LP_Registration with LP_Limitation, LP_Rules, LP_Rewards, and LP_Satisfaction.
- LP_Limitation, LP_Rules, and LP_Rewards.
- LP_VariousOpt shows some weak positive correlations with other variables

Both correlation methods show the significant relationships between the variables. The tests also indicate that potential patterns can be seen, that could be further explored.

Model Summary										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.794a	0.631	0.608	0.698	0.631	27.816	7	114	0	1.861
ANOVA										
Model	Sum of Squares	df	Mean Square	F	Sig.					
Regressior	94.898	7	13.557	27.816	.000b					
Residual	55.561	114	0.487							
Total	150.459	121								
Coefficientsa										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics			
		B	Std. Error	Beta			Tolerance	VIF		
1	(Constant)	0.327	0.312		1.048	0.297				
	LP_Registration	0.035	0.075	0.039	0.474	0.637	0.476	2.1		
	LP_Forms	0.073	0.074	0.082	0.977	0.331	0.458	2.184		
	LP_Limitation	0.112	0.074	0.124	1.502	0.136	0.474	2.109		
	LP_Rules	0.112	0.082	0.131	1.373	0.172	0.356	2.807		
	LP_Time	0.215	0.07	0.239	3.056	0.003	0.53	1.885		
	LP_Rewards	0.309	0.077	0.341	3.994	0	0.443	2.256		
	LP_VariousOpt	0.032	0.066	0.029	0.489	0.626	0.924	1.082		
a Predictors: (Constant), LP_VariousOpt, LP_Time, LP_Limitation, LP_Forms, LP_Registration, LP_Rewards, LP_Rules										
b Dependent Variable: LP_Satisfaction										

TABLE 19 - LP REGRESSION ANALYSIS

The regression analysis shows that the most important coefficient for "LPRewards" is 0.309, which means that when respondents disagree with being satisfied with their reward options, their overall satisfaction is also lower.

The coefficients for LP_Registration, LP_Forms, LP_Limitation, LP_Rules, LP_Time, and LP_VariousOpt are relatively small and not statistically significant ($p > 0.05$). The R-squared value of 0.63 indicates a moderate level of explanation of the outcome variable by the predictor variables. The ANOVA table (F-value = 27.82) suggests that the whole model is statistically significant.

The results suggest confirming H1 and rejecting H0. However, H1 implies that customers prefer blockchain-based LPs due to their overall benefits. The results can not confirm this, because only one attribute seem to have statistical influence on consumer behavior (LP_Rewards). Therefore, H1 will be rejected and further research of benefits is suggested.

4.5.2 Hypothesis 1a: Consumers are more likely to participate in blockchain-based loyalty programs when they can exchange loyalty tokens with other loyalty programs

Descriptive Statistics

	N	Mean	Std Dev	Minimum	Maximum
How likely would you choose a loyalty program that offers exchangeable tokens with other LP	92	3.97	1.09	Not Likely at all	Very likely
Valid N (listwise)	122				
Missing N (listwise)	30				

TABLE 20 - DESCRIPTIVE STATISTICS OF BT LP

The average response of 3.97 suggests that participants were more likely to be interested in choosing a loyalty program that offers diverse spending options across various hospitality

services. The relatively low standard deviation indicates that most responses are relatively consistent. However, 30 responses were missing as mentioned previously.

Model Summary (I am very satisfied with my loyalty program(s))

R	R Square	Adjusted R Square	Std. Error of the Estimate
.15	.02	.01	1.07

ANOVA (I am very satisfied with my loyalty program(s))

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.33	1	2.33	2.03	.158
Residual	103.62	90	1.15		
Total	105.96	91			

Coefficients (I am very satisfied with my loyalty program(s))

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.40	.42	.00	5.67	.000
How likely would you choose a loyalty program that offers exchangeable tokens with other LP	.15	.10	.15	1.42	.158

TABLE 21 - REGRESSION ANALYSIS OF SATISFACTION AND BT LP

According to the results, the likelihood of selecting programs with exchangeable tokens has no statistically significant effect on satisfaction with loyalty programs. The low R value indicates that the model does not explain much of the variation in loyalty program satisfaction. Thus, Hypothesis 1a is rejected.

The second hypothesis is related to the questions “How likely are you going to pay for a hospitality service with cryptocurrencies, such as Bitcoin, when the payment option is available?”, “Would you be willing to use cryptocurrencies for payment if you received proper guidance and support on how to do so?” and “Would you be more likely to use cryptocurrencies for hospitality-related payments if there were incentives such as discounts or loyalty rewards?”.

Furthermore, various payment variables are tested to analyses the importance of their benefits. These variables include “Various payment options (e.g., cash, credit card, crypto currencies, ...)”, “Transparent payment procedures (e.g., all relevant information is easily accessible and understandable)”, “Safe and secure payment options (e.g., protect data from being tampered)”, “Cash payments”, “Digital payments”, and “Cryptocurrency payments”.

According to the literature, consumers are more likely to prefer payments with increased benefits to traditional payment methods. Therefore, the second hypothesis is formulated as:

Hypothesis 2: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior

Furthermore, the specific benefits of payment methods are analyzed to get a better understanding of customer preferences and how it affects consumer behavior. The different crypto payment benefits are statistically tested in the next hypotheses. H2a, H2b and H2c can therefore be formulated as:

Hypothesis 2a: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for secure payment methods

Hypothesis 2b: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for transparent payment methods

Hypothesis 2c: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for earning rewards when paying with a blockchain-based payment system

Various statistical tests are used to examine the relationship between the impacts of blockchain-based payment systems on consumer behavior in the hospitality industry. The tests provide more insights to customer preferences and their spending behavior. Descriptive statistics provide information on how customers perceive payment options, transparency, and safety. The correlation analyses list which variables interact with each other.

The sub hypotheses are investigated by using correlation and regression analyses and group comparison tests. These tests aim to reveal possible relationships of different variables.

4.5.3 Hypothesis 2: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior

	N		Mean	Median	Std. Deviat	Range	Minimum	Maximum
	Valid	Missing						
Payment_Options	122	0	3.3	4	1.334	4	1	5
Payment_Transparency	122	0	3.89	4	1.241	4	1	5
Payment_Cash	122	0	2.89	3	1.3	4	1	5
Payment_Digital	122	0	3.93	4	1.089	4	1	5
Payment_Crypto	122	0	1.89	1	1.151	4	1	5

TABLE 22 - DESCRIPTIVE STATISTICS OF PAYMENTS

Payment Options:

As seen in Table 22, the mean score for "Payment_Options" is 3.29. This indicates that respondents consider the availability of various payment options, such as cash, credit cards, and cryptocurrencies, to be moderately important. The standard deviation of 1.34 shows some variability in responses. This means, that respondents may have different views on the importance of payment options.

Payment Transparency:

The mean score for "Payment_Transparency" is 3.86, which shows that transparent payment procedures are relatively important. This suggests that respondents find it important to have easily accessible and understandable payment procedures. The standard deviation of 1.27

shows some variability in responses, but the responses were generally leaning towards 4 and 5 of the Likert scale.

Payment Safety:

The mean score for "Payment_Safety" is 4.30, which is considerably higher than the midpoint of 3 and also has the highest value of respondents. The low standard deviation of 1.17 indicates consistent agreement among respondents. This attribute seems to be of particular significance to the respondents.

Payment Cash, Digital, and Crypto:

The mean scores for "Payment_Cash," "Payment_Digital," and "Payment_Crypto" are 2.89, 3.94, and 1.90, respectively.

It can be assumed that respondents have a neutral view of cash payments and a very favorable view of digital payments. However, it looks like participants do not value cryptocurrency payments at all. The standard deviation of 1.30 for the cash option, indicates that some respondents might consider cash payments more important than others. The overall average of respondents seems to lean towards digital payment methods.

Correlations

			Payment_Options	Payment_Transparency	Payment_Safety	Payment_Cash	Payment_Digital	Payment_Crypto
Spearman's rho	Payment_Options	Correlation Coefficient	1	.493**	.477**	.286**	.328**	.241**
		Sig. (2-tailed)	.	0	0	0.001	0	0.008
		N	122	122	122	122	122	122
	Payment_Transparency	Correlation Coefficient	.493**	1	.654**	.214*	.476**	0.048
		Sig. (2-tailed)	0	.	0	0.018	0	0.603
		N	122	122	122	122	122	122
	Payment_Safety	Correlation Coefficient	.477**	.654**	1	.213*	.422**	0.065
		Sig. (2-tailed)	0	0	.	0.018	0	0.475
		N	122	122	122	122	122	122
	Payment_Cash	Correlation Coefficient	.286**	.214*	.213*	1	0.138	0.159
		Sig. (2-tailed)	0.001	0.018	0.018	.	0.13	0.08
		N	122	122	122	122	122	122
	Payment_Digital	Correlation Coefficient	.328**	.476**	.422**	0.138	1	0.068
		Sig. (2-tailed)	0	0	0	0.13	.	0.458
		N	122	122	122	122	122	122
	Payment_Crypto	Correlation Coefficient	.241**	0.048	0.065	0.159	0.068	1
		Sig. (2-tailed)	0.008	0.603	0.475	0.08	0.458	.
		N	122	122	122	122	122	122

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

TABLE 23 - CORRELATION ANALYSIS PAYMENTS

"Payment_Transparency" has a strong positive correlation with "Payment_Options" (Spearman's rho = 0.493, $p < 0.01$), implying that consumers who value many payment options also value transparency.

