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Blockchain Technology and the Impact in the Hospitality Industry

By

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Declaration of Authenticity

INSTITUTE OF TOURISM STUDIES
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Blockchain Technology And The Impact In The Hospitality Industry

Declaration:

I hereby declare that this research study is based on the outcome of self-made research. I, as the authentic author, declare that this research study is my own composition, and has not been previously produced for any other qualification.

The research study was conducted under the supervision of Mr Martin Debattista

Date: 26 September 2020

Signature

Abstract

For the Hospitality Industry, Blockchain Technology brings potentiality and new applications that are not only prosperous but also predictable to the future. Blockchain is a permanent asset which is incorruptible ledger, by being transparent for all transaction carried out digitally. Since Blockchain is known as an encrypted, it eliminates all the middle man transaction, which ensures the validity of inputted data. Malta is the Blockchain Island which is only being used for events and developers. Nevertheless, it is hardly being implemented in the hospitality industry that can eliminate conflicts between hospitality industry and customers. Globally, it has been seen as a challenge for customers to adopt such new development in the Tech world.

Through the research questions carried out, Customers showed concerns about the Adoption of new technology where it is seen as a challenge for customers to grow with the digital era, and described their concern in using online platform due to unusual experience(Expensive, Fraud, Time consuming) that got them more reluctant in advancing in new technology. The challenges were brought up in the project, why adoption of Blockchain might solve the concerns and problems of hospitality customers and industries. Furthermore, security was seen a major issue on online transaction where Blockchain would make it impossible for hackers to perform illegal activities through secured hash where there will be more trust and loyalty, and prevent payment scams for buyers and seller through digital signature while doing a transaction and adds weight in the General Data Protection Regulation. Without neglecting the fact that Food and beverage can be tracked for their originality which will bring more assurance on the quality of the product and add more value to it.

Through the research done, it resulted that the best solution for customer assurance to use Blockchain technology is by educating the customers on how the encoded system works and make them understand the Blockchain technical word in simple term for them to start using it in their daily life and to integrate with Blockchain in the hospitality sector that will create opportunity, integrity and improve all the different operational performance.

Blockchain in the Hospitality industry will bring benefits not only to the Maltese island, but also to the whole globe as with the AI and Robotics invention, Blockchain technology will be working smoothly along with these trends which will eliminate the hassle of the customers by having a direct impact on the brand value.

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Chapter 1: Introduction

"Chains keep us together" (Buckingham et al., 1977).

Forty years ago no one knew technology would be leading the world and bring to us this chain of block called Blockchain technology to keep all the data linked together. The potential of Blockchain is to revolutionize different industries and disrupt the entire economic sector by contributing in the sharing of the economy of a country. Adding the Artificial intelligence and the Internet of Things (IoT) .Blockchain Technology is assumed to create a vast opportunity for much business that can help them in strategic planning and management. (Richard Adams, Nov 6, 2017). In particular it has become a critical element in the hospitality industry and as a result 'smart tourism' and 'smart hospitality' have emerges by growing up the role of the digital technology in the conception of creating long-standing sustainability tourism in the industry. This is slowly leading to a strong impact in the hospitality industry by creating a whole new system to interact with potential customers and ass value to the chain in the tourism, travel, hospitality, and catering to maximize the efficiency and effectiveness; hence with the Blockchain Technology,

In this chapter, tourism will be entirely described as a societal, cultural and financial occurrence to outline the movement of people in embracing new technology. I discussed the potential impact of moving toward the digitalization era and the benefits of implementing Blockchain within the hospitality industry in a broad-spectrum sense without going into technical details which will be followed in the chapter 2. (UNWTO, 2005) It is more the general characters of Blockchain which are of interest in this chapter. Being described as a wide variety of a potential application for the hospitality industry, it is therefore very challenging to draw the attention of any individual to understand the concept within the hospitality industry. Taking example of the most compelling used cases of Blockchain which can be believed that it'll be great in reducing inefficiencies and unlock value of existing companies where trusted intermediaries are reduce to record, validate and reconcile transaction. One of the most uses case for Blockchain is the supply chain management where

there is the issue of transparency, hence it allows the multi parties to get access to a database to act as a source of authenticity which helps in enhancing transparency and reduces paper work, held to stop thefts, and counterfeits.

Blockchain is still green topic for the public and have been creating less impact in their life due to not being put in action, it is still not very clear how fast and well it will be accepted by the customers by satisfying and pursuing them to use the Blockchain application within the hospitality industry. This leads to an intensive interesting research on the on-going chapters. The aim of this research is to obtain the concerns of the public while they are doing an online purchase and how strongly this technology can influence their life with its potentiality proven to them. In simple term, how will the Blockchain technology bring positive impact in the customer's purchasing power and the benefits of it all which will at the end give a huge contribute to the Maltese's economy.

Chapter 2: Literature review

2.1 Moving Towards Innovative Technology

Blockchain technology is promising especially being an island where tourism is an essential segment of the country's economy, subsidizing about 15% of the nation's Gross Domestic Product (GDP). (Knoema, 2018) It is worth noting that in the year 2014, the government implemented the digital Malta strategy which was to guide the country towards the 2020 vision of Malta to prosper as the digital nation in all sectors of society. The 71st strategy was to assist businessmen, cities alike in promoting digital business, digital government and digital citizen. The vertical strategy innovation was under the main pillars, a) regulation and legislation, b) infrastructure and c) human capital. (Malta, 2014)

Figure 1 shows that within one-year Malta has climbed the ladder of success on technology and digitalization. According to the report of the Digital Economy and society index 2020, Malta has progressed from the ninth position to the fifth position. This drastic improvement shows why Malta adopted the digital technology and why Malta is now known as the most advanced in digital Economies

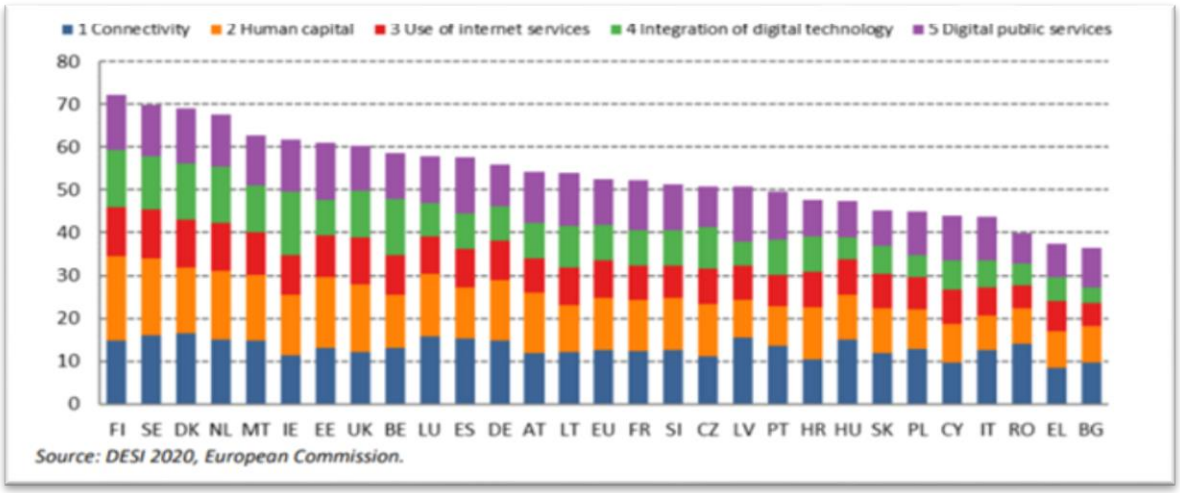

Figure 1 the Digital Economy and Society Index (DESI) 2020

2.2 Gender And Demographic Adopting The Digital Era

With the digitalization bringing a growth in the economy, it highlights the importance of gender and demographics gap in the usage of digital technology such as internet. According to a research done by word wide web foundation, women in rural areas in developing countries are relatively more using the internet and are generally more than men. Moreover, according to a survey carried out by Data Reportal, the digital 2020 report shows that 4.5 billion people use the internet worldwide. When it comes to travel statistics, women have been increasingly buying online tickets to travel which made an increase of 230% over the past few years and it has also been found that women have been the leaders in making travel decisions. 70 % to 80% of the consumer which is women has a great influence in the power of purchasing. Eighty three percent of the population is at least once a week on the internet (Artur Lugmayr, 2016). Having such high percentage of usage, Malta is however in an average performance as according to the data reportal 2020, the digital growth increased by 0.3 percent from 2019 to 2020 and internet users has increased by 5.3 percent from 2019 to 2020. Moreover, according to the literacy rate in Malta, female literacy rate is higher that male literacy which is women 96 percent and men 94 percent in transactional services. Another interesting fact is that, into the financial inclusion factors, whereby men are making much more online transaction than women according to the statistics which is 50 percent women purchasing power and men's 57 percent. (Kemp, 2020)

2.3 Educating and Raising Awareness in Blockchain

2.3.1 What is Blockchain Technology?

The beginning of the 21st century witnessed a rapid evolution in technology, bringing about changes in the landscape of human civilisation, transforming it into an information society. As recent as 2008, a new technology evolved: **Blockchain**.

Blockchain (chain of blocks) is distributed information which is by or in of it storage of public data records of all transactions done by the user, and runs purely in a digital form. Blockchain technology is challenging the status quo radically, by using math and cryptography to create a decentralised database of every transaction involving value. (Finley,

2016) Blockchain technology allows the user to attain a bigger scale and systematic cooperation in an entirely distributed and decentralised way. It is known as a global governance tool that enables social interaction on a bigger scale by eliminating the traditional central authorities. (Laskowski, 2016)

“In the world of information technology, there have been five revolutions - the creation of computers, the creation of personal computers, the internet, social networks and Blockchain” stated Herman Gref, Head of Skerbank. “Blockchain will turn all industries without exception from agriculture, ending with banks” (Bystritskiy, 2010).

Unfortunately with the revolution of digital technology, there is still a lack of knowledge on Blockchain To see the adoption whether it is being accepted by people around the world, especially in Maltese Islands, one has to look at the Ministry of Education as it is showing whether the adaptation is being done by the education people teaching new technology like Blockchain to the public locally or foreign students. The government is also promoting women to participate within the E-skills Malta foundation to discuss issues and run specific projects and initiatives. The government launched the digital key known as “Cavetta Digitali” for people with special needs to participate in the IT sector which can also be implemented in the Hospitality sector. Moreover, digital courses are available for persons of 55 years or older and in the community.

Some people may say that the customer should not be told the word Blockchain as customers are concerned only about three things: cheaper system, safer system and convenient system. This is explained by Cesare Fracassi, an associate professor of finance at the University of Texas at Austin and director of the schools of Blockchain initiatives. He also stated that “the battle should be fought and won by looking at what the advantages are of the product of consumers, instead of any fancy words about the democratisation of finance of enabling a trust less society.” (Jimenez, 2019)

2.3.2 Malta Moving To the Innovative Technology: Blockchain Technology.

Malta, being known as a little island in the Mediterranean, it made big name in the world of crypto currency and also made history by passing as a ‘’world’s first Blockchain island’’. (Cauchi, 2018). According to Bloomberg April 2018 article, this tiny island has managed to lure two of the world’s biggest crypto currency exchanges to put up shop in the country. (Viren Vaghela, 2018) July 4, 2018, was a historic time for Malta where the Maltese Government established the first regulatory frame for Blockchain, crypto currency and Distributed Ledger Technology. Moreover, Malta’s Junior Minister for financial services, Mr Silvio Schembri stated that, passing of new laws mark a significant landmark in which companies will be provided with the necessary tools to operate in a regulated atmosphere. The respondents revealed that they got to know about Blockchain in 2018 as the Ex-prime minister; Joseph Muscat stated that, Malta as the Blockchain Island. (Wolfson, 2018)

2.3.3 How Does Blockchain Works

The main characteristics of Blockchain are distribution, publicity and mathematical authenticity, and storing the distributed data in a network on the digital devices of the users. It operates in a similar way to peer-to-peer networks which makes it available to all the participants that are registered in the blocks for verification (Albuquerque, 2018), and is ideal for recording events, medical certificates, management activities, and transaction processing. Once the participant gets to verify and confirm a transaction, it is directly recorded on the Blockchain and cannot be changed. Therefore, it allows the user to secure the record and transfer the data without the need of using any intermediary, such as a central authority, to verify it. This innovative system was introduced by the pseudo-anonymous Bitcoin creator, Satoshi Nakamoto, in 2008. The Blockchain network depends upon the structure of nodes that is tighter in a chain with the drive of storing the transaction better. (Sachs, 2017).
Then with the block, it can only be join to the chain once all sides in the network accept the order and operate with the consensus protocol.

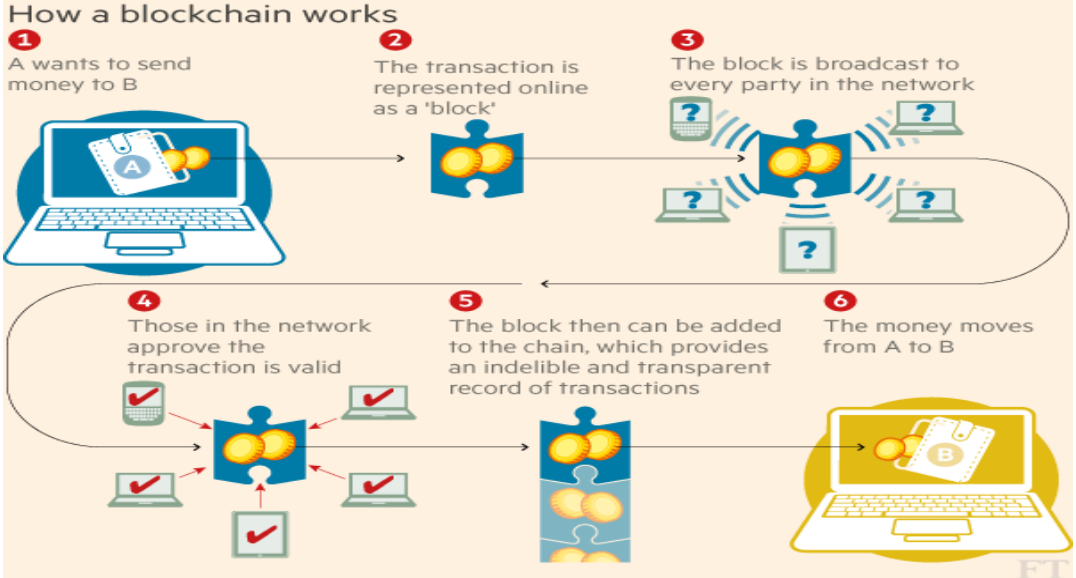

Figure 2 -How does Blockchain work by Christophe Burgdorfer 2017

2.4 Blockchain in the hospitality industry

Blockchain technology has the possibility of disrupting a wide range of companies and industries, including the travel and tourism industry – known as the hospitality industry (John, 2020). The information-intensive nature of the hospitality industry necessarily links it to modern technology, for instance, the marketing of tourism destinations, besides products and services. The quick growth of technology, therefore, has an immense impact in the industry. (Pesonen, 2016)

Is Blockchain trustworthy? This has been the main question asked by those toeing into the Blockchain world. Many businesses in hospitality have benefitted from fostering technological development (Abderahman Rejeb1, 2019). Expedia, the world's leading agency, launched a massive crowdsourcing initiative in 2012, with the aim of transforming travellers into 'personal agents. Companies such as Expedia and Trip Advisor have earned prominence as trustworthy sources of traveller feedback (Rejeb, 2020). Blockchain technology being design for security enhancer, it has expanded in the hospitality industry and has gained its prime recognition due to digital / crypto currencies such as Bitcoins where companies has started to invest heavily in this in the past years (Rainer Böhme, 2015).

