

# Awareness on Big Data and Its Impact on Consumer Privacy; With Special Reference to Franchise Fast Food Chains in Sri Lanka

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**Abstract:** Organizations are increasingly turning to use big data which allows them to predict consumer behaviour perfectly. The main purpose of this research is to explore the consumer awareness on big data and its impact on consumer privacy as well as analysis the factors according to the consumer's point of view. The research is conducted by using quantitative approach and data are gathered via a questionnaire in a survey method. The questionnaire is designed to investigate consumer awareness on big data and consumer privacy, data security, customer service information search towards franchise fast-food chains in Sri Lanka. The population of this study comprises of consumers between the age range of 20 to 35 who live in the Colombo district, Sri Lanka and use non-probability sampling method to gather data from 113 franchise fast-food consumers. In order to test the validity of the research, correlation analysis and expert validity methods are utilized. To test the reliability of the variables, Cronbach's  $\alpha$  analysis is conducted. Multiple regression analysis is used to test the conceptual model and mediating affect is tested by using Sobel test. Based on the results, there is a significant impact on information search and consumer privacy. Consumer awareness is examined as the mediator and Sobel test shown that it has no mediation affect. The study focuses on a single district, Colombo. Hence, the model's stability has to be checked in several districts. Thus, the study recommends that consumers be cautious

when providing personal information to third parties in order to avoid these difficulties. Furthermore, findings and suggestions are explored in depth throughout the research.

**Keywords:** big data, consumer privacy, consumer awareness

## 1. Introduction

### A. Background of the study

Big Data refers to the collecting of massive and complicated datasets and data volume that includes massive amounts of data, data management capabilities, social media analytics, and real-time data (Le and Liaw, 2017). Nowadays from a business perspective, there are many large corporations and organizations which have started accumulating big data without any doubt. Through that, many organizations have access to various sources like SMS text, call logs, YouTube, and social media such as Facebook, Instagram, blogs, etc (Le and Liaw, 2017). According to the modern privacy law, fair information practices are the major challenge for big data (Crawford and Schultz, 2014). In the Sri Lankan context, Sri Lankan fast food supply restaurants also have started to use big data in their respective marketing strategies. Global big data trend also has a big positive impact on the Sri Lankan trade sector. As a result of that, the fast-food restaurants in Sri

Lanka have started to pay more attention to big data analytics recently. Especially in the supply chain, online customer data and location data, are passed from one firm to another information supply firm (Kirsten, 2015). Within this situation, those companies may sell data to the third-party companies. This cause to create the huge privacy issues within society. People who use social networks have very low awareness of big data. Badiozaman (2009) stated that among the consumers, majority are willing to give their personal data except financial and credit data. Therefore, this research helps to aware on franchise fast food consumers in order to aware about privacy issues on big data. It means the major scope of this study is consumer awareness.

#### *B. Problem Statement*

Within Sri Lanka, digital and cloud services, which collect data are becoming rapidly popular (Senaratne, 2020). For an example, McDonald's, KFC, Pizza Hut and other well-known fast-food chains use big data to stay on top of the industry (Rajput, 2020). Most of the companies collect a variety of data and then target advertisements based on that data (Senaratne, 2020). Then, those data are passed from one company to another company. In this situation, data also transfer to tracking companies and the data aggregators. Finally, there is a probability that data aggregators may sell these data to third-party companies, or they can use these data for their advertisements purpose. It causes lead to huge privacy issues among consumers, but people who use social networks have very lesser awareness about this matter. Consumers give their personal information to franchise restaurants without think twice but consumers do not have a proper idea about what these companies do with their personal information. Consumers lack awareness about data privacy and big data can lead to huge profits for the companies and huge losses for consumers.

Hence, the lack of consumer awareness of big data affect on consumer privacy can be problematic. As a result, the research fills the gap of examining the consumer awareness of big data and its impact on consumer privacy. However, in Sri Lanka, there has been only limited number of researches that have been carried out relating to this matter.

#### *C. Research Question*

Q1; How does the consumer awareness on big data affect on consumer privacy?

Q2; What are the factors that affect consumer awareness of big data?

Q3; What are the main factors affect on consumer privacy?

#### *D. Objectives of the Research*

The main objective of this study is to explore consumer awareness on big data and its impact on consumer privacy and analyze the factors according to the consumer's point of view. In addition to that, the sub-objectives are as follows,

To identify factors, that affect consumer awareness of big data.