"Payment_Safety" has a strong positive correlation with "Payment_Transparency" (Spearman's rho = 0.654, $p < 0.01$). This relationship explains, that respondents who believe payment transparency is important, also believe that payment safety is important.

"Payment_Safety" has moderate positive correlations with "Payment_Cash" (Spearman's rho = 0.213, $p < 0.05$). This implies, that there is a moderate chance that respondents who value payment safety are more inclined to pay with cash.

"Payment_Digital" has a moderate positive correlation with "Payment_Transparency" (Spearman's rho = 0.476, p < 0.01) and “Payment_Safety” (Spearman's rho = 0.422, p < 0.01). Respondents who value digital payment options, are also more likely to value payment transparency and safety.

"Payment_Crypto" does not show strong correlations with other attributes.

The findings suggest that respondents highly value safe and secure payment options and consider transparent payment procedures to be relatively important. While various payment options and digital payments are also seen as important, cryptocurrency payments appear to be less favored. There are strong indications that consumers prefer blockchain-based payment systems, however, the results do not fully confirm H2. The sub-hypotheses could possibly give final evidence to support H2.

4.5.4 Hypothesis 2a: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for secure payment methods

Correlations				
			Technology_Level	Payment_Safety
Kendall's tau_b	Technology_Level	Correlation Coefficient	1	0.09
		Sig. (2-tailed)	.	0.281
		N	122	122
	Payment_Safety	Correlation Coefficient	0.09	1
		Sig. (2-tailed)	0.281	.
		N	122	122

TABLE 24 - CORRELATION ANALYSIS TECHNOLOGY_LEVEL + PAYMENT_SAFETY

The correlation coefficients of 0.09 (Kendall’s tau-b) indicates a very weak positive correlation between the variables "Technology_Level" and "Payment_Safety". The p-values suggest that this correlation is not statistically significant.

The analysis does not provide enough evidence to prove a relevant relationship between the technology level and the preference for payment safety.

To find more evidence, the data was grouped into respondents who do not perceive safety as important, and those who did. The Kruskal-Wallis test compares the distribution of the "Likelihood_Crypto_Payment" Likert-scale responses across different groups based on the "payment_safety_group" variable.

Ranks

		N	Mean Rank
Likelihood_Crypto_Payment	not important	16	61.19
	neutral	7	58.36
	very important	98	61.16
	Total	121	

Test Statistics

	Likelihood_Crypto_Payment
Chi-Square	.06
df	2
Asymp. Sig.	.972

TABLE 25 - KRUSKAL-WALLIS TEST CRYPTO_PAYMENT + SAFETY_GROUP

The Kruskal-Wallis test statistic is 0.06, the degrees of freedom (df) is 2, and the asymptotic significance value is 0.972. Because the p-value is above 0.005, it can be concluded that there is no significant statistical evidence.

There is not enough evidence to conclude that the likelihood of paying with cryptocurrencies significantly differs across the group of people who highly value payment safety. Therefore, H2a can not be accepted yet.

Model Summary (Payment_Safety)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.54	.29	.28	.99

ANOVA (Payment_Safety)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	47.72	1	47.72	48.67	.000
Residual	117.66	120	.98		
Total	165.38	121			

Coefficients (Payment_Safety)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.03	.34	.00	6.03	.000
Payment_Digital	.57	.08	.54	6.98	.000

TABLE 26 - REGRESSION ANALYSIS PAYMENT_SAFETY + PAYMENT_DIGITAL

The regression analysis explains the variance in "Payment_Safety," with an F-statistic of 48.67 and a p-value of 0.000. There is a statistically significant positive relationship between the likelihood of paying with digital options and the level of agreement to safe payment methods. This means, as the likelihood of paying with digital options increases, the agreement to safe payment methods also tends to increase. These results confirm H2a.

4.5.5 Hypothesis 2b: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for transparent payment methods

Model Summary (Payment_Transparency)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.01	.00	-.01	1.27

ANOVA (Payment_Transparency)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.04	1	.04	.03	.870
Residual	194.59	120	1.62		
Total	194.63	121			

Coefficients (Payment_Transparency)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.89	.22	.00	17.60	.000
Payment_Crypto	-.02	.10	-.01	-.16	.870

TABLE 27 - REGRESSION ANALYSIS PAYMENT_CRYPTO + PAYMENT_TRANSPARENCY

The R Square of the regression analysis of “Payment_Transparency” and “Payment_Crypto” was 0.00, the adjusted R Square was -0.01, and the ANOVA table displayed no significant variance, indicating that there are no significant relationships between the variables.

Model Summary (Payment_Transparency)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.48	.23	.23	1.12

ANOVA (Payment_Transparency)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	45.40	1	45.40	36.51	.000
Residual	149.23	120	1.24		
Total	194.63	121			

Coefficients (Payment_Transparency)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.65	.38	.00	4.35	.000
Payment_Digital	.56	.09	.48	6.04	.000

TABLE 28 - REGRESSION ANALYSIS PAYMENT_TRANSPARENCY + PAYMENT_DIGITAL

The R Square was 0.23, indicating that approximately 23% of the variance in "Pament_Transparency" can be explained by the variance in "Payment_Digital." The adjusted R Square was also 0.23, suggesting that the model fits the data relatively well. The ANOVA table showed that the regression model significantly explained variance in "Payment_Transparency"

since the p-value is less than 0.001. The standardized coefficient for "Payment_Digital" was approximately 0.48, which indicates a moderate positive relationship between the variables.

Model Summary (Payment_Transparency)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.49	.24	.22	1.09

ANOVA (Payment_Transparency)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	43.86	2	21.93	18.31	.000
Residual	142.53	119	1.20		
Total	186.39	121			

Coefficients (Payment_Transparency)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.44	.42	.00	3.43	.001
Data_Privacy	.32	.11	.29	2.83	.005
Data_Settings	.29	.12	.25	2.46	.015

TABLE 29 - REGRESSION ANALYSIS PAYMENT_TRANSPARENCY + DATA_PRIVACY + DATA_SETTINGS

Table 29 shows that respondents who value configuring their own privacy settings also value transparent payment methods. However, the importance of data privacy does not show significant evidence for preferring transparent payment methods.

The results of the Table 28 proves that the likelihood of paying with digital payment methods significantly predicts the importance of transparent payment methods. Respondents also prefer configuring their own privacy settings, suggesting that they prefer using blockchain-based payment systems that offer transparent payments. H2b can therefore be accepted.

4.5.6 Hypothesis 2c: The adoption of blockchain-based payment systems in the hospitality industry significantly influences customer spending behavior with consumers showing a preference for earning rewards when paying with a blockchain-based payment system

Model Summary (Crypto_with_Rewards)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.44	.20	.19	1.34

ANOVA (Crypto_with_Rewards)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	53.20	1	53.20	29.48	.000
Residual	216.58	120	1.80		
Total	269.78	121			

Coefficients (Crypto_with_Rewards)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.22	.23	.00	9.53	.000
Payment_Crypto	.57	.10	.44	5.43	.000

TABLE 30 - REGRESSION ANALYSIS CRYPTO_WITH_REWARDS + PAYMENT_CRYPTO

The "Payment_Crypto" variable has a statistically significant positive impact on the preference for earning rewards when paying with a blockchain-based payment system ("Crypto_with_Rewards"). The p-value in the ANOVA table displays a statistically significant relationship between the variables. This means, if people do not want to use cryptocurrency, they are more likely to consider using it if they are presented with rewards.

Model Summary (Crypto_with_Rewards)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.18	.03	.02	1.48

ANOVA (Crypto_with_Rewards)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.49	1	8.49	3.90	.051
Residual	261.29	120	2.18		
Total	269.78	121			

Coefficients (Crypto_with_Rewards)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.57	.89	.00	1.76	.081
Technology_Level	.37	.19	.18	1.97	.051

TABLE 31 - REGRESSION ANALYSIS CRYPTO_WITH_REWARDS + TECHNOLOGY_LEVEL

There appears to be a potential association between technology knowhow and preferences for earning rewards when using a blockchain-based payment system. However, the p-value of 0.051 reveals that the relationship is only marginally significant. There is a possibility that the relationship could have occurred by random chance.

Model Summary (Crypto_with_Rewards)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.77	.60	.60	.95

ANOVA (Crypto_with_Rewards)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	161.91	1	161.91	180.13	.000
Residual	107.87	120	.90		
Total	269.78	121			

Coefficients (Crypto_with_Rewards)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.18	.18	.00	6.56	.000
Crypto_with_Guide	.77	.06	.77	13.42	.000

TABLE 32 - REGRESSION ANALYSIS CRYPTO_WITH_REWARDS + CRYPTO_WITH_GUIDE

The results indicate that respondents who are more likely to use crypto payment systems when they receive guidance, are significantly more likely to use crypto-payment systems in which they can earn rewards (R=0.6). There is a strong connection between these two variables, as the p-value is very low (<0.005).

The third hypothesis is related to the questions “How important is the impact of reviews and ratings posted from other customers on your purchase decision?”, “Have you ever encountered or suspected fake or biased reviews while making decisions about travel or hospitality services?”

and “How likely are you to trust online reviews and customer feedback if identities of users are verified? This would increase the authenticity of reviews and remove fake reviews and bots. ?”.

Various researchers concluded that consumers are more likely to prefer blockchain-based review and rating systems. Furthermore, it is expected that blockchain reviews improve the credibility of online reviews.