2.5 Cryptography And Bitcoins Adoption

The World Economic forum estimates that 10% of world GDP will be stores using the Blockchain by 2027. Crypto is an internet based medium of exchange which uses the crypto graphical functions to conduct a transaction. (Dee, 2020) Block cryptography uses the public key, and a public Blockchain permits anyone in the globe with an internet connection to participate as a user and a validator. All the transactions on a public Blockchain can be viewed on a block explorer. This type of block is decentralised, with examples including Bitcoin, Litecoin, and Ethereum, among others. (Xue, 2019).

Malta has had a positive experience with the crypto and Bitcoins they found the ability to keep a close eye on the records and data that will mainly raise chances of frauds from happening. With early research, it has also shown that the transaction cost of crypto are lower and payments carried will be transferred immediately worldwide. The transaction is easily stored in a digital wallet that is simply managed from the mobile application whether it is software crypto or hardware crypto; the customer owns the accounts and no one can get access to it. With this positive response, it's the cryptocurrencies and Bitcoins that make it possible for the customers to book or purchase any product via an application on the mobile. This will increase their prosperity by ensuring fast, transparent, and securely handling the data and transaction in a much faster and cheaper way.

As analysing the strengths and opportunities of this result, the customers can automatically identify safely in the Blockchain and use it when purchasing an airline ticket, traveling by public transport, checking in at a hotel and verifying age when purchasing alcohol.

Using the Gaming and gambling company as a decentralised method, the traveller that own the input address should perform a digital signature using private keys to authorize a transfer or payment where the receiver, before accepting any transaction, should give the go ahead after receiving the signatures and verify if the input address is correct or not or whether it has expired. The country has found the potential to implement it in other industries to hit some incredible success. (Larsens, 2020). Since law and regulation about Blockchain is well behind and the progress is slow, it has not yet reached a certain level of knowledge therefore individuals are still green about this subject.

In other words, data can be only written, but cannot be removed; hence the name ‘Blockchain’. Blockchain is managed by a username and password, and the public Blockchain is without any central authority to guide or get access to the said username or password. A private key code enables the user to generate a locker address. (Reiff, 2020).

Private Blockchain, on the other hand, includes a consortium (an association typically composed of several companies) which displays entry barriers for the users or participants, and there is a greater control over the nodes and transactions within the system. They are similar to a traditional database, but with a decentralised approach. This heightens security for the stored data, and increases performance for the user, through efficient consumption of resources. In relation to this, the permissioned Blockchain is configured to perform without the need of being private, but with regulated access control (Tarik Dogru, 2018). In contrast, public Blockchain is decentralised with no restriction, and has a full public ledger, and anyone can join the network without the necessity of getting approvals via other nodes (Pavlić Skender, H. and Zaninović, P. 2020).

2.5.1 Smart Contract

Smart Contract was written down in 1996 by computer scientist, Nick Szabo by the tile ‘Smart contract building block for digital markets. He writes the ground rules of smart contracts as one of the critical innovations of Blockchain. The idea of smart contract is that it cannot be tempered or breached as it has automated execution. Smart contracts have the ability to enforce contract automatically, trustlessly and independently whilst removing the middlemen through the contract construction.

Smart contracts are lines of code that are kept and stored on Blockchain and are automatically affected when predetermined terms and conditions. In simple words, they are programs that have been created by the people who developed them. Smart contracts on Blockchain streamline the complexity of the process when there are several intermediaries involved due to the lack of trust among the users and participants in the transaction. Having the identity of the customers stored in the Blockchain while they are doing the transaction in the hospitality industry, lenders can make decisions about the credit. This type of program helps in

facilitating and enforcing rules between parties by allowing them to interact with other smart contracts

2.6 Acceptance of Digital Currency within the Blockchain

A survey was done on customer behaviour's perspective to analyse acceptance of the crypto currency. As a result, 85% had the intention of adopting smart digital coins. In 2010, there was the very frustrated retail purchase that was made with Bitcoins where Laszlo Hanyecz paid 10,000 Bitcoins for two pizzas. (Chaparro, 2018) The widespread adoption of crypto currencies definitely impacted the tourism industry, especially in small islands. Certain countries already started experimenting with crypto currency payment for resident and tourists to gain a competitive edge.Hence by removing the high cost of dominant intermediaries, the tokens can help to create efficient rewards system for travelers who provide feedback on online review sites. Moreover, it also secures the payment as it is a peer to peer transaction. (Öndera, 2018)

2. 6.1 Online Transaction within the Blockchain

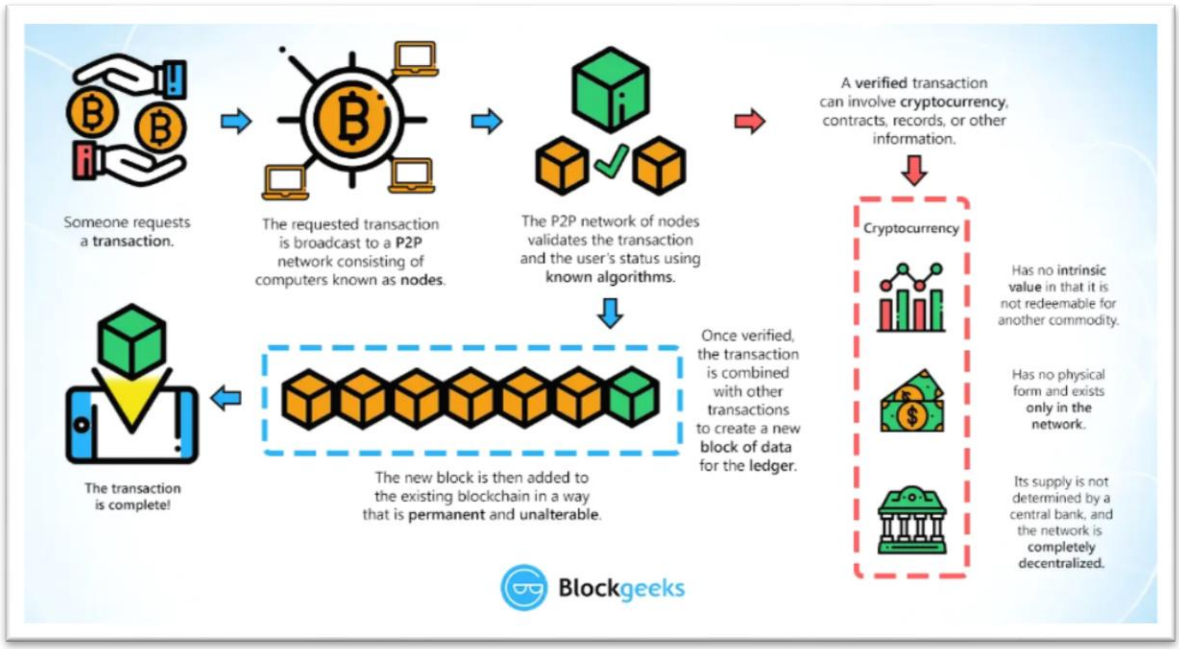

Figure 3 Transaction through Blockchain Technology- Amir Rosic -Block

Figure 3 is an example of Block chain in its simplest form: The transaction is characterized online as a block, and is broadcasted to every member in the network. The participants are hold responsible of the transaction by confirming that it is valid. (Kultsova, 2019) The block is included to the chain, which provides an immutable and transparent record of transactions. (Tzoannos, 2018)

2.7 Implementing Blockchain in real life system

Both governments and corporations are increasingly introducing Blockchain into their operations, as they believe it will optimise their structures and reduce expenses. Recently, researchers and experts have been revealing more applications of this technology, into various platforms and services. Some leading tech companies, such as IBM, Microsoft, Sony, and Samsung, have already hopped on the Blockchain bandwagon. Estonia, for instance, has signed an agreement with Brazilian start up Bination to improve refugee identification (inside bitcoins, 2014).

Blockchain does not get involved in any cash but rather an online transaction which seems to be pretty adopted by a high number of individuals. By keeping pace with latest trends, new generation of a cashless society such as Sweden and a number of Chinese cities have already accepted the online mobile payment application; in the USA, digital payments are helping to change the customer's way of living. Advocates of cashless society emphasise that physical wallet will soon become extinct as all transactions will be done through digital information that brings more efficiency. Critics say that some people will need to use cash for budgeting and security reasons. Sarah Janes Hughes, a professor of commercial law, says that ''we have fierce individuals in this country and cash is a part of the country. On the other hand, the Filipinos going cashless, as Philippines is a country where most citizens don't even have a bank account because of the big population, Filipinos chose the cashless transaction.

This **disrupts** the whole banking and financial institution. Coming to the hospitality sector, it disrupts not only the banks but also the travel agencies concept to be third intermediary on people's life. (Devanesan, 2020)

According to the statistics done by Barclays bank in year 2019, Blockchain business to business payment start-ups have helped companies to collect payments and automate digital

invoices and also emerging as a solution to reduce cost of cross border transaction which accounted to 27% of global transactions. Moreover, with the distributed ledger, it will make it difficult to make the use of sharing a ride where the rider can create more users driven; value oriented market place, and on top will reduce the cyber -security risk, by removing the need of human intermediates. This will lessen the threats of hacking, and human error.

2.8 Why Is Blockchain Applicable In The Hospitality Industry

The takeover of tourism services aggravates transparency problems and creates dullness; these online businesses often face biased and opaque market mechanisms (Nelson Granados, P. 2010). Blockchain promises transparency, neutrality, and objectivity to users, with a high level of confidentiality and trust on online travel and tourism platforms. (Hoglund, 2018)

This applies to any pre-package stage, including airlines, itineraries, and vacancies, which could be eased in an open Blockchain based tourism atmosphere. In a Blockchain society, customers could share their experiences more openly. Travel Chain is a Blockchain based travel business that incentivises and rewards travellers for sharing their experience without risking their data integrity. Winding tree platform is another Blockchain solution platform which aims to provide high visibility of travel stock and to solve any problems regarding cancellations, overbooking, and implicit endorsement by bringing more transparency in the tourism context (Rejeb, 2019).

Blockchain has the potential to provide customers with more control in information and supports creativity. By empowering travellers to use ICT tools to create their own package, they have the right to carefully select the right partners which attain a maximum stage of productivity through the automation (Iis Tussyadiah, 2007). Many people search for the same destination, disrupting the Meta Search system, therefore, Blockchain helps to bring more control in competitiveness, and create a perfect market. The technology underpins both independence and decentralisation, hence the implication of creating and adopting such technology will be beneficial for customers by allowing them to have more control on how they will consume their search and travel experiences (Rejeb, A. and Rejeb, K. 2018).

Blockchain applications go off with smart contracts, as they are self-verifying, self-executing and secured by Blockchain itself. The concept of the smart contract with the amalgamation of the Internet of Things (IoT) opens huge opportunities for innovative consumer ideas. Being the centre of innovation, Blockchain in the payment industry is being proposed as a solution to a real-time payment between two parties which operate at a high speed, creating a high level of tourism market discipline (Konstantinos Christidis, 2016).

Each department in Blockchain enables the system to be defined clearly. It also provides security in any unpleasant situation. Blockchain technology could be seen as an enhancement of the traveller's experience throughout the travel experience (Abderahman Rejeb, K. 2019). The largest bit of the literature review focus on the potentiality of Blockchain technology in the hospitality sector is the sharing economy market such as Airbnb. Block chain's potentiality is all about building trust, allowing direct transaction, creating a cashless society and more protected monetary transaction along with information exchange, to eliminate the middleman. (Pham, 2018)

2.9 Cost-Efficient and Independent

As a new technological paradigm, Blockchain is allowing consumers to move towards online transactions. The role of the middleman is a core premise of technology, and the merging of Blockchain re-engineers the distribution of travel and tourism products and services. The adoption of this technology and the removal of middlemen are deemed to be eminent since consumers are willing to independently choose their own way of travel, according to their needs, unlike online travel agencies which provide centralised offers. The disintermediation via Blockchain speeds up the transaction process, with a lower price, by eliminating charges imposed on customers (Edward, L., 2007). For instance, a hotel or airline companies charge anything from 20 to 25% as commission to intermediaries for helping them sell their product or service to customers to raise their market value.

2.10 Securing the Travel Transaction

There are several mechanisms for securing Blockchain, ranging from Bitcoins' original Proof of Work (PoW) to the more recent Proof of Stake. The introduction of crypto currency could reduce the risks linked to the settlement of tourism and payment transactions. By taking advantage of the characteristics of crypto currencies, OTA and tourists will be able to make their transactions without the involvement of third parties. (Frankefield, 2019)

Recently, there have been a high number of fraudulent transactions with credit cards, which made companies dive into the crypto currency market in the Thai tourism sector, where customers are willing to search for product sellers accepting Bitcoin. In addition, Dash Thailand was launched and funded in October 2018, focusing on user integration in the tourism industry, and was seen as a market opportunity, since the tourism market has around 20% of the GDP. Customers and merchants were taught how to use this dash wallet. The demand became high in Southeast Asia, as its potential and security were increasingly recognised, and integrated into Point of Sale (POS) solutions, as well as the Master in Blockchain of Trading interchange to increase in adoption, usability and liquidity (Group, 2018).

2.11 Concerns of People in Using the Blockchain within the Hospitality Industry

The first concern of the customer of being a bit reluctant in using Blockchain is trust and protecting their personal information which is the general data protection. Before the general adoption, public must be able to understand that crypto currencies are only one application of Blockchain technology among other, according to a report by Fin extra, corporate are worries about the disruptive character which means beneficial to the customers. On the other hand, security and privacy is seen as a biggest challenge. As many potential applications requires smart transaction, it raises important question about privacy and of the security of the data stored and accessible on the shared ledger.

The role of Blockchain is to make sure that there are no cybercriminals performing any cyber-attacks to breach the data or create malicious software to disturb the program. As Blockchain creating question in terms of scalability, sustainability and security, according to Deloitte, Global Blockchain and cyber security have joined forces to study the security of Blockchain. From their point of view, the main consideration is based on Block chain's current level of security and the public and private ledger's perspective.

Even though the cyber attacker gains access to a Blockchain data, it does not mean it will read all the information and can fully retrieve all the data, there will be full encryption of the data block that will be applied to the data being transacted by guaranteeing the confidentiality.

The clients need to be aware and taught that having a number of accessibilities to multiple devices from their Blockchain account can create a higher risk of losing control over the security. It is important to use key management procedures such as RFC 4107 cryptographic key management guidelines and develop secure key governance internally.

With regards of data immutability it is important to think on how Blockchain will be able to fit side by side with data privacy law where the technology can ensure customers that the mechanism can help to prevent and control to be split in the event of 51% cyber control attack . To safeguard the security, it is important to encrypt the personal data which is stored in the system, with the forgetting of keys. This will safeguard the sensitive information by making it invalid to get access through it.

Encryption will help tracing each transaction done at a specific time period as all transaction inputted to the public or private Blockchain is digitally signed which helps to identify the main user via their public address. With this feature being implemented, it will stop any criminal to duplicate the authenticity of their signature on a fake transaction. This feature on Blockchain helps to increase the reliability of the application since all the transaction will be cryptographically associated to the main user. (Jayachandran, 2017)

2.12 Smart Contract Applicable To The Hospitality Sector

As an application to the hospitality industry, an agreement can be made between an online Travel agency besides airlines or hotels to be effected separately once an event occurs. In short, it will help the customer to eliminate costs and delays associated with ordinary contracts (Cosby et al. 2016; Peters & Panayi 2016).