To identify the main factor, affecting consumer privacy.

#### *E. Significance of the Study*

Many privacy issues are triggered due to the low awareness of people. Zhang (2018) stated that "Big data has two sides, it provides convenience for consumers while also bringing certain risks".

In today's electronic world, successful companies' competitive strategies increasingly rely on large amounts of customer data, and without the users' knowledge or consent, some companies collect marketing data on their Internet behaviours (Roca, García and de la

Vega, 2009). As the usage of big data grows, a variety of ethical concerns about the gathering and use of consumer data have arisen (Perreault, 2015). For an example, when the watch was released, Apple predicted that millions of customers would use apple watches for all of the things from checking their heartbeat to coordinate their social calendar to control their home entertainment remotely (Adil and Izhar, 2016).

One of the major research concerns at this time is how to raise consumer awareness of big data and how to preserve their privacy (Zhang, 2018). Therefore, the research addresses the problem according to the consumer's point of view. This article begins with big data, examines consumer awareness regarding big data and privacy issues, and proposes security actions for big data security and privacy. This research offers ways for increasing big data awareness and success factors for businesses looking to improve data security and consumer loyalty.

## 2. Literature Review

### A. Big Data

Big data is a buzzword and different researchers look at big data from various points of view. Therefore, it is not easy to give a definite definition to it. Lamba and Dubey (2015) stated that big data is the use of various analytic methodologies to handle a variety of large size and complicated data to extract useful results that fulfil a firm performance. Similarly, specialists in the field information technology, expressed big data as massive data sets that require super devices to collate, process, and analyze to get meaningful conclusions (Moorthy *et al.*, 2015). There are four characteristics of big data; volume, velocity, variety, and value (Kshetri, 2014; Tennakoon and Lasanthika, 2020). Volume means the amount of data collected and stored, Velocity means the rate at which data is

received, variety means the various types of data from different sources, and value means the insight of which the organization gain Kankanhalli *et al.*, (2016) as cited in (Tennakoon and Lasanthika, 2020) stated that because of its great variety, high velocity, and volume, processing big data is difficult. Furthermore, those characteristics or dimensions of big data are deeply linked to privacy and security issues (Kshetri, 2014).

Nevertheless, presently impact of big data has changed the lives of people and many industries. Its greatest impact is on the marketing field (Tubbs, 2021). Today's marketers are highly concerned about consumer privacy, personal data gathering, analysis, and utilization (Moorthy *et al.*, 2015). If organizations use the information embedded in big data sets, they may improve their decision-making and achieve their goals. There are different sources of big data such as social media, vehicles, mobiles, energy meters, satellites, digital senses, and the internet. Among them, social media is a widely used source to collect big data (Moorthy *et al.*, 2015). Therefore nowadays, the concept of privacy issues of big data is the most considerable area.

### B. Privacy Issues in Big Data

Nowadays, serious privacy problems have arisen from big data (Crawford and Schultz, 2014). Similarly, Moorthy *et al.*, (2015) also stated that many ethical and privacy challenges are coming to light with the emergence of big data and there is a clear conflict between big data security and privacy (Jain, Gyanchandani and Khare, 2016). Companies which collect big data know people's secrets and these companies combine people's personal details with various data sets (Terzi, Terzi and Sagiroglu, 2016). Researchers classify privacy issues into two categories, homegrown problems and big data problems

created by others (Smith *et al.*, 2012). By contrast, security and privacy issues have been categorized for big data under five titles. They are Hadoop security, cloud security, monitoring and auditing, key management, and anonymization (Terzi, Terzi and Sagiroglu, 2016). Many nations have identified the seriousness of big data's privacy issues. In order to safeguard customers' privacy and personal data, several nations have established data protection legislation that attempts to control the use of consumers' PII by companies (Salleh and Janczewski, 2016). Buhl and Heidelman have found that the "most severe issues of big data" are country-based privacy rules and regulations (Salleh and Janczewski, 2016). It can be concluded that there are privacy issues on big data and to protect consumers many countries have taken necessary actions.

### *C. Franchise Fast-Food Chain*

"Fast food" plays a major role in everyday life in current time. When lifestyle is fast and time-consuming, fast food is particularly important for each and every one. Fast food is simple, fast, and easy food which as well as being sanitary and safe. Not only that fast food is quick and easy to prepare and free from microbial contamination. In contrast to ancient times when people used to eat attentively and carefully, the current trend altered behaviours into simple and easy-to-digest meals (Udurawana, 2015). Therefore, people in modern society mostly use that fast-food chain.