4.5.7 Hypothesis 3: The adoption of blockchain technology improves the credibility of online reviews and ratings and has a positive impact on consumer behavior

Statistics

		Reviews_Importancy	Reviews_Blockchain
N	Valid	122	122
	Missing	0	0
Mean		3.82	3.89
Std Dev		1.13	.98
Minimum		1	1
Maximum		5	5

Reviews_Importancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	5.7%	5.7%	5.7%
	2	9	7.4%	7.4%	13.1%
	3	21	17.2%	17.2%	30.3%
	4	47	38.5%	38.5%	68.9%
	5	38	31.1%	31.1%	100.0%
Total		122	100.0%		

Reviews_Blockchain

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	3.3%	3.3%	3.3%
	2	5	4.1%	4.1%	7.4%
	3	27	22.1%	22.1%	29.5%
	4	51	41.8%	41.8%	71.3%
	5	35	28.7%	28.7%	100.0%
Total		122	100.0%		

TABLE 33 - FREQUENCY TABLE OF REVIEWS_IMPORTANCY + REVIEWS_BLOCKCHAIN

Participants considered reviews to be moderately important (mean = 3.8) when making purchase decisions. Participants were slightly more likely to trust online reviews and customer feedback when identities of users were verified through blockchain technology (mean = 3.9). It is important to mention that the difference of 0.1 in mean scores is relatively small so it is not possible to confirm the hypothesis.

Model Summary (Reviews_Blockchain)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.53	.28	.28	.83

ANOVA (Reviews_Blockchain)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	33.17	1	33.17	47.82	.000
Residual	83.23	120	.69		
Total	116.39	121			

Coefficients (Reviews_Blockchain)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.11	.27	.00	7.91	.000
Reviews_Importancy	.46	.07	.53	6.92	.000

TABLE 34 - REGRESSION ANALYSIS REVIEWS_BLOCKCHAIN + REVIEWS_IMPORTANCY

The regression analysis supports Hypothesis 3. The R-squared value and the Adjusted R-squared value of 0.28 confirms H3. The ANOVA also supports accepting H3. The p-value is very close to zero ($p < 0.000$), signifying that the relationship between "Reviews_Importancy" and "Reviews_Blockchain" is statistically significant. Consumers who give a high level of importance to online reviews are more likely to perceive the credibility of these reviews positively when blockchain technology is adopted.

The Coefficients table (0.46) denotes a direct and positive relationship between these variables and the p-value ($p < 0.000$), confirming the significance level.

Thus, the adoption of blockchain technology appears to improve the credibility of online reviews and ratings, which impacts consumer behavior. H3 can therefore, be accepted.

4.5.8 Hypothesis 4: Blockchain-based inventory management systems can enhance efficiency in the tourism and hospitality industry, resulting in improved customer experience

The fourth hypothesis is related to the questions “How likely would you book directly at the service provider, such as hotels, if it is cheaper than booking via intermediaries, such as booking.com?” and “How important for you are real-time information on inventory availability and rates, such as hotel rooms and airline seats?”.

The aim of the statistical analyses is to find relationships or connections between customers who value real-time information displayed by blockchain technology and their likelihood of direct booking.

According to literature, consumers highly value real-time information and opt for cheaper booking methods if there are no additional negative impacts.

There is a significant and moderately monotonic relationship between the likelihood of direct booking and the importance of real-time information (r_{xy}= 0.318; p-value: <0.01, as shown in Table 11). As the importance of real-time information increases, the likelihood of participants preferring direct booking also increases.

Thus, participants who value real-time information are more likely to consider direct booking if it is cheaper. This supports, but not confirms, the H4 that real-time information and accessibility through blockchain technology could enhance efficiency and customer behavior.

Model Summary (Booking_Real_Time)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.47	.22	.21	.84

ANOVA (Booking_Real_Time)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	23.18	1	23.18	33.04	.000
Residual	83.51	119	.70		
Total	106.69	120			

Coefficients (Booking_Real_Time)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.18	.35	.00	6.17	.000
Booking_without_Intermediary	.46	.08	.47	5.75	.000

TABLE 35 - REGRESSION ANALYSIS BOOKING_REAL_TIME + BOOKING_WITHOUT_INTERMEDIARIES

The R-squared value (0.22), adjusted R-squared value (0.21) and the positive coefficient (0.46) suggested a positive relationship between “Booking_without_Intermediary” and “Booking_Real_Time”. The low p-value further indicates that this relationship is significantly important. This means that there is sufficient evidence to support the hypothesis that blockchain-based inventory management systems can improve efficiency in the tourism and hospitality industries, resulting in better customer behavior. H4 can be accepted.

4.5.9 Hypothesis 5: Blockchain supply chain management can enhance consumers’ trust in the hospitality product and service

These findings provide some preliminary support for the hypothesis that "Blockchain supply chain management can enhance consumers’ trust in the hospitality product and service." The fact that participants express a moderate to high likelihood of choosing services with enhanced transparency and traceability suggested that transparency and traceability have a high value for consumers.

Model Summary (Tracking)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.61	.37	.36	.98

ANOVA (Tracking)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	68.29	1	68.29	70.42	.000
Residual	116.37	120	.97		
Total	184.66	121			

Coefficients (Tracking)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.15	.28	.00	4.13	.000
Maintenance	.63	.08	.61	8.39	.000

TABLE 36 - REGRESSION ANALYSIS TRACKING + MAINTENANCE

The positive coefficient for "Maintenance" (0.63) showed a positive relationship between a higher likelihood of choosing transparent maintenance regulations, and a higher likelihood of choosing services with enhanced transparency and traceability. However, there is still a significant amount of variability that remains unexplained (R Square=0.37). There is enough evidence to support H5. However, the regression model does not explain all the variability in participants' choices. Based on the results, one can conclude that participants who are more inclined to choose transparent maintenance regulations also show a preference for services that offer enhanced transparency and traceability. This aligns with the idea that blockchain-based supply chain management can enhance trust in the hospitality industry. H5 can be accepted.

4.5.10 Hypothesis 6: Costumers prefer faster and automated methods of identity verifications when using hospitality services

Descriptive Statistics

	N	Mean	Std Dev	Minimum	Maximum
ID_Verficiation	122	3.31	.95	1	5
ID_Automated	122	3.71	1.18	1	5
Valid N (listwise)	122				
Missing N (listwise)	0				

TABLE 37 - DESCRIPTIVE STATISTICS ID_VERIFICATION + ID_AUTOMATED

Participants express a moderate level of satisfaction (mean = 3.31) with traditional identity verification methods and express a slightly higher likelihood (mean = 3.71) of using automated identity verification methods. The standard deviations on both variables are spread out.

Correlations

		ID_Verficiation	ID_Automated
ID_Verficiation	Pearson Correlation	1.000	.007
	Sig. (2-tailed)		.942
	N	122	122
ID_Automated	Pearson Correlation	.007	1.000
	Sig. (2-tailed)	.942	
	N	122	122

TABLE 38 - CORRELATION ANALYSIS ID_VERIFICATION + ID_AUTOMATED

The correlation coefficient of 0.007 suggests an extremely weak positive correlation between the variables. The p-value of 0.942 signifies no statistically significant importance. Thus, there is no strong evidence to support H6 yet.

Model Summary (ID_Automated)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.01	.00	-.01	1.19

ANOVA (ID_Automated)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.01	1	.01	.01	.942
Residual	168.95	120	1.41		
Total	168.96	121			

Coefficients (ID_Automated)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.69	.39	.00	9.38	.000
ID_Verficiation	.01	.11	.01	.07	.942

TABLE 39 - REGRESSION ANALYSIS ID_AUTOMATED + ID_VERIFICATION

Based on the regression analysis (R square=0.00, Adjusted R square=-0.1, p-value=0.942), there is no strong evidence to support the hypothesis 6. H6 is rejected.

4.5.11 Hypothesis 7: Using blockchain's data collection can lead to an enhanced customer experience because of personalized packages in the hospitality industry

There was a moderate positive correlation and a significant p-value (as shown in table 15), thus, one can conclude that participants who place higher importance on personalization are more likely to agree to the secure data storage system for enhancing their personalized experience. The correlation coefficient of 0.565 suggests a moderate relationship. There is some evidence to support Hypothesis 7. A regression analysis is conducted to look for more evidence.

Model Summary (Personalisation)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.56	.32	.31	.80

ANOVA (Personalisation)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.61	1	35.61	56.23	.000
Residual	76.00	120	.63		
Total	111.61	121			

Coefficients (Personalisation)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.33	.22	.00	10.58	.000
Personalisation_Automated	.43	.06	.56	7.50	.000

TABLE 40 - REGRESSION ANALYSIS PERSONALISATION + PERSONAISATION_AUTOMATED

The R-squared value (0.32), the adjusted R-square value (0.31), and the coefficient value (0.43) indicate a positive relationship between the two variables “Personalisation_Automated” and “Personalisation”. The p-value ($p < 0.001$) proved that the relationship was statistically significant. This means, respondents who value personalization also prefer automated personalized services. Thus, there is strong evidence to support hypothesis 7. H7 is accepted.

4.6 Discussion of findings

In this section the results and findings are compared to previous literature and research papers.