Thus, smart contract can be adopted on any type of transaction in the hospitality industry. For example, it can tell the hotels and travel agencies to streamline their business relationship with the smart contracts by having contractual provisions that are mainly predetermined by the user carrying the transaction. The applications of smart contracts can also be prolonged to the customers by entirely removing the check-in procedure. Therefore, through Blockchain, the digital IDs are stored with the authorized account for payment, and the hotel rooms will be assigned to the guest with the digital key recorded after the payment is acknowledged. (Levi, 2018)

The most important advancement in the smart contract is that both payment information and IDs are encrypted through a secure code not being exposed to theft act. (Lim, 2016) Other industries such as car rentals and lease apartment can be extended through the smart contract application along with Airbnb properties and can use the existing application to resolve any security concern they might be facing.

With Blockchain based locks, which are used in properties, and once a payment is received from the end client or customers, the smart contracts authorize access to the property owner for any activity the customer is carrying out. Moreover, it will also facilitate travel insurance in the occasion that a flight might be cancelled or delayed, and with the contractual terms, the Blockchain network will be executed through the smart contract. Many enterprises in the hospitality and travel industry are vetting big on the Block chain's bandwagon effect, in other words, another modern customization to facilitate a better, faster experience and cheaper.

A case in point, TUI Group is already using Blockchain technology to manage and run the distribution of its stocks and assets while handling the internal processes. (Johnson, 2019)

2.13 Why Blockchain is secure for the customers using the online Blockchain application

According the Polyswarn CEO, Steve Bassi said in the tech bullion interview that, “The cyber security defines the economy of the few areas and it is mandatory to work on the anti-malware and in the meantime have discovered interesting ideas by giving the customer a back control of their data to incentivizing a better audit is the smart contracts.” In the current situation, without a single point of failure, the cyber security product that is built on the Blockchain will be much more resistant to attacks; hence with this technology, companies can enlist a worldwide network for security experts and focus on sub setting the problems.

2.14 Loyalty Programs

Loyalty programs have increased across all business and financial enterprises; according to the 2015 Colloquy Loyalty Census, there are 29 different loyalty programs active in the US alone. Loyalty programs come in exchange for points among program partners and make them easier to use. When a digital transaction happens, for example, a loyalty point is exchanged; an exclusive algorithm-generated token is created and assigned to that particular transaction (Dan Kowalewski, 2017, pp. 1-2).

Customers increasingly ask for personalised travel offerings, and digital one-stop-shop services. Blockchain would help businesses solve issues in loyalty programs, and allows both large and local partners to be added seamlessly, making the crafting of on-trend offers much easier while virtually eliminating the back-end irritation of point redemption (Dan Kowalewski, 2017, pp. 3,4).Customers would want to participate in defining how the currency is exchanged in loyalty points, seek ways to have exclusive control of their data, and ask for guarantees to ensure that the platform remains unbiased. In sum, a Blockchain loyalty program system for travel and accommodation applications could enable firms to improve their brand and strengthen the ties between the travellers and destination (Mohamed Goaied, S., 2017).

2.15 Blockchain Can be used Within the Hospitality Sector to Track the Originality of the Product

Hotels can immediately update their system by the time the guest leaves home to get to the airport, checks in on the flight, and arrives at the hotel. This tracking system increases efficiency by reducing the guest's waiting time, and increasing guest satisfaction. Since tracking the guest's activities may be seen as a privacy invasion, accessing the information will require the guest's authorisation to determine the level of information that is shared with the hotel or any other members in the network. Blockchain has the potential to provide integrated guest services without intruding on their privacy (SiteMinder, 2020).

2.16 Baggage Tracking

Airlines have continuously become more creative in the way they increase charges imposed on clients. Very often, customers encounter delays, mismanagement, and theft of their luggage, and it repeatedly results in time and money lost for the passenger. These actions not only create trouble for the customers, but also bring a state of chaos at the airport. To tackle these issues, advanced technology supports activities linked to luggage. RFID technology (Radio-Frequency Identification) tracks luggage tags and enables airlines to save USD $733 million annually. (Roberti, 2018). According to International Air Transportation Association (IATA), the RFID has considerably increased efficiency and effectiveness. Additionally, the use of big data capabilities by Delta Airlines allows the company to share information with customers. It helps to know the exact location of their luggage, which can be monitored with several keys while updating records such as the scanning code, weights, and location in the ledger, and this will give the passenger more control and visibility of their luggage.

As a result, Blockchain will simplify the handling of the luggage and reduce interaction between the staff and customers during check-in and reduce waiting times (Technology, 2017).

2.17 Tracking Food and Beverage

As Blockchain is slowly being adopted into mass tourism, the food and beverage industry, including companies like Nestle, Carrefour, and Starbucks. Blockchain empowers customers by informing them about documents and food origin. According to a study released by the United Stated Food Marketing Institute in 2018, the trust issue has been solved, as the public was demanding more food transparency on the market. Customers have become very conscious of what food they are consuming (J.F Galvez, 2018, p. 3). According to the report, 75% of consumers want to switch to brands that provide more information on the product. Another study done by Label Insight showed that 39% of consumers wish to change their brand.

The same theory is used just like the other services mentioned earlier in this thesis that every single transaction that is shared across the chain is self-regulated and in case of a node being attacked from the security point of view, Blockchain technology marked it more resilient for the customers and the company producing the product in the market. (Grylls, 2020).

But controlling of such chain is slightly a bit different from other services that are more interesting. According to the article new food, they have attended the Food Standard Agency (FSA) first board 2020 meeting to see a way forward how they will be managing the changes that is being done to the UK's food and beverage system with a more secure supply chain. (Mehmet, 2020).

There main principle is producing food that is safe, and the originality of the food origin to make sure that the customer has the right to know the appropriate information to help them make the best choices for their food consumption. Therefore, the hospitality industry will be seen on a safer side if they will adopt such strategy that will be more transparent and honest with its customer. (Alexandre, 2018).

Back in 2018, FSA successfully completed their two main pilot using this technology which is known as collection and communication of inspection result (CCIR), where the FSA has legal rights to inspect the food producer and also helps in taking actions required at any farm to improve the food safety as well as protecting the animal health and welfare.

2.18 Transparency of Coffee Beans

The hospitality elements of tourism are to bring a sense of relaxation throughout the visit or stay. What a great way of simplicity of a simple cup of coffee or a glass of wine that brings anyone who wishes to socialise and have that relax moment whether with that loved ones or a commercial meeting. Environment, appointed Staff and Prices make the whole difference. Ultimately, that's the difference between a café that has a culture of hospitality, and one that doesn't, example a barista that act like they care about their customers or not. Whether an owner of a coffee shop, or a wine bar, their staff need to give such service with understanding of the product whether coffee or wine or any other drink. In year 2020 Blockchain will enable farmers, bankers, exporters, retailers and even customers track and trace the shipment of coffee beans from grower to retailer and can assist in recognising better where the product all started, consumed and all expenses incurred. It can also show what loyalty scheme they can offer. (Marulanda, 2018).

Scott Tupper, Founder and CEO of Yave, a Blockchain provider specializing in coffee, defines block chain as the "transactional technology that enables any trade between people to be distributed and verified on any network. (Yave, 2018, pp. 1-5).

Moreover, when it comes to coffee beans, all data of the coffee beans, proof of ownership, and the region planted and the quality of the bean will be saved on data which will be encrypted. On the other hand, all sales and funds used for such transaction would be recorded and a commitment of sales would be done and inspected through network of security transaction. Thus, automatically the trade is settled, with coffee bean shipped whilst money has been transferred. (Potma, 2018).

Through chain of blocks, the picker, producer, miller, exporter, importer, roasters, cafe owners and lastly consumer can be tracked and traceable. The more data stored the better production and understanding of the demand of coffee. Until recently, traceability was missing and ability was lost. With the IT system, all the information would be in the same place and with the additional technology like IoT sensors, will allow the customers to connect to the Blockchain that will confirm the originality of the product. (UNECE, 2019).

2.19 Use Cases in Implementing Blockchain Technology in the Food and Beverage Sector

Blockchain technology is already being used in some industries according to an article on open ledger. One of the platforms which is called devery.io, provides a digital identification for each product and record the IDs. This application has joined forced with the UN world Food programme for enabling easy tracking of meals in Tunisia with the Blockchain. It is sadly believed that few years ago, 54% of Americans were faced with food poisoning in restaurants and hotels more than at home as they do not have control of the food product they are buying, therefore, for a better coming solution, AI were involved where robots were created to create the appropriate meals to avoid errors and mistakes of human being. (Khatoon, 2020).

There are also numbers of used cases that has been noted as succeeded Blockchain implementation. Taking Wal-Mart as an example, this supermarket is now using Blockchain to join up teams and implement the Blockchain internally by coming up with its own supply chain, this helps the company to follow and understand their status where they are leading in the food and beverage.

2.20 Conclusion of this chapter: Literature Review

The Blockchain technology is ensuring security, data, privacy better performance through size and brand, friendly usability and scalability.

However, these qualities are put into question that needs to be addressed accordingly. Hence to understand the current research in the Blockchain implementation within the hospitality sector, the current challenges are analyzed and through research, it is shown that this topic is still new to the globe and it indicates that Blockchain implementations need to be brought into re awareness to the people as it need more attention on terms of authenticity, cost effectiveness, security and assurance to people it is better than other online transaction in the hospitality sector. The goal of this study is to investigate the concerns and challenges of adopting Blockchain in this broad sector along with the quality requirements and solutions that could improve the customer service and keep an ecofriendly atmosphere of the new Blockchain implementation.

CHAPTER 3 – METHODOLOGY

3.1 Qualitative Research Method

3.1.1 What is Qualitative Research Method

This research was complemented by qualitative research in the form of a survey. The survey was mainly done as it was primarily concerned with the experience of human behavior and all their experiences within the hospitality industry.

The function of the qualitative research method was mainly to investigate answers to the questions and concerns of the customers, to adopt the Blockchain technology, and the future evolution of their experience by observing and collecting their answers to find them the right answers and solutions to reassure their concerns. Through the qualitative research methodologies, inquiries could be done by indicating the various problems and framing them for a better exploration. Through this method, it also helped to develop appropriate data generation and to come up with logical links between the problems or obstacles to adopt such technology.

Qualitative research was adopted as it is the best approach to collect primary data from the respondent who shows their interest in answering the questionnaires which will help to collect and analyses the data requires to meet the set aims and objectives of the current research work. This will help to follow the lead on how it can improve their concerns in accepting the Blockchain technology in the hospitality industry. Through my research on, the characteristics of Blockchain had to be explained to the customers and the respondents who knew very little about the Blockchain.

This type of research falls into the category of content analysis which is the textual analysis and by conducting systematic analysis that helps in comparing and contrasting the primary data to test the depth of the research (Sachin Kamble, 2018).

In developing and identifying relevant measures of the importance of Blockchain technology, important questions were set up to collect the primarily data through a questionnaire that would allow the researcher to gather more flexible and responsive emerging themes for the person asking the questions and the respondent; therefore, a questionnaire was set up to discuss the questions below:

1. Would the customer accept Block chain technology?
2. What are the benefits gained from such a model?
3. What are the customer's concerns while booking any trip or accommodation?
4. What is the security risk faced?

In order to address these issues, a qualitative research method was carried out to help in understanding and getting the right answers to the above.

3.2 Research Conduct Of The Study

This research has focus on Blockchain technology and how it will emerge in the hospitality industry, focusing on its strengths, weaknesses, opportunities and threats. This research will also show the integration of Blockchain in the hospitality industry and its analysis within the context of the technology, and its acceptance by consumers. Through this research, we got to know the reputation of Blockchain and crypto, the risks, and the usefulness and the transaction intentions.

Little has been said on the implementation and application of Blockchain technology, and the usage of it within the economy (Rice, 2018). Hence to analyses this, an investigation like method is imply with the qualitative research. Hence this will help in describing, analyzing and finding solutions for the customer's concerns in adopting such technology Moreover; this will also bring light and measure the benefits of such platform in relation to consumers' willingness to accept the Blockchain technology.

Measurements are developed which will allow the study of consumer acceptance and attitude towards technology. The studies are conducted on the overall use and application of Blockchain technology. Taking into consideration the e-commerce background, the term 'perceived usefulness' is considered as a behavioral term of the consumers which will put weight to see the advancement of the purchase efficiency and the quality of their life. Pavlou 2003, discussed the relationship between purchasing power and purchasing intention by quoting "Consumers do not make their decision in a bubble; they are often confronted by choice situations that are far less than ideal with regards to risk and uncertainty" (Pavlou, 2014, pp. 100-130).

Xu et al, thought that the technology can bring satisfaction, With this statement, qualitative research methods was ideal to be used, as consumers are always looking for quality over quantity and bring more emphasize in such technology to win to win the trust of the customers and bring online satisfaction which will form online customer loyalty by the site's security and credibility (Lennon, 2014).

Furthermore, research has been done to evaluate the impact of various technologies on online sales. Through this research, It will help to have better understanding of what the consumer needs are and their concerns, including, among others, the intention to transact, perceived usefulness, perceived ease of use, and perceived risk, which have emerged as principal components in the combination which forms the basis for the technology (Pietro, 2012).

Following the receipt of the questionnaire from the respondents, we follow an exploratory factor analysis approach in order to test the validity of the theory of the various factors given in the adoption of Blockchain. The result was presented in a chart with all the data to test reliability. Mathematical criteria were then used to create a factor model from the data (Edgar Pessemier, W. 1973)

3.3 Implementation

To test the knowledge of customers when using this platform, an examination was conducted on the overall perceptions and attitudes of the respondents. The examination was divided into different categories to see their relationship with the Blockchain technology, and its various uses, such as ticketing, or booking any service via crypto or Bitcoins using Blockchain applications. Statistics will be collected to show whether the concern of the consumer is on the acceptance of the decentralised platform while purchasing any product or service within the hospitality sector.

Respondents hailed from varied backgrounds, including university students, workers, youths, housewives, and entrepreneurs. Currently, younger people and students are more aware of the target market of Blockchain technology and crypto currencies. The goal of this study was to provide a better understanding of how people would like to see the involvement of Blockchain in the hospitality industry and what security measures would be best to take into consideration. It will be beneficial for the customer to do their purchase online using crypto currency and bit coins, rather than the old system of buying through online banking systems.

A questionnaire was prepared, whereby the methodology showed the previous measures pertaining to risk and adapted new measures on Blockchain in the hospitality sector. The questionnaire was divided into different categories: firstly; gender, age, career, and education; secondly; familiarity with the new technology and an understanding of Blockchain versus using online transactions; finally; concerns on online transactions, and the disruption of Blockchain.

The Research Questions were divided as follows: -

RQ1 - The first research question consists of the gender, age, career, and education of the participants. This is to know how many of them are ready in accepting or getting to use new technology. The current research of the implementation of Blockchain will also help other participants to gain a better understanding on the topics and will help in knowing the categories of people who are willing to adopt this new technology in the tourism sector.

RQ2 - Respondents will be asked to give their opinion and suggestions in this research to test their ability to understand the research topic and whether they will accept to practice the research topic in real life or not. Hence this will show their ability to know the importance of using the decentralised platform whether it is Bitcoin or crypto currency, and it will also help in understanding the research gaps in current Blockchain technology.