To keep solvent in an ever-changing market, businesses must use a variety of strategic techniques. Organizations are attempting to achieve their objectives by applying efficient marketing strategies. Customers are the assets or the focus of success in every firm. Every firm must adopt some promotional and commercial tactics, such as franchising and contracting, in order to be successful (Fasana and Haseena,

2017). As an example, restaurants use a wider variety of digital technologies, including kiosks, smartphone applications, and computers. In addition, to provide a more easy modern paying procedure, they may improve the customization and personalization of the data sets collected by their shops (*Michigan state university*, 2020). One of the service options for quick food supply is home delivery. In this context, the fast-food modality is typically referred to as practical food and according to the ABRASEL data, it has expanded substantially (Nakao *et al.*, 2019). Not only that, but franchise food chains also collect their consumers' personal details for their strategy-making purposes. The franchise fast foods are more popular worldwide, because of their attractive and amazing business strategies. However, at times some problems may arise due to using of customers' personal data without their permission.

### *D. Data Security*

Data security is the method of safeguarding digital information during its lifecycle against unauthorized access, corruption, or fraud (Lycett and Oracle, 2012). Similarly, data protection can also be described as the method of shielding confidential information from unauthorized access (Poza, 2021). However, Le and Liaw (2017) stated that data privacy, data security are major issues in the big data period. Hence, data security and privacy protection have become fundamental needs for protecting end-users in their market, economics, and everyday lives (Zhang *et al.*, 2018). Data security can be measured by using safety on sanctions and guarantees (Ha, 2004). When people provide their personal data to others they always think about safety and how to guarantee the securing of their data. People are on high alert due to the possibility of misuse of data, as frequently reported in the news media. Therefore, there should be a secure link for card payment information

transmission (Ha, 2004). People require visible terms of service that explain exactly how the organization will handle the data. It can be concluded that data security is an important aspect when it comes to issues in big data.

#### *E. Customer Service*

The happiness of customers is very important. Therefore, high-quality services should be provided to satisfy them. Customer service means the level of the service and handling of returns/return policies prior to and afterward the sale (Blut, 2016). In offline businesses, there is always someone on hand to assist customers during the purchasing process, but there is no personal contact in online businesses (Rita, Oliveira and Farisa, 2019). Then, some online business provides service to their customer to ask more details of the product that need to buy (Rita, Oliveira and Farisa, 2019). For that, they provide contact service to customers through email (Blut, 2016). Analytics in the supply chain or delivery route is one unique use in big data for business processes and Sensors use to track items or delivery vehicles based on their geographic location and radio frequency identification (Le and Liaw, 2017). Therefore, this process helps Customers to track their orders. Hence using big data analytics, organizations can improve their customer service. Moreover, Retailers can use web search data, consumer behaviour, and weather forecasts to optimize their inventory (Le and Liaw, 2017). Some customers may not only use the website's formal methods to complain about items or services, but they may also post on social media about their groups (Le and Liaw, 2017). As a result, retailers need to keep track of such consumers' information and practice extra vigilance so that their complaints are handled twice as quickly. Therefore, organizations use big data to enhance their customer service.

There are two characteristics to the first-order dimensions of customer service. They are services level and return handling/policies (Rita, Oliveira and Farisa, 2019). Holloway and Beatty (2008) study has mentioned that reliable customer service, paired with fair and well-communicated return policies, is a key factor in increasing customer satisfaction. Furthermore, the data obtained may be utilized to enhance market speed and customer service levels (Kwon, Lee and Shin, 2014; Woerner and Wixom, 2015). As a result of many researches it is assumed that the online retailer's service level and return handling contribute to the sense of outstanding customer service. It can be concluded that big data can use to enhance the quality of customer services (Le and Liaw, 2017).

#### *F. Information Search*

Information search is a process where a requirement has been identified by the consumer, a buyer looks to discover the best relevant supplier(s) (*Information Search*, 2018). Before buying something, consumers can be attracted to and watch the advertisements, read articles, and turn to consumers' reports (*Information Search*, 2018). Therefore, people have a comprehensive experience of the Information Search Process, which includes a range of ideas, feelings, and actions (Fisher, Erdelez and McKechnie, 2005). The areas of information searching are concerned with the interaction of people and content in information systems. As a result, it considers the three perspectives of humans, information, and technology in locating data stored in computer systems (Jansen and Rieh, 2013).