The main objectives were to find out if blockchain technology has an impact on consumer behavior in the hospitality industry. Specifically, the first goal was to determine whether blockchain influences customer engagement in blockchain-based loyalty programs. The second research question concerned the impact of blockchain-based payment systems on customers. It is critical to investigate the various relationships between payment attributes and their perceived benefits in order to answer this question. The third goal of the study was to determine the potential benefits of smart contracts and whether implementing smart contracts in various fields of hospitality and tourism sector would influence customer behavior. The final goal emphasized the significance of online reviews and ratings. It was critical for this section to examine how customer behavior is influenced without blockchain-based reviews and how customer behavior is influenced after blockchain technology is implemented.

The demographics were revealed in the first section of the survey. It is important to note that male respondents participated at a significantly higher rate than other genders. The survey was also shared on social media, which may have influenced male followers. This suggests that the survey was not completely representative of the population. Furthermore, the age distribution was skewed towards the 18-34 age group, with a high density of respondents aged between 25-

34. This would imply a possible preference for younger demographics. The respondents were expected to have a deeper understanding of technology due to the nature of this online survey, which may have influenced their preferences. However, in most tests, age, gender, and technological knowledge had no effect on responses.

Loyalty programs

The respondents had neutral views on the positive aspects of blockchain technology, but the standard deviation was high, implying some significant outliers. Around 30 people skipped the survey questions testing the loyalty program variables, indicating that respondents were likely confused about the meaning of the questions or had no specific opinions on the subject. Despite the fact that they could contact the author at any time, only two out of 122 respondents answered questions about the survey. According to Utz et al. (2023), loyalty program participation is frequently unclear, and customers do not have enough time to redeem all of their loyalty points. Based on this data, the expected values of these loyalty program attributes should have been on the negative side of the scale, with a lower mean indicating respondents' dissatisfaction. However, there are no statistically significant connections to back up this claim. According to literature, people are expected to show more dissatisfaction if there are not enough rewards to spend the points on, or if they cannot exchange loyalty tokens with other loyalty programs (Rejeb & Rejeb, 2019). This statement is backed up by the survey results. Participants who wished for more loyalty rewards, were more likely to have lower satisfaction with their current loyalty program. This means, people are more likely to participate in blockchain-based loyalty programs because they prefer to have more reward options and want possibilities to spend their loyalty tokens on other loyalty programs. The theory of planned behavior suggests that positive attitudes toward loyalty programs result in a strong intention to participate in them (Conner & Armitage, 1998). Maslow's Hierarchy of Needs further confirms these results because individuals are supposed to be motivated by a hierarchy of physiological, safety, belongingness, esteem, and self-actualization needs. In the case of loyalty programs, the model implies that respondents seek for esteem (desire for rewards and recognition) and then pursuit for self-actualization (maximize their potential and rewards by linking multiple loyalty programs together) (Pavelka, et al., 2011). Consumers who prefer loyalty programs with perceived benefits, align with the self-justification principle of CDT. The discrepancies in attitudes about loyalty rewards may create cognitive dissonance, meaning that participants prefer blockchain-based options to reduce this dissonance (Harmon-Jones & Mills, 2019).

The survey results test the idea that consumers are more likely to participate in loyalty programs that offer perceived benefits, but it does not definitively confirm the relationship for blockchain-based loyalty programs specifically.

Surprisingly, other attributes also did not show significant values so support H1 and H1a.

This would contradict literature but it is important to mention that other factors, such as a wrong method of testing, unclear questions or other factors could have biased the results. Thus, further analysis and research is warranted.

Payment systems

As expected, digital money payments represented the majority of payment transactions (Turkay et al., 2019), followed by cash and cryptocurrency at last. Leung and Dickinger (2017), mentioned that consumers are not ready yet to feel comfortable with using cryptocurrencies as a payment method. This statement is significantly proven by the survey results. Respondents are highly unlikely to use cryptocurrencies when paying for hospitality services, however, they are significantly more likely to choose services that offer a high variety of digital and transparent payment options. Furthermore, safety and security are of utmost importance for users when choosing a payment system. These assumptions are also analyzed by Gunter and Önder (2020), who claimed that blockchain technology increases these attributes and possibly influence consumer behavior.

The high value of transparent, secure and variety of digital payment systems, imply that respondents are highly more likely to use blockchain-based payment systems, which is also directly related to the Maslow's hierarchy of needs because customers are seeking to satisfy their safety needs. However, the results of the survey reject this assumption. It is probably too early to introduce customers to crypto-payments and additional requirements are needed for consumers to feel comfortable paying with blockchain-based payment system in the hospitality section (Leung & Dickinger, 2017). Surprisingly, the results showed an increased tendency to use crypto-payments if respondents are guided through the process. This result suggests that customers do not have the required knowledge of using blockchain-based payments yet, but are willing to change their purchasing behavior if they receive guidance to help them through the process. Positive experiences and rewards can boost self-efficacy and drive behavior change, explained by the social cognitive theory (Bussey & Bandura, 1999). The Theory of Cognitive Dissonance assumes that respondents with conflicting views about blockchain-based payment systems (for example seeking for secure payment systems but are unfamiliar with them), are more likely to experience cognitive dissonance (Harmon-Jones & Mills, 2019).

Furthermore, the results show that even if respondents are not very experienced in using technology, they would still adapt and use blockchain-based payment systems if the reward is large enough.

Thus, all H2 hypotheses, including the sub hypotheses, can be accepted. However, it is important to mention that additional requirements, such as guides and rewards, are required to lead unexperienced consumers into paying with cryptocurrencies.

Benefits through smart contracts

Smart contracts have numerous benefits and applications in the hospitality industry. Smart contracts can automate processes, such as ID verifications or validate information or documents in real-time (Consensys, n.d.). Furthermore, companies can offer personalized services to attract customers and shape their experience. Although smart contracts can be applied in almost any possible section, the research is limited to those 5 variables: personalization, ID verifications, inventory management, and maintenance and tracking.

Inventory management

The results show that clients are more likely to book hospitality services without intermediaries, if it is cheaper than booking through them. Furthermore, blockchain-technology also enhances customer experiences by providing accurate real-time information on available inventory and prices. These results also suggest that transparency, safety, and automatic procedures are highly important to customers, such as blockchain-based payment options. The Theory of Planned Behavior explains that attitudes such as cost savings, transparency, and ease of use, influence their decision towards choosing blockchain-based booking systems (Conner & Armitage, 1998). The expectancy-value theory explains customer behavior in a similar way. If customers expect that booking without intermediaries will lead to a cheaper and more transparent experience, their positive attitude will encourage them to use blockchain technology systems (Wigfield et al., 2009).

To sum up, based on the results of blockchain-based inventory management practices, one can conclude that customers prefer services with enhanced transparency and cost savings. These assumptions align with multiple consumer behavior theories that smart contracts positively impact costumer behavior.

ID verifications

The results of automated ID verifications do not show any relevant statistical connections to satisfaction. In other words, customers are somewhat satisfied with traditional ID verification systems but they like the idea of having automated systems. This stands in contradiction to the literature, because the Expected-Value Theory claims that the interest in automated systems align with the expectation of efficiency and convenience. Customers' intentions to adopt to blockchain technology should be influenced by their expectations of these benefits (Wigfield et al., 2009).

Maintenance and tracking

The analysis reports a positive relationship between choosing transparent maintenance regulations and preferring blockchain technology with enhanced transparency and traceability. According to the theory of planned behavior, the attitudes of consumers preferring transparent maintenance regulations, influence their preference for choosing blockchain services with

enhanced traceability (Conner & Armitage, 1998). Likewise, the Expectancy Value Theory assumes that consumers expect certain values when choosing a service provider, which influences their purchasing behavior (Wigfield et al., 2009).

Personalization

The results show that participants who place higher importance on personalization are more likely to agree to the secure data storage system for enhancing their personalized experience. The Social Cognitive Theory implies that consumers' belief about a positive outcome, in this case improved personalization through blockchain technology, also influences their likelihood to choose services with said technologies (Bussey & Bandura, 1999).

Furthermore, the Expectancy-Value Theory claims that consumers chose a product or service if they perceive a great outcome of benefits and values (Wigfield et al., 2009). In this case, participants who value services and products with personalized characteristics, are more likely to prefer blockchain-based personalization systems that can automatically customize their preferences in hospitality services. The findings, therefore, underline the importance of adopting blockchain technology in hospitality services.

Reviews

Consumers who highly value the importance of online reviews are more likely to perceive the credibility of those reviews positively when blockchain technology is adopted. This result can be explained by the cognitive dissonance theory. The adoption of blockchain technology to enhance the credibility of online reviews and ratings, might reduce the experienced dissonance of customers during purchase decisions (Harmon-Jones & Mills, 2019). This means, blockchain technology is a solution that helps customers, who are in doubt about online reviews, by making them more trustworthy (Khanna et al., 2020).

5 CONCLUSION

5.1 Summary

Blockchain technology offers great potential and possibilities in many sectors, including the hospitality industry. Adopting blockchain technology can also impact consumer behavior in many ways. It is crucial for decision-makers to understand the concepts of blockchain technology applications and its impacts on consumer behavior.

This thesis explores the various benefits of blockchain technology with an analysis of existing literature. The link between adoption of blockchain behavior in the hospitality industry and its impacts on consumer behavior, is further discovered and statistically tested. Interesting connections and relationships are revealed, but further research is highly recommended.

5.2 Contribution to knowledge

This master thesis contributes to the relatively new research of blockchain technology impacts in the hospitality industry, with focus on consumer behavior. The research provides further empirically tested insights about different relationships between blockchain benefits and the impacts on consumers.