RQ3 - What are their primary concerns on Blockchain whilst booking or buying the product: Respondents will be able to show their concerns on adopting a new technology in the tourism sector?

RQ4 - Will Crypto or Bitcoins replace cash? By understanding the research topic with its pros and cons and what will be the consequences in adopting such technology. Therefore, with the little knowledge gained on the research, they will be able to state whether they want a cashless society, or whether they still prefer carrying cash with them anywhere, or using a third intermediary to pay more for the product.

3.3.1 Methods of distributing the Questionnaire to the respondent

To reach out number of respondent which started few months ago to be able to reach the maximum participants, it was decided to share via social media. Knowing the fact that Facebook has 0.65 billion active users worldwide, it will be a good platform to collect huge socio- demographic data by the consumers as all the active users will have access to the survey. Hence with the setting of the questionnaire based on the location, age, gender, education, and concerns on online purchasing, this platform will help them to participate and respond accordingly to the survey.

The questionnaire was sent to 50 people which were mainly Those residing in Malta whether local or foreigners as mentioned before, Malta is considered as the Blockchain island and being an island, a huge number of residents' travels for multi-purpose. It was seen by a number of people online mainly via Facebook posts, which were sponsored. The adverts reached 86 people, and resulted in 35 participants. The results of the questionnaire revealed that women are more likely to accept Blockchain in this sector, with 54.30% of female respondents replying positively, as opposed to 45.70 % of males.

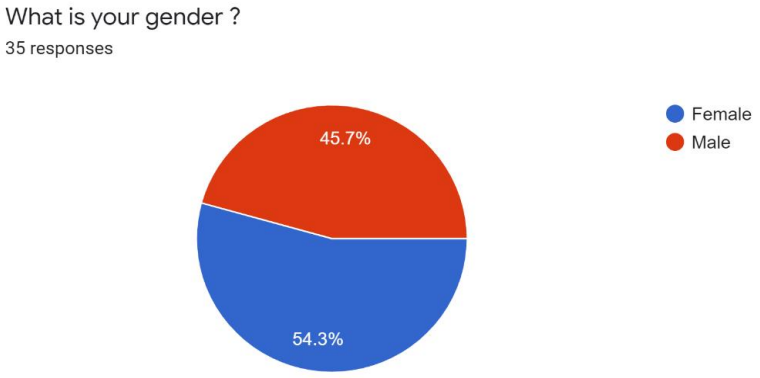

Figure 4 Number of Respondents divided in gender

Conclusion:

The results obtained by means of the questionnaire will be listed in the following chapter, as it will describe and analyses the challenges faced by hospitality companies to convince consumers to use Bitcoins and Blockchain technology in their daily life. Hence measures should be found to address their usefulness, risk, and allow researchers to find a solution for the challenges faced.

CHAPTER 4 – FINDINGS AND ANALYSIS

4.1 The Findings and Analysis

This chapter focuses on the analysis of data which will be discussed using the facts and figures gained during the research to conclude the findings. An overall explanation was given on data collection and why it was more feasible to get the understanding and the behaviour of the customers toward the implementation of Blockchain in the hospitality industry. The data findings were analysed to understand the relationship between the behavioural control, attitudes, risks and social norms and demographics of the respondents and their pulse in accepting the application of Blockchain in the hospitality industry and what they are expecting out of the new digitalised and decentralised technology.

The findings and analysis were done to bring forward the main concerns of customers about whether they would find it feasible to adopt such technology while buying any product or service online using the Blockchain.

1. The first part of the analysis dealt with gender, and the understanding of the customers towards the Blockchain technology which leads to educating and raising awareness on the Blockchain technology.

2. The second part was about the preference in using online platform and Blockchain technology and their behaviour in accepting living in a cashless society. It also analyses the customers' needs and expectations to book or make a purchase in an easier and more convenient way which comes to the easy method for broad services with affordable pricing and have a painless booking while booking or purchasing any service.

3. The adoption of using Blockchain in the hospitality industry, where the answer of the respondent were based on the problems faced while using online travel agency, and what barriers they wish to eliminate while doing any transaction whilst specifying the reason to move the industry towards the Blockchain and how convenient it will be for both parties while having a win-win situation.

4. The second part analyses the concerns of the customers whilst endorsing an online platform to make a purchase of any service. This section focuses on their doubts and assurances based on **security** and **General Data Protection Regulations**.

5. The third part is on the Origin of product and services within the hospitality industry when it comes to traceability of the product origin such as food and beverage where there is the concern of the customers shown and how important it is for the industry to show to the customer what they are purchasing. Furthermore, these will lead to a loyalty program where customers will have more trust within the industry and the product they are purchasing.

4.1.1 The Gender Demographics and Their Understanding on Blockchain Era

According to the first chapter, with the result gained by the travel statistic report 2020 (Artur Lugmayr, 2016) this result shows that men are on the top of the statistics doing online purchase. This reveals the power of purchasing within the hospitality sector as well. In such context, women have a limitless exploration skill in trying new products and services. From this survey, it highlights that women are much interested citizens of the growing demographics in the hospitality sector.

The second section was focused on the age differences of the participants who responded the questionnaire that relates to the education and awareness in Blockchain in Malta which gives insight about the age group that is more into new technology adoption in daily activities.

According to the findings listed below, it shows that the participants that have responded are people who are actually in the working industry, students at university level, which goes into the category of young adult, with age varying from 21 to 24. In these categories, 20% of the respondents were young adults. This shows that for these young adults, it is time to explore more adventurous products in the market. Furthermore, they are considered to be learning about the Blockchain and minority of the respondent were the entrepreneurs. This gives us an insight that housewives and baby boomers are at no point interested to go through the survey and answer the questions as it is a subject of no interest for them.

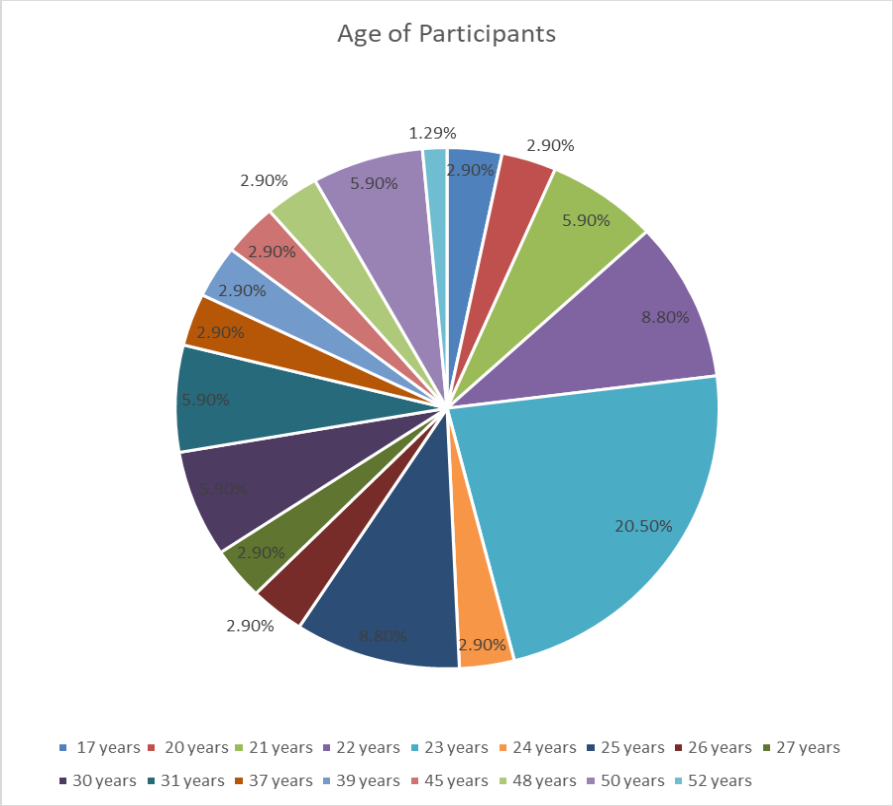

Figure 5 Age Differences who are interested in new trend technology according to the survey

As we go along, the careers of the participants were also taken into consideration because from the result we see the increase of youth reaction that is willing to use the centralized technology within the hospitality industry, such as Blockchain. Most of the population were not taken into consideration as they do not understand the concept of Blockchain; high concentration of user interaction and data at the internet's application layer such as social network and content platform, which are mainly used by youngsters. This correlates the fact that Malta in the first chapter as mentioned, the ministry of education has been putting their effort in bringing more courses to the youth and other categories of individual to help them in raising awareness in Blockchain. With the result gained from the primary research, youth and workers are mainly interested in the new tend of technology as Malta is bringing more enforcement on the Blockchain technology.

The second most popular where the workers, as they have become more independent on digital products and services, whether they like it or not, as long as it is within their current work area. Companies are going into the highly distributed global network to help the

workers or users to reduce more time and effort to get access to their data or used other online applications. It also helps the workers mentally to flourish in such platform and opportunity to have a promising product in the internet. As this link together with the encouragement of women's coding along with youth in chapter 2 (Mackinnon 2017)

Thirdly about the entrepreneur who participated in the survey to use Blockchain within the industry of hospitality or other hospitality that will help them to move into the successful path and changing the way to rule the market. Through the survey, not many entrepreneurs were interested to answer the questionnaire as only 8.6% showed interest in the Blockchain technology. It is important for all these work careers to endorse into raising more their awareness to find the benefits of this application.

As a contrast with the research done in the previous chapters, it shows that the entrepreneurial world is looking forward to accept the Blockchain technology as overheads and worrisome transactions can be done within seconds and with the absence of the authority; this makes transactions easier and safer. Malta, being a small Blockchain island, it can encourage entrepreneurs to make use or adopt such technology where business market players can use it to progress rapidly.

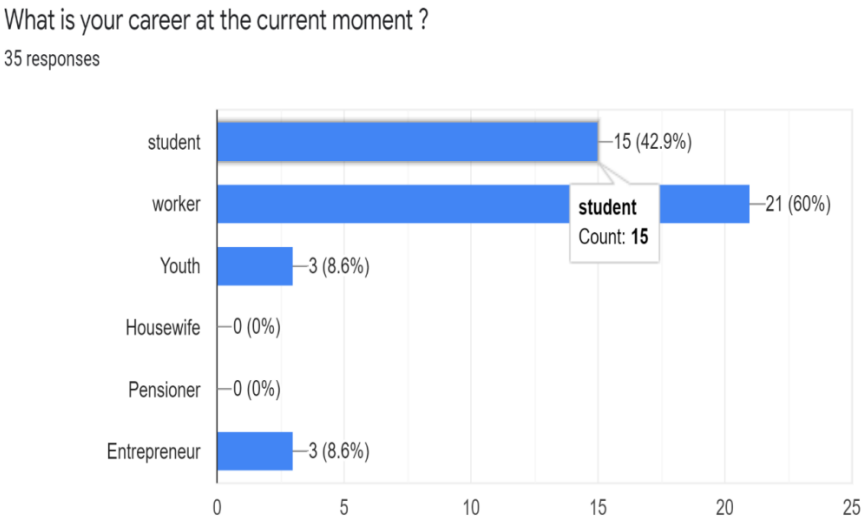

Figure 6 Participants responses based on their career of choices

In the seventh figure below, participants in the survey were asked if they know about Blockchain. Only 40% replied in the affirmative and 17.1 % respondent 'maybe' as they only heard about it via events done locally in Malta. Additionally, they were asked to share their points and suggestions on the improvement of booking or buying any product or service within the hospitality sector by describing any issues or difficulties they faced when making any transaction which will be discussed in the other upcoming part of this chapter. This describes how the age group and careers of the participant affects the adoption of such technology globally when it comes to applying it in daily activities while purchasing any products or services.

The result below shows, there is more high percentage of people that responded that they don't have any clue about Blockchain which seems that there is a huge lack of knowledge and awareness of the Blockchain technology in Malta, as most of the respondents live on the Maltese islands whether local or foreigners. Coming to the fact that Malta is known as Blockchain Island, this result does not at all support the statement about Malta being number one in Blockchain. This supports the fact that Malta, due to its barriers in law of Blockchain, and with its slow regulations, it has brought people to understand Blockchain less. With no actual business licensed under the VFA, it is considered as a disappointment for the companies and the people to adapt to Blockchain technology. (Stephen, 2020)

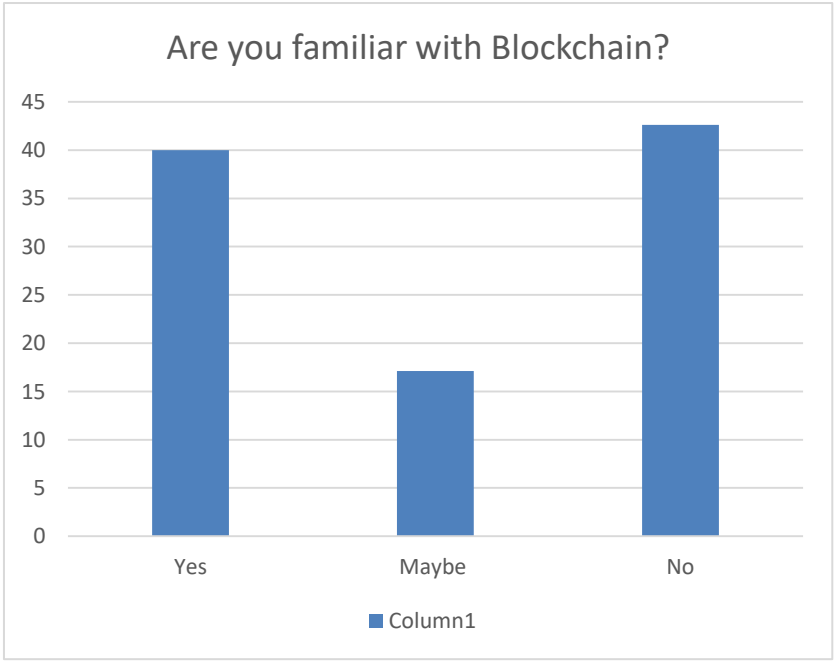

Figure 7 Percentage of Participant who is familiar with block chain

From figure 8 below, it shows that customers change at a slow pace but once they do, it can be established overnight in every household and can be used among every member of the house. It is all about how to educate and promote the Blockchain application to the consumers.

It seems that further awareness is necessary, particularly with regard to online behaviour, as gender, age, and education are important factors when determining the amount of engagement and interaction with online transactions.