Information search is indicated by information quality and searching service quality. The perceived value of a website's output is measured by information quality. Overall client assessments of the value of the searching

service, such as promptness, appropriateness, and actuality, can be categorized as searching service quality. Information search can become a source of sustainable competitive advantage in hopes of obtaining client satisfaction (Le and Liaw, 2017). It can be concluded that consumers do search for information that is related to their intention.

### *G. Consumer Awareness on Big Data*

Big data is gaining popularity as a critical source of competitive advantage for businesses and communities, and its qualities are closely tied to customer privacy, security, and wellbeing, drawing the attention of academics, corporations, and policymakers (Kshetri, 2014). As a consumer, it's important to be conscious of these factors.

As the usage of big data grows, a number of questions about the ethical acquisition and use of consumer data have arisen (Perreault, 2015). Consumers' capacity and ability to protect themselves against crafty traders may be distorted by their lack of information and awareness about big data and consumer rights (Ishak and Zabil, 2012).

Customers are more eager to share demographic and lifestyle information to marketers than they are to give financial or personal identifiers (Phelps, Nowak and Ferrell, 2009). In addition, big data awareness is at a moderate level and principally contributed by usefulness level understanding and effectiveness level understanding of big data (Tennakoon and Lasanthika, 2020). Finally, it shows that as a consumer, having a thorough awareness on big data is very important, so that they can make the best decision possible before disclosing personal information to third parties.

### *H. Consumer Privacy*

Consumer privacy, which is also known as customer privacy, refers to the management and security of confidential personal details collected by users during daily transactions (Lutkevich, 2020). 100 years ago, Warren and Brandeis expressed their opinion on privacy referred to as "the right to be left alone," there is no definite definition to describe the word of privacy (Unalan and Yaprakli, 2017).

People get benefit from modern internet technologies in the big data era. Data has such a significant financial value for internet service providers; however, data analysis and implementation are becoming extremely powerful and hard to control, and compromise personal privacy (Zhang, 2018). Therefore researchers have paid their attention to privacy in numerous research areas including information systems, sociology and psychology (Badiozaman, 2009; Lee *et al.*, 2015). There are various ways to measure consumer privacy. Some researchers have suggested that personal data and credit card information are tallied with their concerns for information privacy when it comes to big data (Ha, 2004).

The arrival of the big era has not only created significant prospects for social progress, however, but it has also introduced many things to the information security problems to a society, raising concerns about the protection of personal data privacy. It can be concluded that consumer privacy is very important when researchers consider big data (Zhang, 2018).

### *I. Impact of Consumer Awareness Towards Data Security*

Mejias and Balthazard (2014) as cited in (Harper, 2016) said that understanding security threats is referred to as security awareness. Presently, data security and consumer awareness have become controversial topics. Since, the sensitive nature of consumers' data and privacy concerns, it is

essential to consider customers' data-security awareness (Nield, Scanlan and Roehrer, 2020). Personal data of consumers are collected by companies and governments without consumers' awareness (Nield, Scanlan and Roehrer, 2020). Some researchers have found that consumers have good knowledge about data-security awareness (Nield, Scanlan and Roehrer, 2020). Similarly, according to certain study findings, customers have a high degree of knowledge when it comes to data breach preparation and data security (Nield, Scanlan and Roehrer, 2020). Customers' lawsuit case against United States drugstore Walgreens shows that consumers are becoming more conscious of data misuse or abuses (Kshetri, 2014). Consumers have raised their voices about companies a breach of integrity and the misappropriation of private information (Kshetri, 2014). However, most businesses have not created the best approaches to ensure the privacy and security of consumer data (Kshetri, 2014). It was argued that when public awareness of security problems grew, adoption of the technology would decrease but the findings of studies demonstrated that the statement was false (Harper, 2016). Due to these reasons, all countries have emphasized the necessity of data security for consumers, companies that store data, and all governments trying to safeguard their citizens (Nield, Scanlan and Roehrer, 2020). As per the previous researchers, it can be concluded that there is an impact on consumer awareness towards data security. Hence, the following hypothesis can be proposed:

H<sub>1</sub>; Consumer awareness on big data mediates the impact of data security towards consumer privacy.