5.3 Limitations

The survey study was conducted in a short time frame. A larger sample size could identify more relationships between blockchain technology and the impacts on consumer behavior. Furthermore, there were many male respondents, influencing the generalizability of the findings. Furthermore, blockchain technology might be a difficult topic for most people. The theory of blockchain is often widely misunderstood or unknown, so responses can vary.

To continue, a cross-sectional design was used to gather data at a specific point in time. A different survey design might enhance the outcome of responses and improve the quality of the analyses. Another survey bias that might influence the results, are unmeasured variables that are not included in my survey questions. There are many different factors that could influence consumer behavior which are not collected by the survey.

5.4 Future research

As mentioned above in section 5.3, a longitudinal study over an extended period could reveal different results, as customer behavior could evolve over time. Furthermore, an experimental design could help finding causal relationships between variables by manipulating some attributes. Since the H1 and H1a got rejected, it is suggested to conduct an experimental design to analyze the possible impacts of traditional loyalty programs and blockchain-based loyalty

programs on consumer behavior. Researchers could compare the different benefits and attributes to find more valuable insights on this topic.

Furthermore, future research could include comparing the results of blockchain technology and its' impacts on consumer behavior in other industries, such as the finance or food industry. This would provide valuable insights to understand if the impacts of blockchain technology is unique to the hospitality industry.

6 BIBLIOGRAPHY

Ajzen, I. (1991). The Theory of Planned Behavior Organizational Behavior and Human Decision Processes. Organizational Behavior and Human Decision Processes, 50(2), 179–211.

Al-Azzam, A. F., & Al-Mizeed, K. (2021). The effect of digital marketing on purchasing decisions: A case study in Jordan. The Journal of Asian Finance, Economics and Business, 8(5), 455-463.

Allen, M. (2017). The SAGE encyclopedia of communication research methods (Vols. 1-4). Thousand Oaks, CA: SAGE Publications, Inc doi: 10.4135/9781483381411

Ashford, K. (2023). What Is Cryptocurrency? Forves. Retrieved from: https://www.forbes.com/advisor/investing/cryptocurrency/what-is-cryptocurrency/

Authena (2021). Food traceability – how does it work with blockchain? Authena Protect Authenticity. Retrieved from: https://authena.io/food-traceability/

Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice Hall

Bargeman, B., & van der Poel, H. (2006). The role of routines in the vacation decision-making process of Dutch vacationers. Tourism Management, 27, 707–720

Bhattacherjee, A., (2012). Social Science Research: Principles, Methods, and Practices. University of South Florida.
https://digitalcommons.usf.edu/oa_textbooks/3

Bickart, B., & Schindler, R. M. (2001). Internet forums as influential sources of consumer information. Journal of Interactive Marketing.

Bitstamp. (2022). How private is the blockchain? Bitstamp Learn. Retrieved from: https://www.bitstamp.net/learn/security/how-private-is-blockchain/

Bouma, G. (1994). Real-world research: A resource for social scientists and practitioner-researchers. The Australian and New Zealand Journal of Sociology, 30 (3), 344-345.
https://doi.org/10.1177%2F144078339403000311

Bray, J. (2008). Consumer Behaviour Theory: Approaches and Models.

Bunjaku, F., Gjorgieva-Trajkovska, O., & Miteva-Kacarski, E. (2017). Cryptocurrencies–advantages and disadvantages. Journal of Economics, 2(1), 31-39.

Burkard, K. (2017, May 30). 10 Reasons Customers are Abandoning Your Loyalty Program (and How to Save Them). https://blog.smile.io/why-customers-abandon-your-loyalty-program.

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. Psychological Review, 106(4), 676–713. doi:10.1037/0033-295x.106.4.676

Calvaresi, D., Leis, M., Dubovitskaya, A., Schegg, R., & Schumacher, M. (2018). Trust in Tourism via Blockchain Technology: Results from a Systematic Review. Information and Communication Technologies in Tourism 2019, 304–317. doi:10.1007/978-3-030-05940-8_24

Chintan (2022). Blockchain for Hotel and Hospitality Industry. Linkedin. Be Ready for Blockchain. Retrieved from: https://www.linkedin.com/pulse/blockchain-hotel-hospitality-industry-chintan-blockchain-trainer/

Cooper, J. (2012). Cognitive dissonance theory. Handbook of theories of social psychology, 1, 377-397.

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. Journal of applied social psychology, 28(15), 1429-1464.

Consensys. Blockchain in Digital Identity. Blockchain Use Cases. Retrieved from: https://consensys.net/blockchain-use-cases/digital-identity/

Constantinides, E., & Fountain, S. J. (2008). Web 2.0: Conceptual foundations and marketing issues. Journal of Direct, Data and Digital Marketing Practice, 9(3), 231–244. https://doi.org/10.1057/palgrave.dddmp.4350098

Creswell, J. W. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications Int.

Cryptonews (n.d.). Travala.com. Retrieved from: https://cryptonews.com/coins/travala/

Deloitte (n.d.). Making blockchain real for customer loyalty rewards programs. Deloitte. Retrieved from: https://www2.deloitte.com/us/en/pages/financial-services/articles/making-blockchain-real-customer-loyalty-rewards-programs.html

Devi, B., Khandelwal, B., & Das, M. (2017). Application of Bandura's social cognitive theory in the technology enhanced, blended learning environment. International Journal of Applied Research, 3(1), 721-724.

Dock (2023). Blockchain Identity Management: Complete Guide 2023. Retrieved from: https://www.dock.io/post/blockchain-identity-management

Dogru, T., Mody, M., & Leonardi, C. (2018). Blockchain technology & its implications for the hospitality industry. Boston University, 1-12.

Drescher, D. (2017). Blockchain Basics - A Non-Technical Introduction in 25 Steps (Vol. 57 b/w illustrations). CA, USA: Apress Berkeley. doi:https://doi.org/10.1007/978-1-4842-2604-9

Dudovskiy, J., Consumer Decision Making Process: a detailed analysis. Busines Research Methodology. Retrieved from: https://research-methodology.net/consumer-decision-making-process-a-detailed-analysis/

Edwards, W. (1954). The theory of decision making. Psychological Bulletin, 51(4), 380–417. doi:10.1037/h0053870

Erol, I., Neuhofer, I. O., Dogru, T., Öztel, A., Searcy, C., & Yorulmaz, A. C. (2022). Improving sustainability in the tourism industry through blockchain technology: Challenges and opportunities. Tourism Management, 93, 104628. https://doi.org/10.1016/j.tourman.2022.104628

Ghoshal, N. D. (2020). Digital marketing: the opportunity and the imperative. International Journal of Public Sector Performance Management, 6(2), 246-259.

Falkensteiner, E. (2022). Blockchain technologies for challenges in hospitality. Use Case in detail. Chain4Travel. Retrieved from: https://chain4travel.com/usecase-hospitality/

Filimonau, V., & Naumova, E. (2020). The blockchain technology and the scope of its application in hospitality operations. International Journal of Hospitality Management, 87, 102383. https://doi.org/10.1016/j.ijhm.2019.102383

Fromhart, S., Therattil, L. (2023). Making blockchain real for customer loyalty rewards programs. Deloitte Center for Financial Services.

Gilani, K., Bertin, E., & Hatin, J. (2020). A Survey on Blockchain-based Identity Management and Decentralized Privacy for Personal Data. 2nd Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS), pp. 97-101. doi:10.1109/BRAINS49436.2020.9223312.

Glion (2023). What is tourism and hospitality? Hospitality Uncovered. Glion Magazine. Retrieved from https://www.glion.edu/magazine/what-tourism-hospitality/

Goudarzi H, Martin JI (2018) Blockchain in aviation. Retrieved from International Air Transport Association. Retrieved from: https://www.iata.org/contentassets/2d997082f3c84c7cba001f506edd2c2e/blockchain-in-aviation-white-paper.pdf

Harmon-Jones, E., & Mills, J. (2019). An introduction to cognitive dissonance theory and an overview of current perspectives on the theory.

Holbrook, M. B.; Hirschman, E. C. (1985). The Experiential Aspects of Consumption: Consumer Fantasies, Feelings and Fun. J. Consum. Res. 1982, 9, 132–140

HTNG (2018) Blockchain for hospitality. Hospitality Technology Next Generation. Retrieved from: https://www.hospitalitynet.org/file/152008497.pdf

Hyde, K., & Lawson, R. (2003). The nature of independent travel. Journal of Travel Research, 42, 13–23.

IBM (n.d.). What are smart contracts on blockchain? Retrieved from: https://www.ibm.com/topics/smart-contracts

Indeed Editorial Team (2023). What Is Causal Research? (With Examples, Benefits and Tips). Indeed. Retrieved from: https://www.indeed.com/career-advice/career-development/causal-research

Irvin, C. (2018) Using blockchain to streamline airline finance, pp 1–6. Retrieved from Deloitte Development LLC website: https://www2.deloitte.com/us/en/pages/consulting/articles/airlines-blockchain-finance.html

Jisana, T.K. (2014). CONSUMER BEHAVIOUR MODELS: AN OVERVIEW. Sai Om Journal of Commerce & Management: A Peer Reviewed National Journal, 1, 34-43.

Jonathan (2021). Travala Expert Review. Cryptogeek. Retrieved from: https://cryptogeek.info/en/tools/travala

Khanna, A., Sah, A., Choudhury, T., & Maheshwari, P. (2020). Blockchain technology for hospitality industry. In Information Systems: 17th European, Mediterranean, and Middle Eastern Conference, EMCIS 2020, Dubai, United Arab Emirates, November 25–26, 2020, Proceedings 17 (pp. 99-112). Springer International Publishing.