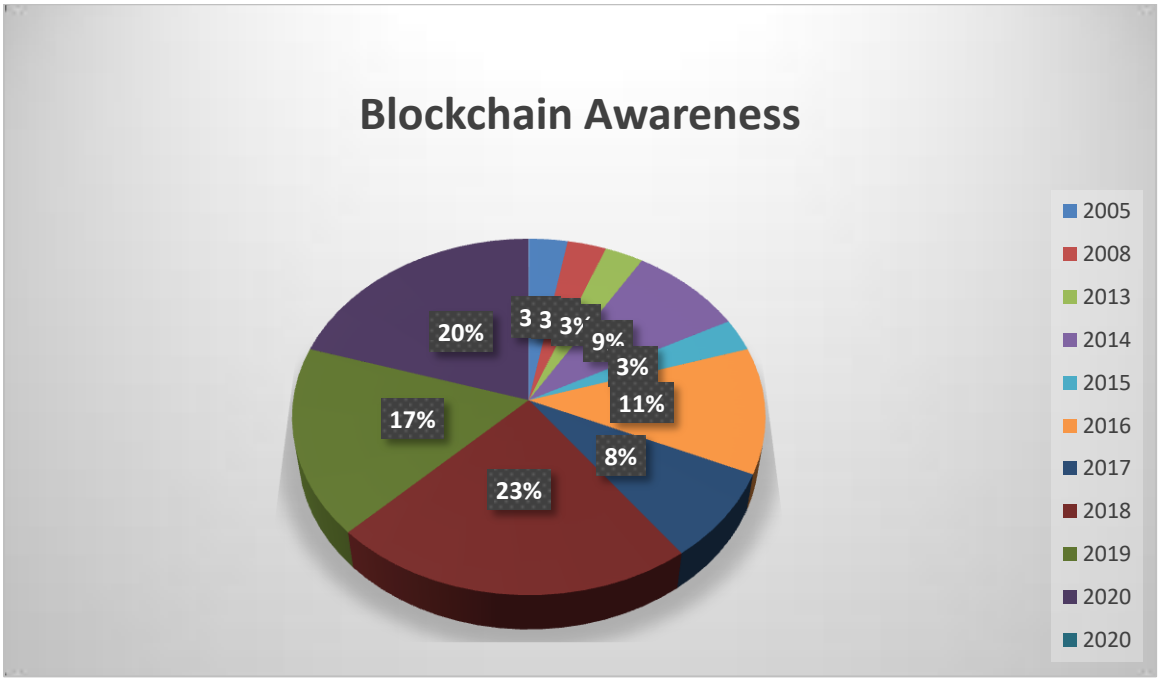

Figure 8 - which year the respondent knew about the Blockchain technology

From the results, it is shown that Blockchain started evolving mostly in year 2018 (Cauchi, 2018), and this confirms the result got by the participants and confirms that Malta has still got the positive vibes on Blockchain technology even with the hassle of law, which dropped 70% business down, they still see the potential, both by normal individual and business entrepreneur. With the decentralised nature of Blockchain, it can lead their market to a good horizon. This is the reason of which we can see the fact that many online gaming has set their feet in Malta which attracts a lot of business tourism and leisure tourism in Malta. Hence this

shows that in chapter 2, with the help of the Bloomberg report, it proves that Blockchain technology started evolving in Malta and awareness started to be spread via number of courses and events that were being carried out.

Analysis:

With the first part of the analysis we can come to the conclusion that it is a must to really focus on raising more awareness in the hospitality industry with the involvement of Blockchain technology. Even though taught courses are being offered, there is still the threat of losing the name as Malta being a Blockchain island due to misinformation. Even though a number of event are being done by Blockchain sigma, it is still a fact that till now the tourism industry in Malta has not yet accepted the idea of using this decentralised platform to purchase online via one set without any hassle of third-party involvement.

With the research carried out in the first chapter, we have seen the positive impost of Blockchain on tourism industry. This contradicts the responds received from the participants, which means that it hasn't yet created much impact in the tourism industry in Malta; even though a huge number of whitepapers, newspaper and magazines articles have been published till 2018 to raise awareness in the recent years. Moreover, many organizations are trying to incorporate the Blockchain technology in their existing business model. Simultaneously, start-ups are done as well, but lack of encouragement in the consumers is holding back the opportunity to analyse the technology or discuss the potential use of the cases. For example, people all over the world are travelling and paying tickets to attend high Blockchain seminars, but the middle-class people that can't afford the ticket cannot pay to attend such lively events where they can see and hear the speakers giving samples of the product they are promoting. From the academic perspective, there isn't much discussion on potential cases from a practitioner's point of view where theories can be investigated from an organizational, behavioural and economic perspective.

4.2 PART 2- Customer's Understanding and Adoption of Blockchain Technology

The second part consists of the customers understanding the online transaction within Blockchain in the tourism industry. From **chapter 2,** we have seen the overall digital revolution and adaption of online transaction from the very beginning which revolutionized the technology into a better dimension and much more development of the internet or usage of mobile application that has become fundamental in the life of every individual.

This finding shows the respondents reason of using online transaction, how is their online purchasing done, depending on their choices and, their preferences between e-payment or cash payment. Moreover, it establishes whether they prefer to make direct payment without the need of intermediaries, such as banks, or travel agencies or whether they want to try to use the online Blockchain payment while purchasing a flight or accommodation online. Lastly according to their knowledge, what will the Blockchain technology disrupt and what might be the barriers to use Blockchain while doing any purchase online through any platform which is decentralised.

I. The first part of this research is carried out to identify the reason why people prefer to purchase products and services online. In the previous research, we see that clothes, hospitality products and services are mostly sold by online shops which created millions of online customers all over the globe. Through the result figure nine, taking into consideration that tourism plays a mandatory part in the economics of Malta, the local and foreigners stated that the major purchase they do online is ticketing, which is 65.7% and followed with their accommodations which is mainly 25.7%. The rest transports which are tours and buses tickets are still used in a traditional way as it is very easy to buy the card or vouchers to refill the card via a mobile application for the bus trip or tours.

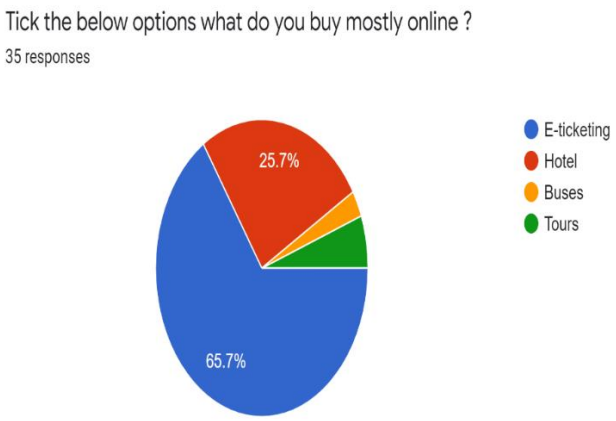

Figure 9 -The online product bought mostly by the respondent

With these statistics, we get to know that customers are already in buying hospitality products and services online with no hassle. This put more weight to the research found previously, that clothes, travel and tourism services are mostly convenient to be bought online rather than going and waiting for a long queue at a travel agency. With Online Travel agency statistics done, the percentages are quite similar to the percentages received via the survey. This also confirms that online travel booking makes the most income in the travel industry every year by people using a website or mobile app and people prefers to sit at home and see the whole transaction going on. This gives more incentives for the customers to use or adopt the Blockchain via their mobile application.

With these results, we also found out that majority of the respondents, that is 62.9%, they prefer to use applications via their mobile phone which adds more weight to the above results.

II. The second section is followed by the results which show that travellers today are more mobile savvy than ever and they always need to evolve on new trends on making their booking style more interesting and easier. With this new trend, customers are preferring to move toward a cashless society, rather than carrying bulks of money in their pocket. This is gradually changing as the society has already moved towards the e-payment system. From figure 10 below, this proves that local and foreigners residing in Malta are in favour of e-payment but there are still 28.6% which

prefer to use both cash and e-payment. This shows that with the digitalised era, online payment is growing fast.

With the recent pandemic of Covid 19, it has allowed people to get access to products and services online during their strict quarantine. Putting this in mind, digital payment has been keeping the economy running. As a fact, customers prefer the convenience of electronic transaction confirmations as they see it in a more sustainable and responsible way than using paper or cash notes. This result also shows the opportunities and strengths of the payments adopted by the tourism sector which gives the customer a level of confidence and satisfaction through a convenience online platform which leads to an increase in online bookings for hotels.

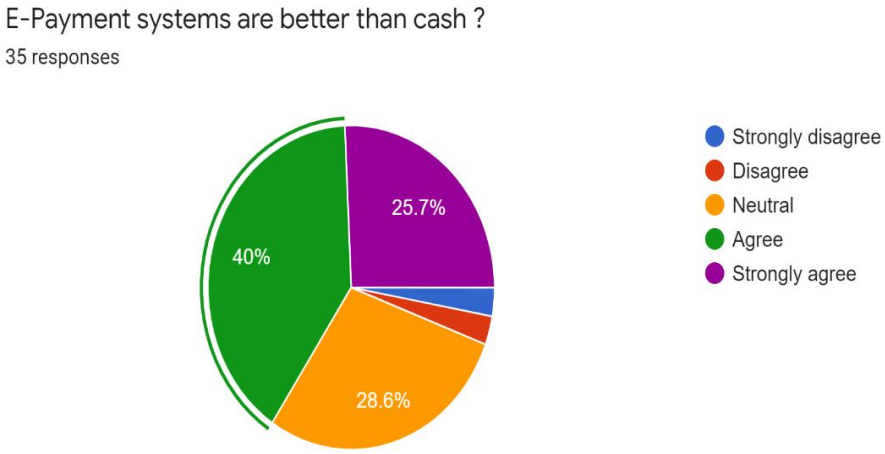

Figure 10 Do they prefer a cashless society?

As stated in the Literature review, traditional banking is now being outdated and somehow, unreliable consumers and businesses are looking for alternatives options for their transactions and safeguarding their assets. With the research carried out, the respond of participants to use the Bitcoin and crypto as a form of payment was not seen as an impossible task to them, as in simple terms of explanation, it removes the third-party involvement.

III. Figure eleventh below is the evidence that supports the statement above as the majority of the participants, around 32.4% totally agreed to use this type of payment, even though they mostly responded as 'Maybe', it means they will consider in the future to use this type of system as it is still new in the life of individuals. Even though it shows that it has some new challenges to accept these digital currencies it is

not categorised as impossible. Evidence shows that this should be in the frontline to show how the Blockchain digital payment can be used to secure online payment.

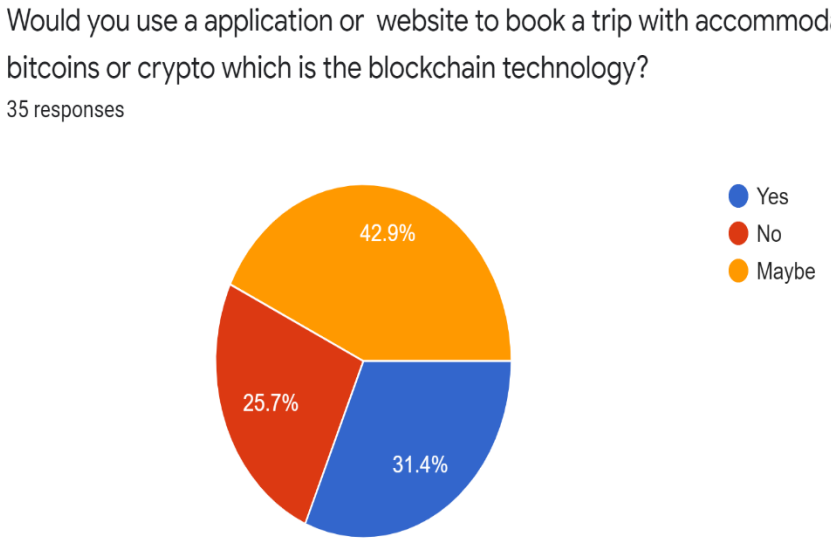

Figure 11 Response of participant in using whether website or application along with Blockchain?

With the response gained by the residents about the payment methods, the majority of people wish to make direct transactions that will enable them to make an affordable and satisfying product.

The majority of the respondents, about 74.3% agreed to direct transfers or purchases without the involvement of third parties. To explain this better, figure 8 will help to describe how the tourism sector will help to make any transaction done from buyer to seller. With the below explanation, this show how effective and how easy a purchase or booking is done.

In relation to what was said above, with regards to the customers accepting the crypto in purchasing any hospitality product, it shows the disruption of the third parties which are mainly the financial institutions that are the banking systems which are the prime industries being affected. The research of Barclays approves this responds upon chapter 2.

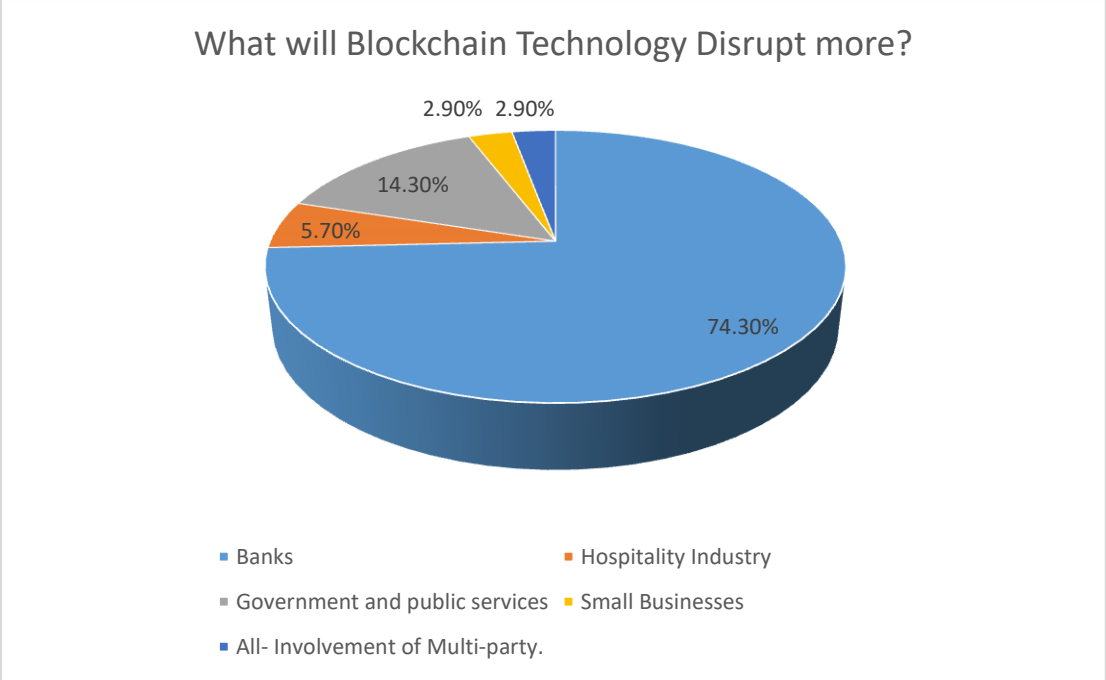

Figure 12 Respondents answers on the Blockchain disruption to the industries

To support these advantages and strengths of these factors, the answer of the participants shown in figure twelfth resulted that 73.4% of the respondents agree to operate without the bank

On the other hand, it has to confirm that it will not affect the hospitality industry as only 5.7 per cent responded that it will less affect the hospitality which majority confirms with the result that it will bring more improvement in the hospitality industry. As a fact support, chapter 2 confirms that with the integration of Blockchain, it will bring more customer satisfaction and loyalty to the customers from being disrupted as hotels, restaurants, and flights are the product and services that are intangible and are being mostly booked online. To make the factor clearer, the Blockchain will add value to the customer experience by making the platform personalized and decentralize and make them feel the prime user of the account.

4.2.1 The Concept of using Blockchain technology into the Hospitality Industry

The third part of this chapter consists of the concerns of buying through an online travel agency, and as a traveller, what are the expectations in this modern era while boking any service online, and how it benefits them financially as travellers are eager about having the best product with prices that are affordable and will be remembered. To sum this all up, what are they expecting out of the Blockchain technology to get integrated in the system and make better improvement and positive impact in their life?

i) Firstly, with a better innovative way of booking or buying a hospitality product online. In this section, the respondent was asked to bring on the table the disadvantages they face when doing a booking online as the majority from part 1 and 2, online booking has been the most effective way of booking. But without knowing the customers' needs and expectation, any online business will not climb the ladder of success unless they put their customers in the first place.

With the result obtained through the survey in table thirteenth concerning the disadvantages of online travel agency, 54.3 Per cent of the participants responded that there is a lack of information while they are booking their flight or accommodation or any other product as there is the involvement of the third party. The below chart will enforce the Blockchain involvement in the tourism industry.

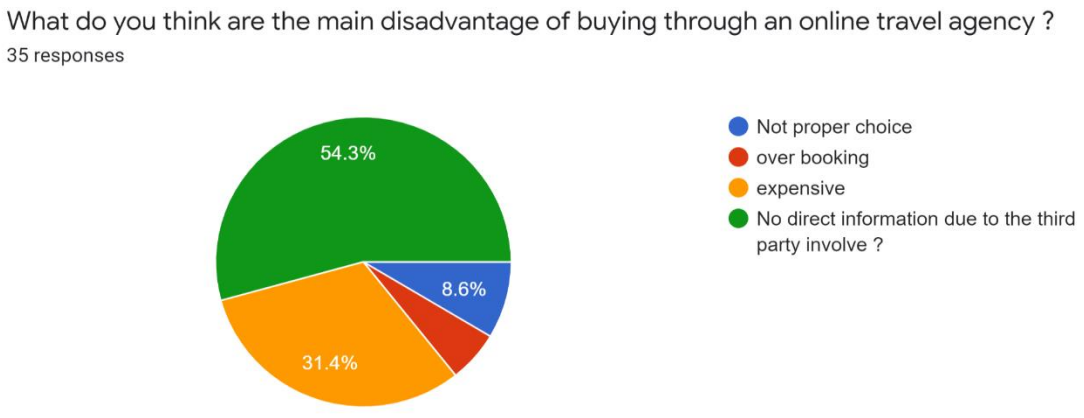

Figure 13 Respondents concerns of using online travel agency without the block chain

Furthermore, 31.4% of the respondents stated that with the online travel agency, the product and a service are expensive and goes beyond their budget while planning a trip. Although Blockchain sounds confusing at the very beginning, it actually brings into light that it will help with better restoration of data, enhancing transparency and transactions.

The online travel agencies and other intermediaries have entrenched themselves, including the hotel booking, car rents and flights, which are disproportionately high according to the respondents that they add cost to each service which the consumers find very expensive to afford. Therefore, Blockchain is disrupting this status-quo by implementing its decentralised nature of simplifying the cost, transaction and also secure payment which adds to the potential to improve the level of trust among all parties.

8.6% of the participant confirms that the online booking system does not provide them with wider choice, as Blockchain features is to let the customers to create their personalised and customised package. Hence this brings the fact that it will disrupt the online travel agency by inputting the BCT into the online platform to make it less costly in terms of paying high commission. Moreover, Blockchain will avoid the over-booking concept and double spending. Blockchain will assist with the smart contract and tokenised ticket which will help to fix the number of overbooking which is selling an excessive number of tickets, banking on late cancellations and passengers missing their flight.

4.2.2 Expectation of respondents whilst booking online

To follow up with the above subject, participants were asked to voice out their main needs and expectations on what they have been looking for in an application or website while booking an online products and services. The respondents are looking for authenticity and certified application where they can as well carry out a safe transaction, user friendly application where it involves the eco-system and sustainability while carrying out these activities as majority of traveller are looking for uniqueness.

They are looking for an application that can be easily referred and recommend by friends and families, for example, Travello is a platform where everyone share their travelling experience, but there is no platforms that only help the travellers to get an personalized package but also where they can easily connect to another solo traveller and if by any chance there are close friends travelling in the same period as you. When they are endorsing in the

platform, they will easily be able to connect to groups or close friends or partners to travel, they can find each other to book the same flights or accommodation where they can enjoy their holiday together.

The respondents also suggested that there is a lack of trustworthy sites with valid SSL certificates on payment page with no hidden information and they are looking for a real time information. From this response, we come to the conclusion that online platforms are not providing peace of mind to the customers; this makes them doubt the services and information due to previous bad experiences.

Another concern was about easy, fast, less time-consuming platforms and wider choices of products and services. With the competitiveness of the travel and tourism industry, the consumers are looking for much better secure methods, and competitive prices where they can choose wisely according to their budget and limitations; this makes the platform more reliable for them. These problems hold the solutions in the decentralised trusted network to be the intermediate between the travellers and the hospitality industry. The consumer looking for the trustworthiness of Blockchain and the industry, need to implement a prototype decentralized website or application based on Ethereum ecosystem.

Going deep in their concerns and opinions, through the survey we have asked them what can be sold at a cheaper price through any online platform. They mentioned these sectors as shown in figure 14th below.

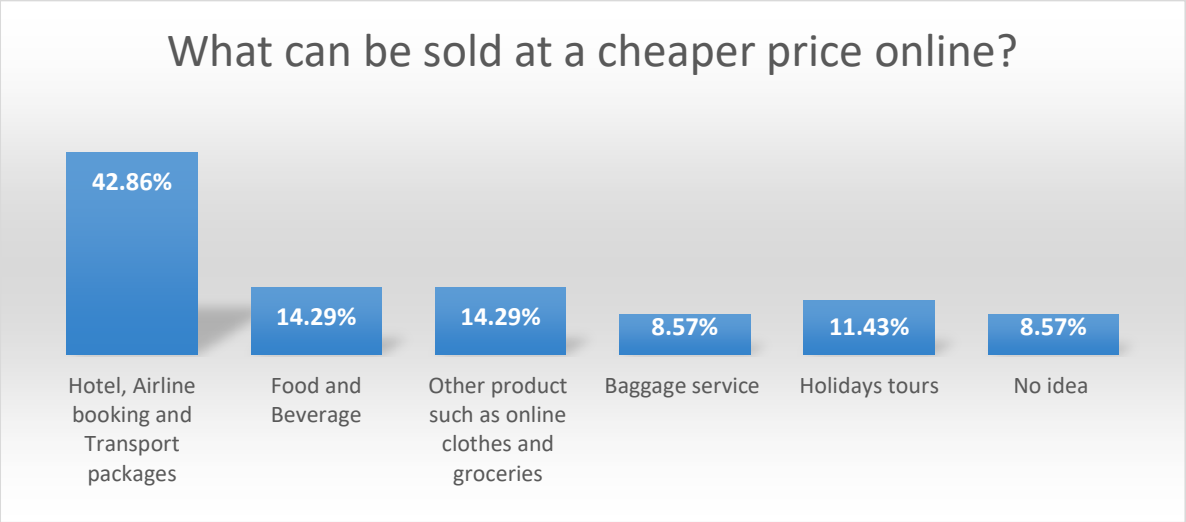

Figure 14 Respondents answers upon the product and services they wish to be sold at a much cheaper and affordable way

On the other hand, from the figure 15th below, according to the survey, very few online platforms offer better service. This shows that there has not been any ideal online platform where it has made the customer 100 percent satisfied. These findings give insight for the travel industry and the readers to understand how e-service needs to be changed and establish new changes to make these services to be sold at a cheaper price online. Online services should ensure quality product and process to ensure customer satisfaction and trust, which in the end can help to retain online customers. In other words, they are looking for a painless booking and with the survey done, 68.6% of the participants were affirmative that they are looking for an easy and stress less online platforms.

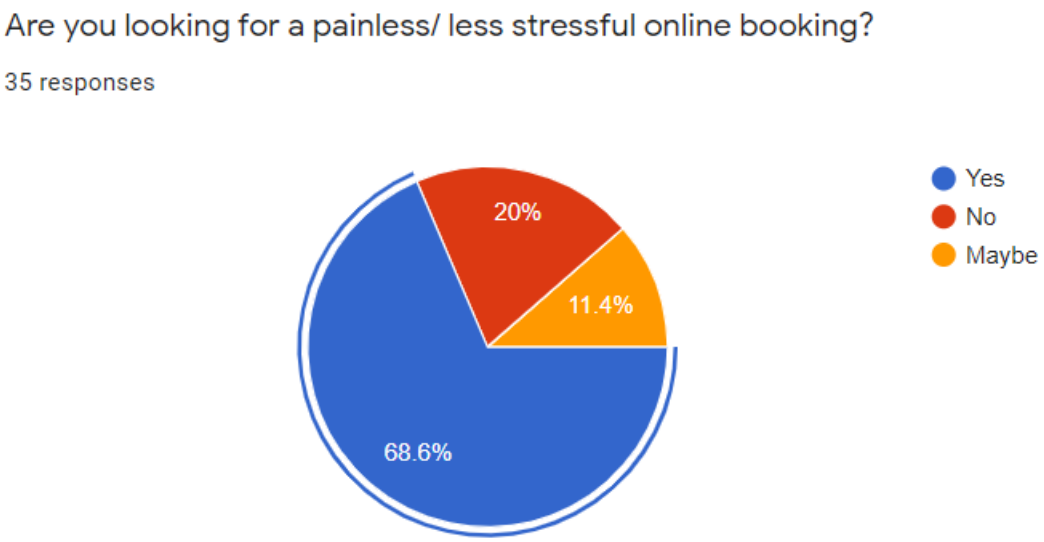

Figure 15- Responds of participants who want easy online booking

There should be more focus on applications and web designs, high security / privacy and fulfilment for customers' needs and wants. This will be a great option to just provide them a personalized and customized platform where they can choose their product and services according to their budget. This will also allow a type of marketing content to promote the brand name as it will be an open space for all type of markets that travellers invest to buy the products and services. Therefore, the result supports the report of the power of personalisation for the travel and tourism industry (360, 2017)

4.2.3 How Blockchain can make the Hospitality Industry More Convenient To Be Used

From the response and suggestions gained by the participants, the below points were mentioned in the previous research in chapter 2 on how Blockchain can be applicable to the hospitality industry and confirm that this will only enhance the customer's value of purchasing their product online within the hospitality industry.

Availability	• **To check dates and how many bookings has been done already.**	• **Prevent overbooking or pre cancelling.**
Security and Privacy	• No one will be able to hack personal data or credit card details • Less chance of fraud	• Prevent Hacking of personal data.
Intermediaries	• Low middle fees	• No financial institution presence but only smart contracts and Ethereum will act as middle man.
Methods of payment	• Crypto and bitcoins • Direct payment with no intermediary and cheaper prices	• Having an app like Revolut but will provide better rate and keep growing the digitalized coins.
Convenience of Blockchain technology	• Easy payment • Fast system with more security • Facilitate procedures • In an emergency situation easy to plan a trip • Selection of different language	• Tickets or booking can be done and stored with the chain of blocks and users will have their own keys to transfer data. • Tickets can be retrieved and proven authentic without the need of supporting documentation.

Table 1- How Block chain can make the Hospitality industry more convenient to be used.

The Table above is the response of the participant that shared their knowledge on the integration of such technology. These explanations, given by few participants, clearly show that the research found in the secondary data of the first chapter is similar to the participant's response on how Blockchain will make it more convenient. The response explains that they think the Blockchain system will have the capacity to identity people, handle payment and security and make the product customised. This also highlights that they believe it will make a difference from the technical aspect and their lifestyle won't be affected due to the financial issue while purchasing the product online. To contradict this statement, there were some participants saying that it will make the system more complicated and the normal online platform has not been broken yet so there is no need to adopt new technology. In his/her opinion, the development will take time. Moreover from 35 participants, one opposed to the adoption of Blockchain. Nevertheless, there are customers looking forward for better decentralised method.

4.3 Part 4: Security and Data Protection of Customer's through Blockchain

This fourth part shows that the participant main concern was on security while using online transaction. It is one of the main pillars of the fundamental human right in the hospitality sector. This is to ensure the participation of any tourist from any society to participate in buying from a travel agency or online and be protected from any violation of a human right that is to be secured in the purchase the customer is doing. Despite some recent turbulent, online sales are steadily growing but from our participant, the issues of confidentiality and privacy are one of their main concerns.

From the result in figure 16th, there is 43% of the participant said their main concern for the online Blockchain purchase is safety and security. 7.2 % of the participants showed their concerns on trust issue. One of the most common worries with creating efficient and trustworthy on-line Commerce concerns the security of online transaction which occurs over the network (Palubo and Herbig, 1998: 258). The concerns are not merely about security of value, but also, about the trust in information society (Udo, 2001: 165).

That is why from the survey, it transpires that the participants of the survey showed concern about lack of security in the way payment is done as one of the major factors apart from the privacy of data protection which will be evaluated in a later stage.

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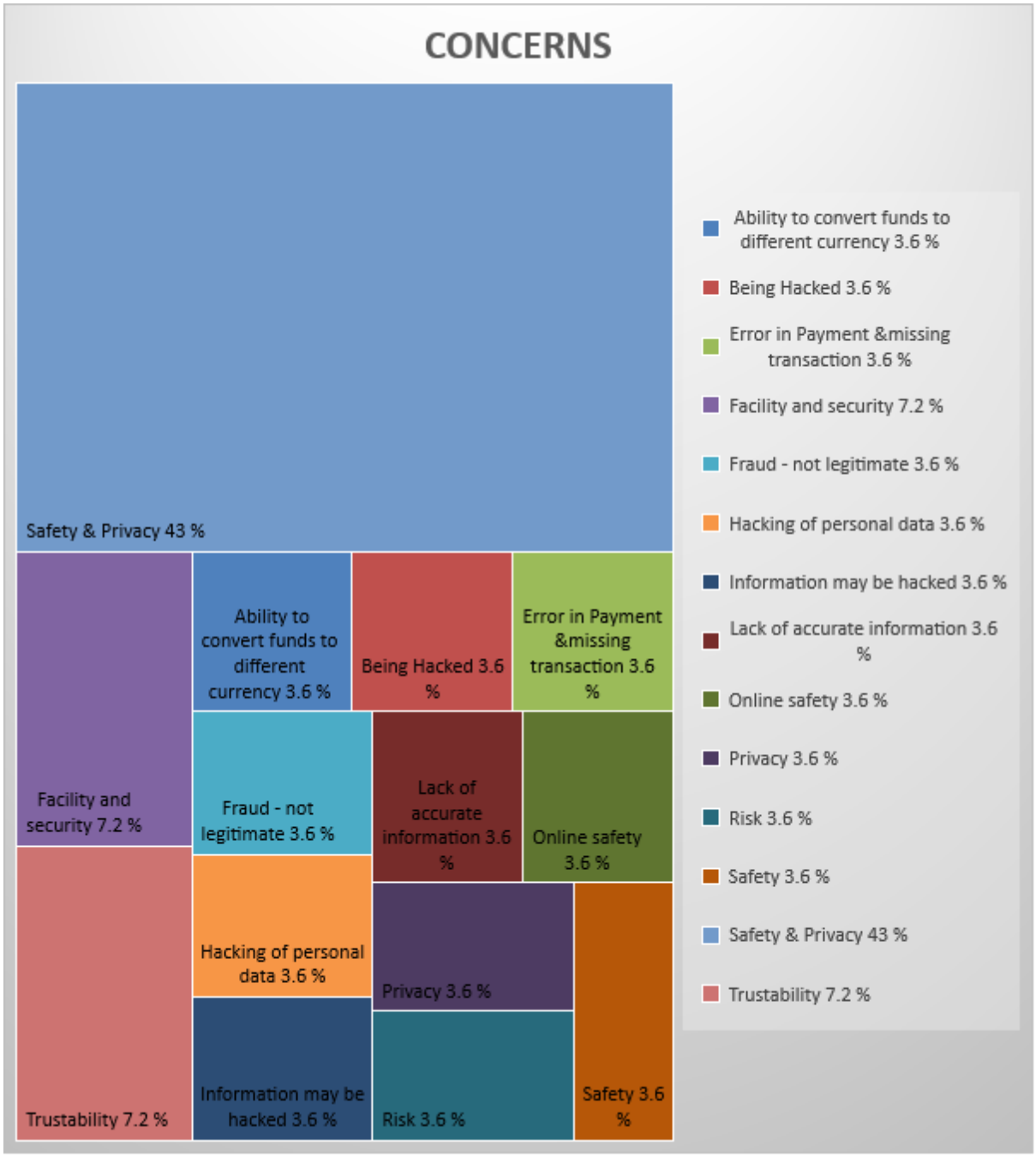

Figure 16 Respondent Concerns on Security

The major fear for a consumer is being hacked, concerns of having a technical error in payment and missing transaction, and whether their personal data is being secured or not as well as lack of proper information at each stage of using the product and services via the Blockchain technology.