Klaus, P., Maklan, S., 2012. EXQ: a multiple-item scale for assessing service experience. J. Serv. Manag. 23 (1), 5–33

Lacalle, E. (2023). Why is blockchain technology useful in the hospitality industry? MEWS. Retrieved from: https://www.mews.com/en/blog/blockchain-for-hotels#heading9

Larchet, V. (2017) Blockchain: solution for the black market threat to the tourism industry, pp 1–14. Retrieved from: https://www.secutix.com/wp-content/uploads/2017/07/White-paper_Blockchain_final.pdf

Laroiya, C., Saxena, D., Komalavalli, C. (2020). APPLICATIONS OF BLOCKCHAIN

TECHNOLOGY. Blockchain Implementation for Internet of Things Applications. DOI:10.1016/b978-0-12-819816-2.00005-8

Lashley, C., Morrison, A. J. (2001). In Search of Hospitality: Theoretical Perspectives and Debates
Hospitality, leisure and tourism. ISBN 0750654317, 9780750654319

Lauren, T. (2023). Cross-Sectional Study | Definition, Uses & Examples. Scribbr. Retrieved from: https://www.scribbr.com/methodology/cross-sectional-study/

Leon G.Schiffman, Leslie lazar Kanuk (2002), “Consumer behavior”, Sixth edition, Prentice Hall of India private limited, New Delhi.

Leon G.Schiffman, Leslie lazar Kanuk (2008), “Consumer behavior”, Ninth edition, Prentice Hall of India private limited, New Delhi.

Lim, S. F. (2018). Blockchain technology the identity management and authentication service disruptor. International Journal on Advanced Science, Engineering and Information Technology, 1735-1745.

Liu, H., Ma, R., He, G., Lamrabet, A., & Fu, S. (2023). The impact of blockchain technology on the online purchase behavior of green agricultural products. Journal of Retailing and Consumer Services, 74, 103387. https://doi.org/10.1016/j.jretconser.2023.103387

Lujun, Su & Yang, Qingyue & Swanson, Scott & Chen, Ning. (2021). The impact of online reviews on destination trust and travel intention: The moderating role of online review trustworthiness. Journal of Vacation Marketing. 28. 135676672110632. 10.1177/13567667211063207.

Luszczynska, A., & Schwarzer, R. (2015). Social cognitive theory. Fac Health Sci Publ, 225-51.

McCombes, S. (2021). What Is a Research Design | Types, Guide & Examples. Scribbr. Retrieved from: https://www.scribbr.com/methodology/research-design/

McLeod, S. (2023). Maslow’s Hierarchy Of Needs. SimplyPsychology. Retrieved from: https://www.simplypsychology.org/maslow.html

Medium. (2022). The Basics of Blockchain Privacy: How to Remain Anonymous on the Blockchain. Medium. Retrieved from: https://medium.com/coinmonks/the-basics-of-blockchain-privacy-how-to-remain-anonymous-on-the-blockchain-3f1cef44ad63

Meijer, G. W., Lähteenmäki, L., Stadler, R. H., & Weiss, J. (2020). Issues surrounding consumer trust and acceptance of existing and emerging food processing technologies. Critical Reviews in Food Science and Nutrition, 1–19. doi:10.1080/10408398.2020.1718597

Mohanta, B. K., Panda, S. S., & Jena, D. (2018). An Overview of Smart Contract and Use Cases in Blockchain Technology. 9th International Conference on Computing, Communication and Networking Technologies (ICCCNT), pp. 1-4.

Mihaela, O. O. E. (2015). The influence of the integrated marketing communication on the consumer buying behaviour. Procedia Economics and Finance, 23, 1446-1450.

Mill, R., & Morrison, A. (2002). The tourist system (4th ed.). Dubuque, IA: Kendall/Hunt.

Miller, D. (1995). Acknowledging consumption. Routledge & CRC Press. https://www.routledge.com/Acknowledging-Consumption/Miller/p/book/9780415106894

Nam, K., Dutt, C., Chathoth, P. & Khan, S., 2019. Blockchain technology for smart city and smart tourism: latest trends and challenges. Asia Pacific Journal of Tourism Research, pp. 1-15.

Nehra, Vibha & Sharma, Ajay & Tripathi, Rajiv. (2020). Blockchain Implementation for Internet of Things Applications. 10.1016/b978-0-12-819816-2.00005-8.

Önder, I., & Gunter, U. (2020). Blockchain: Is it the future for the tourism and hospitality industry? Tourism Economics, 135481662096170. doi:10.1177/1354816620961707

Önder, I., & Treiblmaier, H. (2018). Blockchain and tourism: Three research propositions. Annals of Tourism Research, 72, 180–182. doi:10.1016/j.annals.2018.03.005

Pachauri, M. (2001). Consumer Behaviour: a Literature Review. The Marketing Review, 2(3), 319–355. doi:10.1362/1469347012569896

Pavelka, L. C., Boyd, G., Morillas-Brown, A., Nelson, B. R., Block, M., Hsieh, P.-H., … Anastassiou-Hadjicharalambous, X. (2011). Maslow's Hierarchy of Needs. Encyclopedia of Child Behavior and Development, 913–915. doi:10.1007/978-0-387-79061-9_1720

Pellémans, P. A. (1971). The consumer decision-making process. European Journal of Marketing, 5(2), 8–21. doi:10.1108/eum0000000005155

Pilkington, M., Crudu, R. & Grant, L. G., 2018. Blockchain and bitcoin as a way to loft a country out of poverty-tourism 2.0 and e-governance in the Republic of Moldova. International Journal of Internat Technology and Secured Transactions, 7(2), pp. 115-143

Purcell, K. (2002). In search of hospitality: theoretical perspectives and debates. Warwick. https://www.academia.edu/22986872/In_search_of_hospitality_theoretical_perspectives_and_debates

Rejeb, A., Keogh, JG., Treiblmaier, H. (2020) How Blockchain Technology Can Benefit Marketing: Six Pending Research Areas. Front. Blockchain 3:3. doi: 10.3389/fbloc.2020.00003

Rejeb, A. & Rejeb, K., 2019. Blockchain Technology in Tourism: Applications and Possibilities. World Scientific News, Volume 137, pp. 119-144.

Reserve bank of Australia. (2021). Digital Currencies. What are cryptocurrencies?. Retrieved from: https://www.rba.gov.au/education/resources/explainers/cryptocurrencies.html

Revfine (n.d.). Blockchain Technology and Its Uses in the Hospitality Industry. Revfine Optimising Revenue. Retrieved from: https://www.revfine.com/blockchain-technology-hospitality-industry/

Sahoo, S. S., Hosmane, M. M., & Chaurasiya, V. K. (2023). A secure payment channel rebalancing model for layer-2 blockchain. Internet of Things, 22, 100822. https://doi.org/10.1016/j.iot.2023.100822

George, T. (2021). Exploratory Research | Definition, Guide, & Examples. Scribbr. Retrieved from: https://www.scribbr.com/methodology/exploratory-research/

Sincero, S. M. (Mar 18, 2012). Advantages and Disadvantages of Surveys. Retrieved Aug 21, 2023 from Explorable.com: https://explorable.com/advantages-and-disadvantages-of-surveys

Sharma, M., Sehrawat, R., Daim, T. U., & Shaygan, A. (2021). Technology assessment: Enabling Blockchain in hospitality and tourism sectors. Technological Forecasting and Social Change, 169, 120810. https://doi.org/10.1016/j.techfore.2021.120810

Shin, H. H., Jeong, M., So, K. K. F., & DiPietro, R. B. (2022). Consumers' experience with hospitality and tourism technologies: Measurement development and validation. International Journal of Hospitality Management, 106, 103297. https://doi.org/10.1016/j.ijhm.2022.103297

Shin, H.H., Jeong, M., 2020. Guests' perceptions of robot concierge and their adoption intentions. Int. J. Contemp. Hosp. Manag. 32 (8), 2613–2633.

Sigala, M., 2017. Collaborative commerce in tourism: implications for research and industry. Current Issues in Touris, 20(4), pp. 346-355.

Škare, M., Soriano, D. R., & Porada-Rochoń, M. (2020). Impact of COVID-19 on the Travel and Tourism Industry. Technological Forecasting and Social Change, 120469. doi:10.1016/j.techfore.2020.120469

Smallman, C., & Moore, K. (2010). Process studies of tourists' decision-making. Annals of Touism Research, 37(2), 397–422.

Solleder, F. (n.d.) Leveraging digital check-ins for successful hotel operations. IDnow. Retrieved from: https://www.idnow.io/blog/leveraging-digital-check-ins-hotel-operations/

Solomon, M., Russell-Bennett, R., & Previte, J. (2012). Consumer behaviour. Pearson Higher Education AU.

Sreejesh, S., Mohapatra, S., & Anusree, M. R. (2014). Business research methods: An applied orientation. Springer.

Stone, M., Shinn, J. (2023). Exploratory, Descriptive & Causal: Types of Marketing Research. Study.com. Retrieved from: https://study.com/learn/lesson/exploratory-descriptive-causal-research-concepts-purposes-examples.html

Surbhi, S. (2017). Difference Between Exploratory and Descriptive Research. Key differences. Retrieved from: https://keydifferences.com/difference-between-exploratory-and-descriptive-research.html

Tatavarty, G. (n.d.). Blockchain for Personalization, Opportunities and Challenges for the future. CIO Applications. Retrieved from: https://www.cioapplications.com/cxoinsights/blockchain-for-personalization-opportunities-and-challenges-for-the-future-nid-3785.html

Taheri, B., Prayag, G., & Muskat, B. (2021). Introduction to the special issue: Consumer experience management and customer journeys in tourism, hospitality and events. Tourism Management Perspectives. https://www.ssoar.info/ssoar/handle/document/75398

TravelpoolEurope (2021). Blockchain is great – but are smart hotel contracts a dumb idea?. Retrieved from: https://tpe.org/en/posts/blockchain-is-great-but-are-smart-hotel-contracts-a-dumb-idea

Treiblmaier, H., (2018). The impact of the blockchain on the supply chain: a theory-based research framework and a call for action, Supply Chain Management, Vol. 23 No. 6, pp. 545-559. https://doi.org/10.1108/SCM-01-2018-0029

Treiblmaier, H., (2019). Toward more rigorous blockchain research: recommendations for writing blockchain case studies. Frontiers in Blockchain, Volume 2, p. 3.

Treiblmaier, H. (2020). Blockchain and Tourism. Handbook of e-Tourism, 1–21. doi:10.1007/978-3-030-05324-6_28-2

Treiblmaier, H., & Petrozhitskaya, E. (2023). Is it time for marketing to reappraise B2C relationship management? The emergence of a new loyalty paradigm through blockchain technology. Journal of Business Research, 159, 113725. https://doi.org/10.1016/j.jbusres.2023.113725

Turkay, B., Dınce, F. I. & Dincer, M. Z., 201є. An Evaluation of New Values in Economy and Their Impacts on Future Transformation in Tourism. Procedia Computer Science, Volume 158, pp. 1095-1102

Utz, M., Johanning, S., Roth, T., Bruckner, T., & Strüker, J. (2023). From ambivalence to trust: Using blockchain in customer loyalty programs. International Journal of Information Management, 68, 102496. https://doi.org/10.1016/j.ijinfomgt.2022.102496

Vieira, H. (2017). Applying blockchain technology to online reviews. The London School of Economics and Political Science. https://blogs.lse.ac.uk/businessreview/2017/11/03/applying-blockchain-technology-to-online-reviews/

Wang, Y., & Korstanje, M. (2022). Book review. Journal of Hospitality and Tourism Management, 51, 451. https://doi.org/10.1016/j.jhtm.2022.04.013

Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. Contemporary educational psychology, 25(1), 68-81.

Wigfield, A., Tonks, S., & Klauda, S. L. (2009). Expectancy-value theory. Handbook of motivation at school, 2, 55-74.

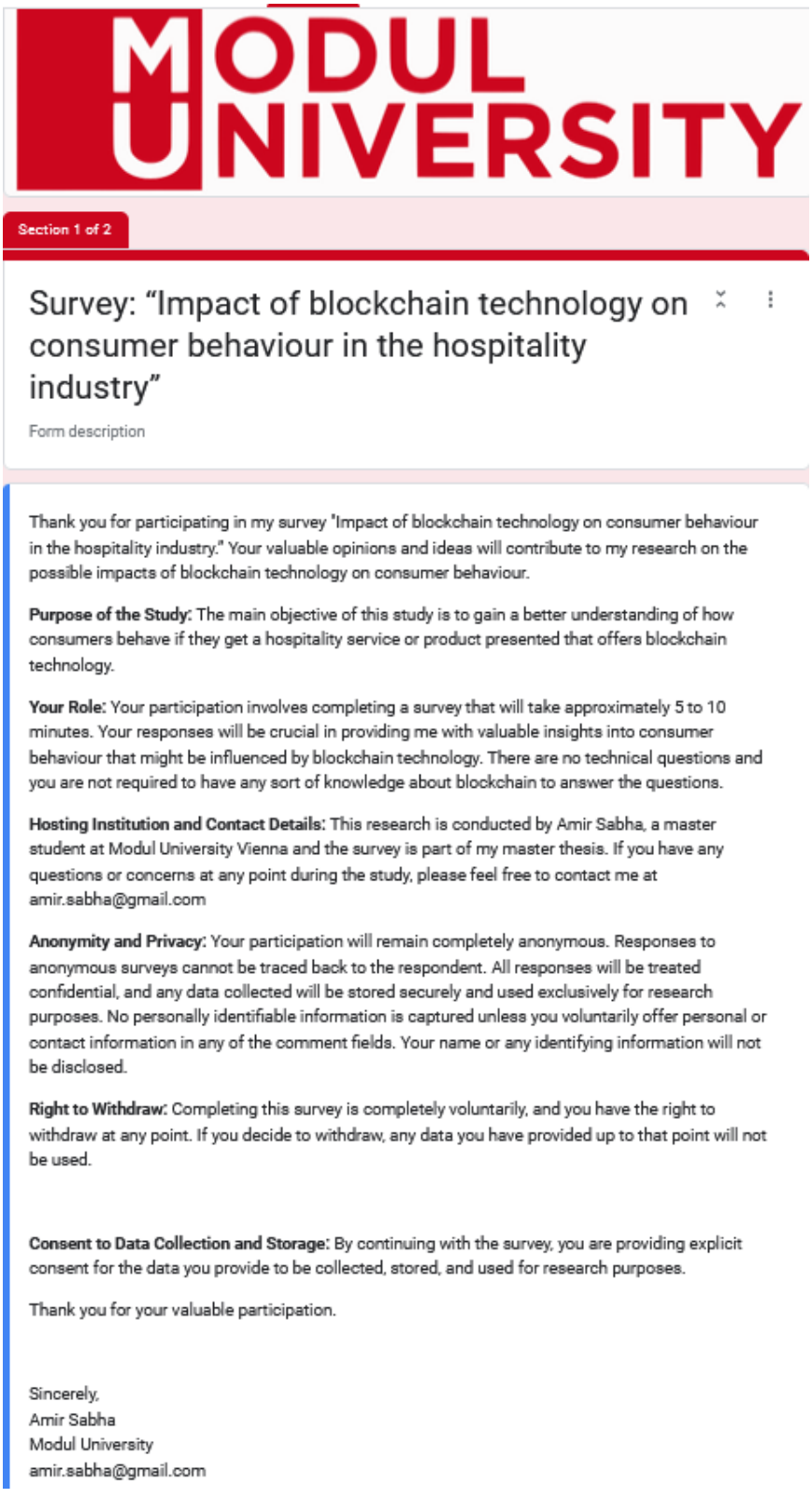
Wilson, E., Small, J., & Harris, C. (2012). Editorial Introduction: Beyond the Margins? The Relevance of Critical Tourism and Hospitality Studies. Journal of Hospitality and Tourism Management, 19(1), 48–51. doi:10.1017/jht.2012.2

Zheng, K., Zheng, L. J., Gauthier, J., Zhou, L., Xu, Y., Behl, A., & Zhang, J. Z. (2022). Blockchain technology for enterprise credit information sharing in supply chain finance. Journal of Innovation & Knowledge, doi: 10.1016/j.jik.2022.100256

Zheng, Z., Xie, S., Dai, H.N., Chen, X., Wang, H. (2018). Blockchain challenges and opportunities: a survey. Int. J. Web and Grid Services, Vol. 14, No. 4.

APPENDICES

Appendix 1: Consent message



MODUL UNIVERSITY

Section 1 of 2

Survey: "Impact of blockchain technology on consumer behaviour in the hospitality industry"

Form description

Thank you for participating in my survey "Impact of blockchain technology on consumer behaviour in the hospitality industry." Your valuable opinions and ideas will contribute to my research on the possible impacts of blockchain technology on consumer behaviour.

Purpose of the Study: The main objective of this study is to gain a better understanding of how consumers behave if they get a hospitality service or product presented that offers blockchain technology.

Your Role: Your participation involves completing a survey that will take approximately 5 to 10 minutes. Your responses will be crucial in providing me with valuable insights into consumer behaviour that might be influenced by blockchain technology. There are no technical questions and you are not required to have any sort of knowledge about blockchain to answer the questions.

Hosting Institution and Contact Details: This research is conducted by Amir Sabha, a master student at Modul University Vienna and the survey is part of my master thesis. If you have any questions or concerns at any point during the study, please feel free to contact me at amir.sabha@gmail.com

Anonymity and Privacy: Your participation will remain completely anonymous. Responses to anonymous surveys cannot be traced back to the respondent. All responses will be treated confidential, and any data collected will be stored securely and used exclusively for research purposes. No personally identifiable information is captured unless you voluntarily offer personal or contact information in any of the comment fields. Your name or any identifying information will not be disclosed.

Right to Withdraw: Completing this survey is completely voluntarily, and you have the right to withdraw at any point. If you decide to withdraw, any data you have provided up to that point will not be used.

Consent to Data Collection and Storage: By continuing with the survey, you are providing explicit consent for the data you provide to be collected, stored, and used for research purposes.

Thank you for your valuable participation.

Sincerely,
Amir Sabha
Modul University
amir.sabha@gmail.com

Appendix 2: Survey Questions

Gender (please select only one) *

- Male
- Female
- Prefer not to say
- Other..

Age (in years) *

- 18-24
- 25-34
- 35-44
- 45-54
- 55 and above
- Prefer not to say

Highest Educational Level (please select only one) *

- No education
- High School
- Bachelor's Degree
- Master's Degree
- Doctoral Degree
- Prefer not to say
- Other..