As discussed earlier, digital transformation is evident that its use is a must in all commercial sectors and tourism industry is no exception. Such digital technology disrupted the old way of selling and promoting tourism sectors from sales of tickets to events. Digital technology became a way to explore traveling, as travel agencies and physical booking from office are almost out-dated. Survey shows that travel-based mobile app is the seventh most downloaded category. Sixty per cent of smartphone users' prefer travel apps for planning their trips from business, family or adventure trips. Security is a top priority in mobile apps to enable clients to structure their travel accommodation, ticket transport, cultural booking. All parts of such mobile apps need to be secured and detailed for all assurance in every sector with no hidden agenda or scam contribution.

Secondly to avoid booking from websites, mobile applications being seen as a safe method to download any application and carry it in the pocket wherever the traveller is going. Therefore, a mobile app is seen to be a better option for more personalized service.

From Figure 11 part 2, shows that more than 32% support the usage of mobile application and 42% are willing to explore the mobile application with more knowledge. From this, we also find that mobile applications via Blockchain will be offering a secure online transaction whether it is android app or IOS app; Blockchain technology will help to get rid of waiting long for secure transaction.

To support this statement of why Blockchain needs to be implemented in the app is that there have been a number of studies done on many applications especially Travel applications, based on both IOS and android. According to a research carried out by the mobile security solutions provider Zimperium, tests were carried out in the travel application which covers the flights, hotels and car rentals so as to have a better understanding on how the companies are dealing with the users' data and security. It resulted that 100% of IOS applications failed to get a passing grade in the privacy and security risks, whereas the Android app did better than IOS with only 45% failing to pass the privacy test.

Thus, to get the most from Blockchain based app for the mobile application platform, the developers and business owners need to make a roadmap that clearly defines their objectives that can help the company to come up with the right solution based on Blockchain. After developing the app, it is very important to get the app tested in the apple store and Google play.

This section of the part 4 shows the involvement of the security when anchoring their personal data in an online application while endorsing to make a payment and giving out their personal details. With the involvement of personal data, it is automatically referred to the General data protection regulation as well in the system that needs to be taken into consideration.

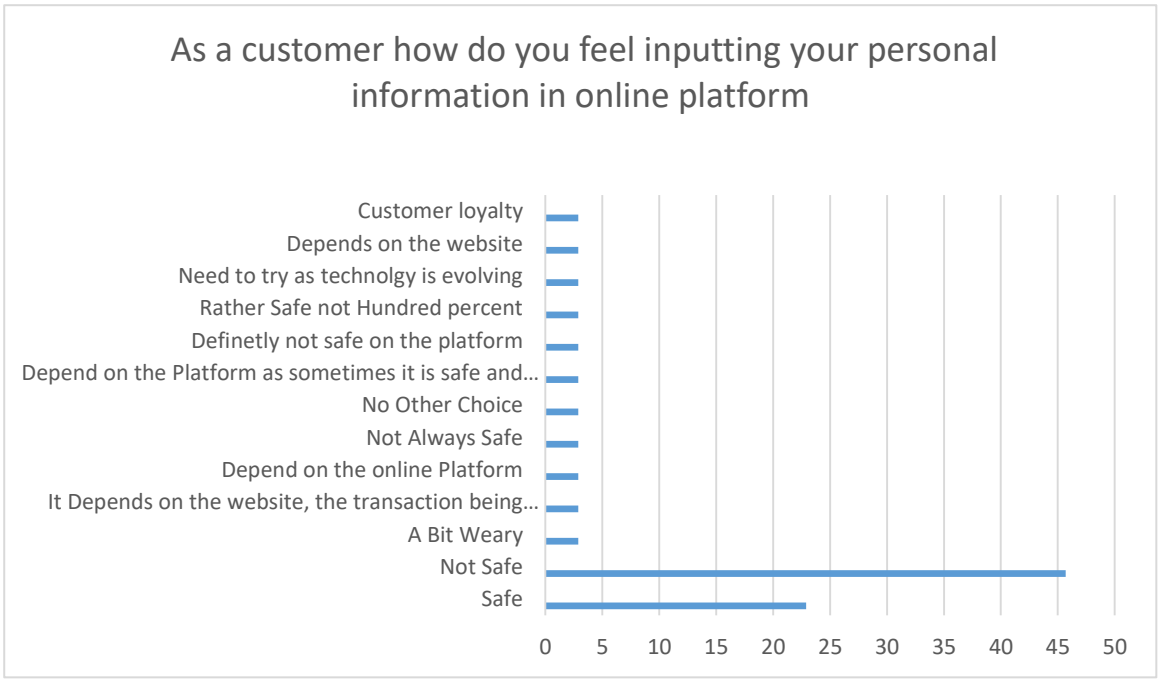

Figure 17 Respondents safeness while endorsing their personal information into any application

With this data received by the respondents' figure 17th shows that 45.7% stated that they do not feel safe while using the online platform when purchasing a product which shows that security and data protection of the customers is mandatory in their daily activities carried out whether traditionally or online. Whereas the rest, i.e. around 24% mentioned that they have to use it because there are no other choices even though they have double feelings in inputting their personal data on the platform. 2.9% mentioned that it is risky but never miss a chance to use any new technology to keep up with the trend and try new platforms.

These concerns keep on increasing as participants showed that they have bad experiences in using an unknown website what they are faced with scam and frauds. Around 77.1%

confirmed that they have been through a scam website and 8.6% were not sure whether it was a scam or fake website platform. Therefore, analysing the number of scams they faced, it shows that security needs to be reinforced in the system.

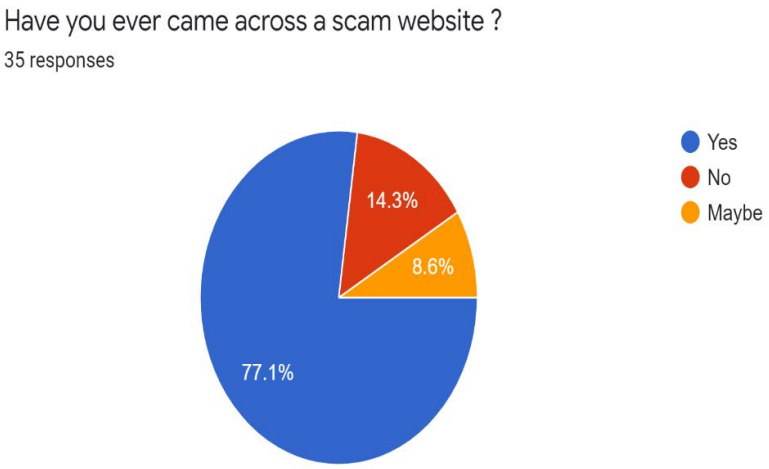

Figure 18 Respondents percentages passing through a scam website.

With this concern, they were also asked what are the security measure to their knowledge should be entertained to secure them against soft malware while doing an online purchase.

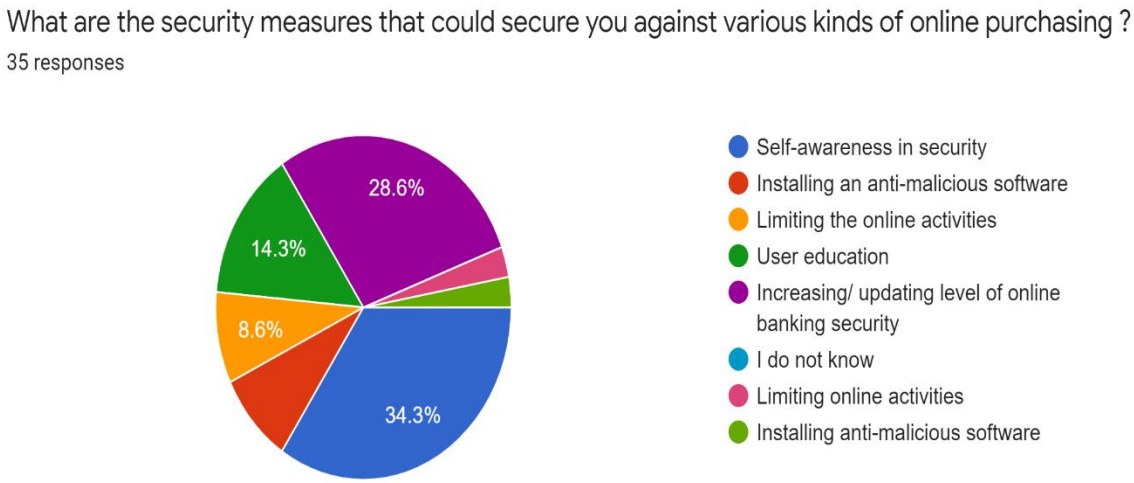

Figure 19 Security measures in doing an online purchase

From figure 19th, we can see that 28.6% suggested keep increasing security and updating level of online banking security. 14. 3% suggested that the user needs to be more aware of the online transaction and how to identify whether it is a fake application or web site. The majority stated that by raising self-awareness in security will help them to understand better new technology and their features towards them. 8.6% suggested that by limiting online activities, having a platform with chain of blocks connecting together, will help to be monitored both by the company and the user whilst doing the transaction until the company gets the payment.

4.4 How do you think Blockchain can bring security to you while using this technology?

The participants respond shown in figure 16, are aware and taught that having a number of accessibilities to multiple devices from their Blockchain account can create a higher risk of losing control over the security. This is why it is important to use key management procedures such as cryptographic key management guidelines and develop secure key governance internally.

Participant 1: Knowing that the transactions are private and cannot be altered by others
Participant 2: With crypto payment it will be more secure
Participant 3: Use on limited number of devices
Participant 4: Not using actual money that is using digitalised money
Participant 5: Do not have any idea how.
Participant 6: No one will get your personal data and information
Participant 7: Government regulations and policy
Participant 8: I personally think it is less secure than current currencies
Participant 10: Validity and verification of transactions
Participant 11: Less cash in hand. Proof of payment
Participant 12: No Leak of info
Participant 13. No need to walk around with a large sum of cash
Participant 14: Seems to be a foolproof system

Participant 15: Not using actual money/ credit cards (a piece of mind) however blockchain still holds value

Participant 16: No internet /online platform is not that safe anymore

Participant 17: Your personal information will not be shared and none of our product will be hacked.

Participant 18: Not all transaction is made online.

Participant 19: Can view transactions

Participant 20: Every transaction can be verified independently, unlike banks.

Participant 21: More severe laws

Table 2: Respondents awareness on how block chain can bring more safety into the platform

As mention in the survey, crypto seems to be the problem solver; it is considered as ensuring data integrity as the Clark Wilson model helps to identify and solve the security attacks through the features of an integrity secure system. It involves control, authentication, well-formed transaction and control over the privilege transfer.

With the statement of being less secure than current currencies, Customers are aware that even though encryption provides confidentiality against attacks it does not fully protect the data from being corrupted by the configuration's errors and software bugs. According to the study done by Deloitte, there are two ways of providing integrity of data in a remote server. The first way is to download the file and check the hash value where the message authentication code algorithms are used.

The rests of the respondents were positive about the Blockchain integration in the security system and this supports the fact that with the presence of smart contract. It wills all the data and payment information will be encrypted through secure code.

Another respondent said that this system is a fool proof system. This statement supports the research carried out stating that, Blockchain can provide multiple security benefits, which are all discussed in detail and are summarized. This means that the security is decentralized, transparent and immutable. With the resilient combinations to the application being operated 24/7; it makes the platform more resilient. Knowing that both public and private Blockchain consist of multiple nodes, the company can assure the customers by making nodes under

attack redundant and it will continue to operate due to the distributes nature of technology. But this is not always 100% 'bullet-proof.'

To balance the research received from the participants in part 2 figures 6, majority opted for the digital online currency to avoid further frauds. According to an article, blockahinc.com, the digital Blockchain size was 188,774 MB in 2018 and 247,177 MB in 2019 by an increase of 31% which it can see a high correlation between the urge of wanting to use crypto payments by the public and the number of transactions being done through this research. As a matter of fact, Block chain's back bone is the cryptography as this is the pillar to achieve their data security.

Part 5: Tracking of products in the Hospitality Industry

The Fifth part will show the tracking of products in the hospitality industry such as food and beverage, and luggage are embracing the Blockchain technology and reasons behind it along with the impact it will have in the life of customers.

Furthermore, according to the research carried out, the participants were asked if they would be interested to know where the origin of the product they are purchasing is. We mention this when it comes to travel ticket, food and beverage, clothes, accessories, luggage tracking and traceability of product that the globe buy and consume. In the below chart, about 86.2% of the participant strongly opt to know the products origin as quality of the product and originality of it matters at the end of the day to create more loyal behaviours in their way of purchasing.

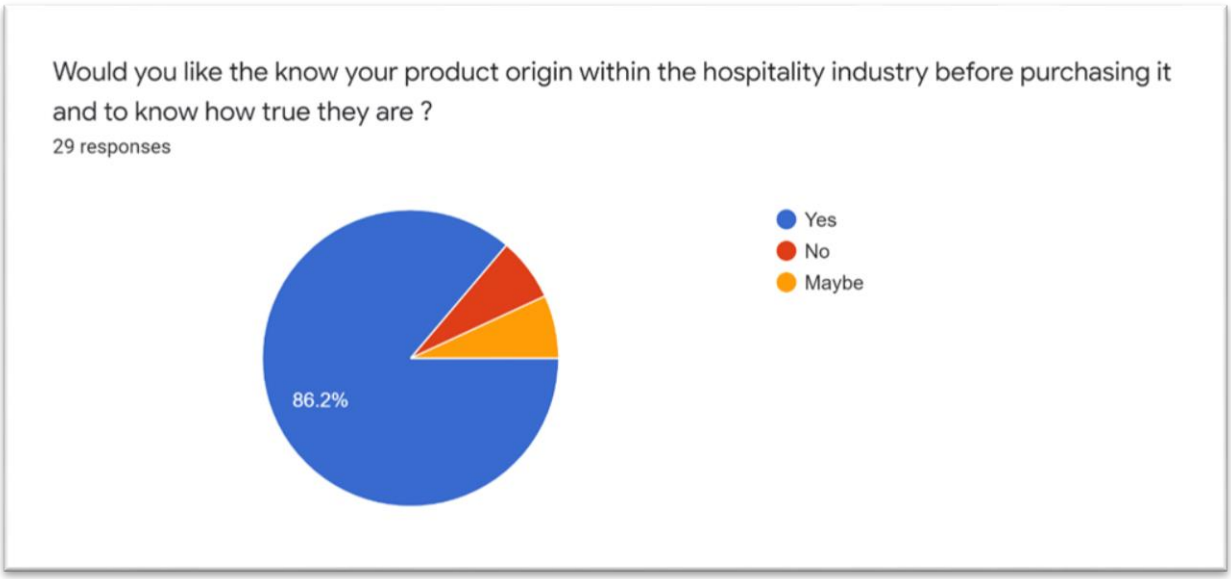

Figure 20 Tracking of product and services

From this result, it shows that the people are desperate to know what they are actually spending money on. With the secondary research that was conducted, it found that the UK is strongly working and adopting such strategy in their food and beverage sector as they are concerned about the health of the human being. Through the article of Business west, West of England has already issued their first ever European Certificate of origin through Blockchain technology where they can identify the origin of the goods that are being imported and exported before it reaches to the consumers. (Martin, 2018)

All local companies in Malta are missing the main valuable feature that will help them and also make more profits through Blockchain. The main feature of this part is loyalty from the customers.

To show facts why Maltese people were having this urge to have the certification of tracking food origin, Daryl Grima, being an editor of Veggie's Malta, started a campaign to raise awareness on plants, and animal welfare. Through his data, recent studies in Sweden proved that pesticides are growing inside our body which creates chronic disease. Moreover, according to the National statistics of Malta in 2015, the volume of fresh food started decreasing by 6.7% as Maltese farmers started using pesticides in their plants and consumers procrastinated the freshness of the food.

Through this, people are looking for transparency on the ingredient used and the expiry date, as this will help the consumers to protect their health. This will reduce food waste, as supply chain consumers will be alert of the freshness of the food. Animal welfare and soil quality will be backed by Blockchain ledger. This will also hold the hospitality industry or other food supply chain industry to act more ethical towards the consumer and provide a better future for the generation. (business, 2020)

After debating whether it is feasible to implement the Blockchain into the hospitality industry to track the origin of meat, wine, coffee and vegetables, the studies carried out shows that from this feature, it will bring more loyalty into the business.

Chapter 5: Recommendation And Conclusion

In this conceptual paper, the impacts and integration of Blockchain within the hospitality sector for the customers where shown and described. It triggers new opportunities to enhance the hospitality integrity and improve all the different operational performance.

Chapters 2 and 4 , shows that Malta should raise more awareness on Blockchain by creating events of Blockchain within the hospitality industry is a very limited topic that will be accessible to people even if it is a small event being created to learn more on Blockchain and its impact in our daily activities. Moreover, by joining forces with the government, there are certain limitations of people who are willing to learn the Blockchain technology through different categories. As per my opinion, online classes should be launch where people of any age will be able to get easily access to their laptop and follow an online Blockchain guide. The ministry of education has already launched the first Malta Blockchain certificate whereby, this can be promoted and used in other countries that will help the adopting of Blockchain worldwide.

Coming to the subject of Food and beverage in the invite, to eliminate the counterfeit in products and services adulteration in the food supply chain, fake product of purchasing of expensive tickets, long hours of fixing customers problems, these issues are a life threatening to the tourism industry.

As a recommendation, the west of England region has proved to adopt this technology as they have successfully preceded their first European certificate origin. This is mainly used by business trading internationally to identify the origin of the goods. Hence being the issue by the European Union, Malta will easily get the certificate of origin to track the product if they can join forces with countries who are fully embraced with Blockchain technology and partner with them to bring a change in the tourism sector.

In my opinion, it is essential to provide a large number of Blockchain that need to be set up within the tourism industry in Malta where eventually one system will be able to be in the whole sector. Data will be fully encrypted but having more openness in the Blockchain technology will make it more revolutionary. The hospitality industry has always excelled in keeping the customer’s happy with the service, Today, with the Blockchain era, the digital approach has encroached on the hospitality sectors. To achieve success by the 2050, the tourism industry needs to nurture the guest drams and move more towards the digital era. By

creating an inspiration that is converted into purchases with all mix experience in one platform and enable hyper personalization n to the application will make the industry successful in few years' time.

With the Blockchain technology, the hospitality industry In Malta can emerge with different technology such as VR, by verifying the room in the 3-D cession before booking the rooms. Having AI with Blockchain will have a great combination in the application platform as they both by time will work hand in hand to each other by degrading all the hard work done by staff that will be tired. From taking food orders to helping travellers to plan their trip, these technologies will facilitate them in all the areas which is booking and purchasing.

With the algorithm of Blockchain, the Iberostar Hotels and Resort has already significant reduction on booking cancellations in their hotel with the Blockchain data science. Moreover, it will be beneficial to input Artificial intelligence into the Blockchain application to create a smart hospitality industry in Malta which will raise the economy of the country within the hospitality sector. Singapore has already won the best technology excellence award on 2019 where smart self-check in and check out are done. The combination of Blockchain with other technologies such as the Internet of things (IoT) and artificial intelligence (AI) might yield new applications that create synergies and benefit each other. For example, in the hospitality industry, AI in combination with sensor technology can be used to administer buildings and the data can be stored on a Blockchain. With Potential use cases include controlling air conditioning systems, monitoring room occupancy, or estimating the number of meals that need to be prepared. However, this might also lead to systems that are hard to control and to seamless monitoring, which might be acceptable for things, but which raises serious privacy issues where humans are involved. As I have outlined in the chapter, severe implications of Blockchain technology are expected for individuals, organizations, markets, and economies, and the tourism industry is no exception. My recommendations for Malta Tourism Authority help the existing business models to embrace the BCT and to identify the potentials of the Blockchain (in combination with other technologies) to foster organizational effectiveness and efficiency but also to pinpoint those weak spots that can be a potential target for disruptive start-ups. Academic researchers also face a major challenge. Blockchain and tourism is a fruitful research area for the coming years and an exciting opportunity for academia to make a major contribution through creating understanding, raising awareness, and educating companies, governments, and the general public security.

Another recommendation is that Blockchain application can be integrated to create direct flight between the customers and the airlines by eliminating extra charges to the services. And this will create loyalty with the customers and the company. Furthermore, with the Blockchain technology, within one application, customers can moreover track and give their information to be able to find a partner or friends to travel the same period of time they want to. With this permission less data, customer can create more pint and once sharing their comments and views to other people, the application will enable them to get automatic extra points where it will track who has recommended the place or product or services to them. The company will give them the privilege to gain rewards. With this, Malta although being an island of Blockchain, it still far from adopting the Blockchain in real life system.

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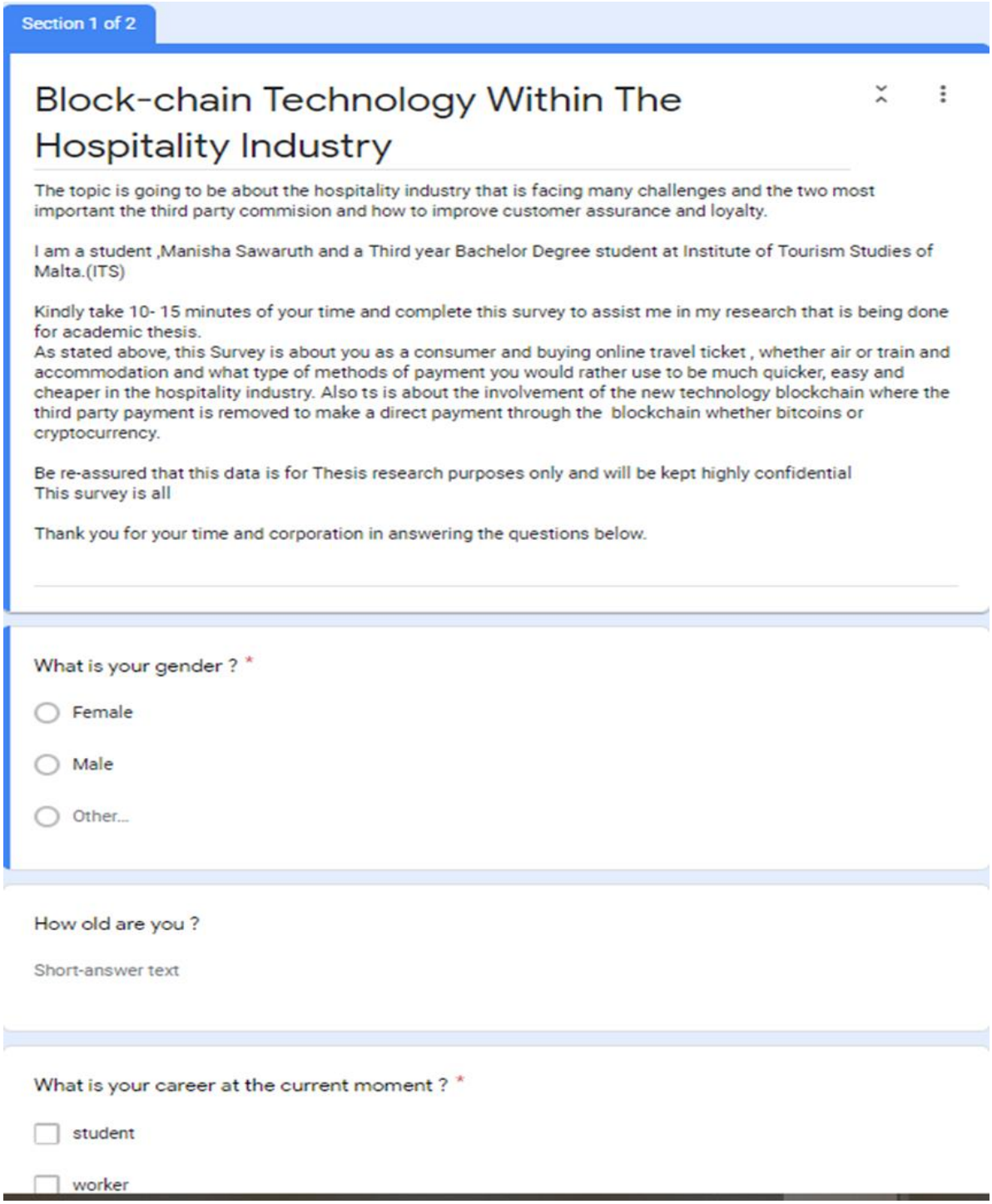
Appendix 1 Forms:

Customer's Questionnaire



Section 1 of 2

Block-chain Technology Within The Hospitality Industry

The topic is going to be about the hospitality industry that is facing many challenges and the two most important the third party commision and how to improve customer assurance and loyalty.

I am a student ,Manisha Sawaruth and a Third year Bachelor Degree student at Institute of Tourism Studies of Malta.(ITS)

Kindly take 10- 15 minutes of your time and complete this survey to assist me in my research that is being done for academic thesis.
As stated above, this Survey is about you as a consumer and buying online travel ticket , whether air or train and accommodation and what type of methods of payment you would rather use to be much quicker, easy and cheaper in the hospitality industry. Also ts is about the involvement of the new technology blockchain where the third party payment is removed to make a direct payment through the blockchain whether bitcoins or cryptocurrency.

Be re-assured that this data is for Thesis research purposes only and will be kept highly confidential
This survey is all

Thank you for your time and corporation in answering the questions below.

What is your gender ? *

- Female
- Male
- Other...

How old are you ?

Short-answer text

What is your career at the current moment ? *

- student
- worker

Are you familiar with blockchain? *

- ○ Yes
- ○ No
- ○ Maybe
- ○ Other...

What year did you know about blockchain technology? *

Short-answer text

What is your main concern on an online transaction ?

Short-answer text

Which of the following you think blockchain might disrupt? *

- ○ Banks
- ○ Hospitality industry
- ○ Government and public services
- ○ Other...

What might be the barriers to use blockchain? *

- ○ Lack of trust
- ○ Lack of clarity
- ○ Immature unproven technology
- ○ Lack of government Regulation

Do you agree in paying with cryptocurrencies that is online currencies based on blockchain technology that can replace the existing system of various currencies while booking a ticket or accommodation online ? *

- ○ Strongly disagree
- ○ Disagree
- ○ Neutral
- ○ Agree
- ○ Strongly agree

Would you use a application or website to book a trip with accommodation with the payment of bitcoins or crypto which is the blockchain technology? *

- ○ Yes
- ○ No
- ○ Maybe

How do you think it can bring security to you while using this technology ?

Long-answer text

Do you agree for peer to peer money transfer that is People will transfer money to one another or make direct payments without the need for an intermediary financial institution like a bank ? *

- ○ Yes
- ○ No
- ○ Maybe

How do you think that blockchain can make the hospitality industry more convenient and easier to be used in terms of accommodation, and ticketing online? *

Long-answer text

Are you looking for a painless/ less stressful online booking? *

- Yes
- No
- Maybe

As a customer how do you feel anchoring all your personal information in an online platform while doing payment ? *

- safe
- Not safe
- Other...

Tick the below options on why do you use online transaction *

- E-ticketing
- Hotel
- Buses
- Tours

How concerned are you about the security in relation to making purchase or banking over the internet? *

For your on-line buying , which of the following categories explains well about your usual situation? *

- ○ You use banking software/app on your PC or mobile phone
- ○ You use a web browser (with a banking login, username and password etc.)
- ○ You use a web browser together with an authentication device (such as a 'secure ID token/calculator')
- ○ You don't use on-line banking
- ○ Other...

What do you think are the main disadvantage of buying through an online travel agency ?

- ○ Not proper choice
- ○ over booking
- ○ expensive
- ○ No direct information due to the third party involve ?

In your opinion what are the major barriers of online ticketing ? *

- ☐ No barriers
- ☐ Don't trust the bank security
- ☐ Don't have a secure computer (e.g. shared computer)
- ☐ Don't like entering data digitally
- ☐ Finding the technology difficult
- ☐ Inconvenient (takes too long/too many questions)
- ☐ Doesn't provide all services (e.g. Cheque Deposit)
- ☐ Other (please specify)

What are the security measures that could secure you against various kinds of online purchasing ? *

- ◯ Self-awareness in security
- ◯ Installing an anti-malicious software
- ◯ Limiting the online activities
- ◯ User education
- ◯ Increasing/ updating level of online banking security
- ◯ I do not know

E-Payment systems are better than cash ? *

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree
- ◯ Other...

As a traveller what do you really look for in an website while booking tickets? *

Long-answer text

How can you think that the website of booking a flight and accommodation should easy your pain ? *

Short-answer text

What are the services that you think can be sold to you in a cheaper price in the website ? *

Long-answer text

Would you endorse yourself for a loyalty program ? *

- Yes
- No
- Maybe

Which loyalty program that attract you most ? *

- Gift cards
- Loyalty program
- Membership management

Have you ever came across a scam website ? *

- Yes
- No
- Maybe

Which of this below you would know if the website is fraud ? *

- Connecting a website with only http.
- The website show a "Secure" or an image of a padlock in your web browser's address bar.
- There is an "About us" page where it show the real people behind the company.

Which of this below you would know if the website is fraud ? *

- ◯ Connecting a website with only http.
- ◯ The website show a "Secure" or an image of a padlock in your web browser's address bar.
- ◯ There is an "About us" page where it show the real people behind the company.

Would you like the know your product origin before purchasing it and to know how true they are ? *

- ◯ Yes
- ◯ No
- ◯ Maybe

Is the maltese tourism industry adopting blockchain? if yes give reason, if no give reason why? *

Short-answer text