In which country or region do you currently reside? *

Short answer text

How comfortable are you using technology and the internet? *

	1	2	3	4	5	
Not comfortable	○	○	○	○	○	Very comfortable

How often do you travel for leisure or business purposes? *

- ○ I don't travel
- ○ 1-3 times a year
- ○ 4-6 times a year
- ○ more than 6 times a year
- ○ Prefer not to say

What is the primary purpose of your travel *

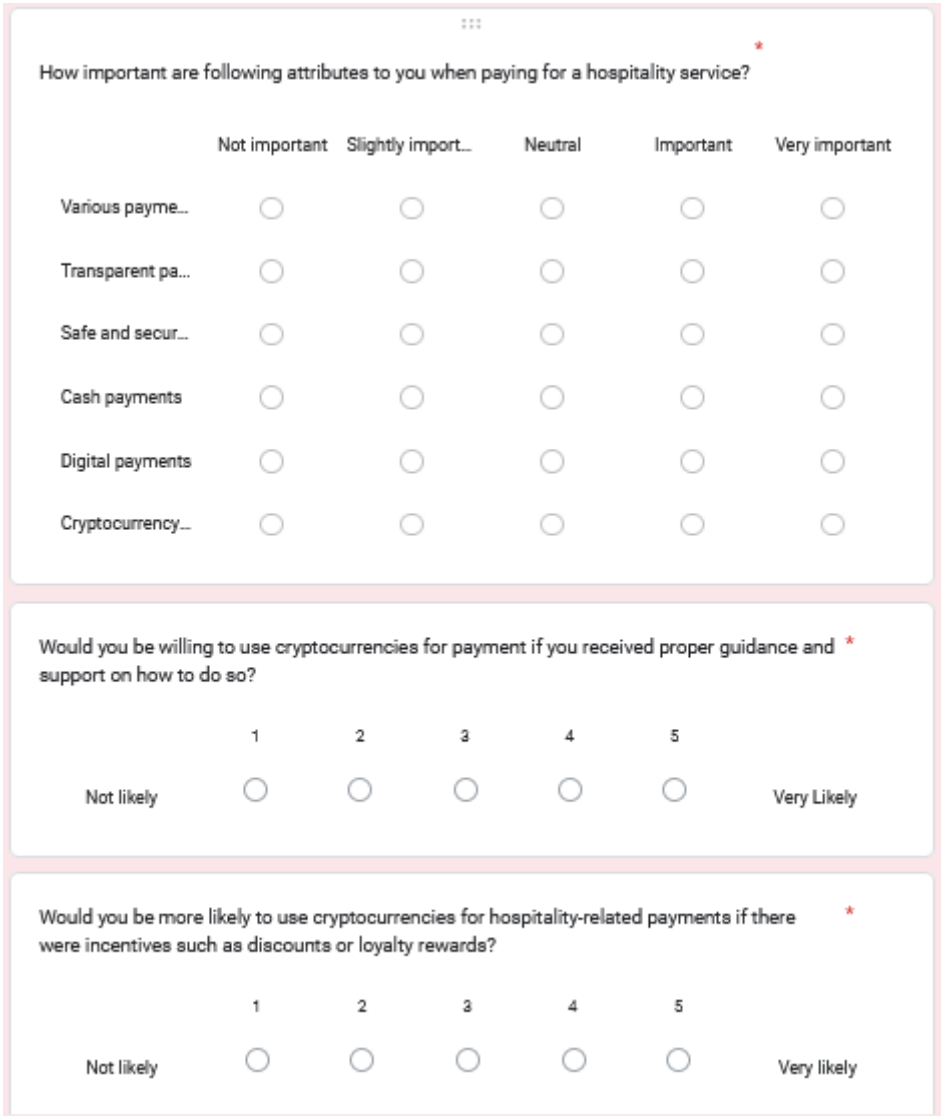
- ○ Leisure
- ○ Business
- ○ Family visits
- ○ Special occassions (Honeymoon, Birthdays, etc..)
- ○ No special purpose
- ○ Prefer not to say

Secure payments and bookings

Explanations of terms:
Secure payments is the protection of sensitive information, such as payment details and personal data. This will prevent unauthorized access, fraud, and data breaches during the payment process.
Transparent payments procedures display all relevant information about a financial transaction and is easily accessible and understandable to all parties.
Cryptocurrencies are digital forms of money. You can buy cryptocurrencies, such as Bitcoin, to spend it on various services and products.

How likely are you going to pay for a hospitality service with cryptocurrencies, such as Bitcoin, when the payment option is available? *

	1	2	3	4	5	
Very unlikely	○	○	○	○	○	Very likely



How important are following attributes to you when paying for a hospitality service? *

	Not important	Slightly import...	Neutral	Important	Very important
Various payme...	○	○	○	○	○
Transparent pa...	○	○	○	○	○
Safe and secur...	○	○	○	○	○
Cash payments	○	○	○	○	○
Digital payments	○	○	○	○	○
Cryptocurrency...	○	○	○	○	○

Would you be willing to use cryptocurrencies for payment if you received proper guidance and support on how to do so? *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very Likely

Would you be more likely to use cryptocurrencies for hospitality-related payments if there were incentives such as discounts or loyalty rewards? *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

Reviews

Explanations of terms:
Fake/biased reviews are dishonestly created or manipulated ratings/comments to harm or manipulate a product or service provider.

How important is the impact of reviews and ratings posted from other customers on your purchase decision? *

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

Have you ever encountered or suspected fake or biased reviews while making decisions about travel or hospitality services? *

- ○ No
- ○ Yes
- ○ Other...

How likely are you to trust online reviews and customer feedback if identities of users are verified? This would increase the authenticity of reviews and remove fake reviews and bots. *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

Inventory Management

Explanations of terms:
Intermediaries are third-party entities that facilitate transactions or interactions between different parties (travel agencies, online booking platforms, payment gateways, and wholesalers)
Inventory availability are real-time information about the quantity and availability of products or services, such as hotel rooms, airline seats, or restaurant reservations, for customers to make informed decisions. For example: How many rooms are available? How expensive is this exact Airline seat? How many tables are free in this restaurant?

How likely would you book directly at the service provider, such as hotels, if it is cheaper than booking via intermediaries, such as booking.com? *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

How important for you are real-time information on inventory availability and rates, such as hotel rooms and airline seats? *

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

Data Privacy

Explanations of terms:
Data privacy is the protection of personal and sensitive information from unauthorized access and abuse.
Transparent data privacy involves clearly communicating to individuals how their personal information is being collected, used, and shared, while also giving them control and understanding over these processes.

When selecting a tourism location (such as restaurant, hotel, event, ..) how important is transparent data privacy for you? *

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

How important is it for you to select your own data privacy settings? *

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

Maintenance and Tracking

Explanations of terms:
Maintenance regulations refer to rules and guidelines that dictate the upkeep, repairs, and renovations of products, services, or facilities to ensure they meet certain standards and remain in optimal condition over time.

How likely would you choose a hospitality service, such as restaurants and hotels, where you can clearly trace and certify the origin and handling procedures of a product? For instance, being able to easily understand how your food was prepared and track the sources of its ingredients *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

How likely would you choose a hotel that provides transparent and easily visible maintenance regulations, such as room renovations? You can easily check when and how maintenance was performed. *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

ID and Verifications

Explanations of terms:
Identity verification processes involve the methods and procedures used to confirm the authenticity and identity of individuals, typically through various means such as personal information, documents, biometrics, or technology-based solutions. Examples are passport controls, Tickets for a concert, fingerprint scanners, etc...

How satisfied are you with the current speed and methods of traditional identity verification processes when visiting hospitality locations? For instance, checking into a hotel with your passport/ID or waiting in line with your tickets to enter a concert/event *

	1	2	3	4	5	
Very unsatisfied	○	○	○	○	○	Very satisfied

How likely would you use a hospitality service which has automated and secure methods of identity verifications across different hospitality platforms, such as hotels, airlines, and rental services? Automated methods of identity verification could be a mobile application or biometric scanner that approves your identity for various facilities, such as hotels, events, cinema, etc.. *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely

Personalisation

Description (optional)

How important do you believe personalization and offering a range of choices are within the hospitality industry to guarantee a unique individual experience? For instance, think about personalized hotel room preferences such as bed type, diverse restaurant options catering to dietary preferences, or transportation choices including bicycle rentals or car sharing *

	1	2	3	4	5	
Not important	○	○	○	○	○	Very important

Would you agree to a system that securely stores each transaction or purchase made by you, to enhance your personalised experience and automate processes? Only you can access the data and it cannot be tempered or hacked. For instance, automatically select your hotel preferences, automatically let restaurants be aware about food allergies, etc. *

	1	2	3	4	5	
Not agree	○	○	○	○	○	Totally agree

How much do you agree with following arguments when joining a new loyalty program? *

	Not agree	Slightly agree	Neutral	Agree	Totally agree
It is convenient...	○	○	○	○	○
It is convenient...	○	○	○	○	○
I am fully awar...	○	○	○	○	○
Rules are clearl...	○	○	○	○	○
There is enoug...	○	○	○	○	○
There are enou...	○	○	○	○	○
I am very satisf...	○	○	○	○	○

How likely would you choose a loyalty program where you can spend your rewards on various hospitality services, such as hotels, restaurant, flights, concerts, etc... *

	1	2	3	4	5	
Not likely	○	○	○	○	○	Very likely