#### *J. Impact of Consumer Awareness Towards Customer Service*

Nowadays Organizations may use big data to substantially improve their customer services

(Le and Liaw, 2017). Listening to customers and fulfilling their needs and wants is critical, especially in this modern era of information processing (Görgens, 2019). If they did not maintain good client relationships, definitely they would fail their business (Görgens, 2019). Therefore, the majority of online firms offer customer services that help customers to obtain additional information about the product that they desire to purchase (Rita, Oliveira and Farisa, 2019). Deb and Jain (2018) as cited in (Görgens, 2019) stated that using these technical tools, businesses can gain a deeper understanding of their customers, develop and recommend the ideal product for them. By that, organizations can improve their customer services. In contrast, big data is more likely to harm the well-being of naive, vulnerable, and technologically illiterate consumers (Kshetri, 2014). It occurs as a result of a lack of awareness. However, Görgens (2019) has found that clients are aware that businesses utilize their information to target them with customized advertisements but they do not like to disclose their data with third parties. Similarly, Kshetri (2014) has found that the majority of consumers are opposed to the secondary use of their personal information. As per the previous researchers' findings, it can be concluded that consumer awareness of big data and customer services are interrelated. Hence the following hypothesis can be proposed:

H<sub>2</sub>; Consumer awareness on big data mediates the impact of customer service towards consumer privacy

#### *K. Impact of Consumer Awareness Towards Information Search*

The stage of the buyer selection process where the consumer is required to seek out further information is known as information search. Surfing the internet was the primary source of information (Bailey, 2013). Internet is

important as a source of information and feedback from customers, as well as its impact on consumer behaviour. Online shopping allows customers to access product reviews and feedback websites about their business and customer experience of buying and using specific products (Bailey, 2013). For an example, customers can post reviews on the specific product they consumed via a link on Pizza Hut's website. It is important to have an awareness of these links and consumers can visit any product review website before they make an online purchase. Tracking cookies pose a serious danger to customer online privacy since they are used to collect information without permission (Shahid, 2021). Due to these reasons consumers should be concerned about the personal information collected through cookies on these websites. As per the previous researchers, there is a considerable link between information search and customer awareness. Hence, the following hypothesis can be proposed:

H<sub>3</sub>; Consumer awareness on big data mediates the impact of information search towards consumer privacy.

#### *L. Impact of Consumer Awareness Towards Consumer Privacy*

Quite possibly the most notable meaning of privacy is "the right to be left alone", as gone ahead by Warren and Brandeis in their Harvard Law Audit article, "The Right to Privacy." Ishak and Zabil (2012) have stated that in terms of defending consumers' rights, there is a relationship between consumer awareness and efficient consumer behaviour. In modern society, people are the benefactors of internet technology in the big data era. For Internet providers, data has a high financial value, but its analysis and use are more complicated and difficult to control, putting personal privacy at risk (Zhang, 2018). Furthermore, a large quantity of data suggests

that security breakdowns and privacy violations are going to happen in much more serious consequences and losses, such as reputation harm, legal responsibility, ethical damages, and other problems (King, 2014).

Therefore, a lack of consumer awareness is leading to a threat to the privacy of the consumer. A lack of client awareness, as well as business malpractices, are to blame. Many businessmen abuse consumers in order to maximize profits by selling low-quality goods at exorbitant prices. Adulteration, boarding, black-marketing, and other unfair trading tactics use for their business purposes. As a result, customers are not getting their money's worth (Minhas and Chandel, 2018). Furthermore, requiring providers to be transparent can increase customer knowledge of how their data can use and define which third parties can access and share potentially personal and important information (Bagley and Brownntt, 2015). As the points, there is a link between consumer awareness and consumer privacy. Hence, the following hypothesis can be proposed:

H<sub>4</sub>; Consumer awareness on big data affect on consumer privacy.

#### *M. Impact of Data Security Towards Consumer Privacy*

Data security refers to all the techniques and tools used to protect both the data and analytics processes from attacks, theft, or other harmful behaviour which could harm or adversely affect them (*Data security*, 2021). Consumer privacy refers to the management and protection of private personal information acquired by users during everyday transactions (Lutkevich, 2020).

Data security is very important when considering consumer privacy. Individuals value the convenience, which is provided by big data, but they also encounter a number of



disadvantages. If big data is not adequately protected for user data during the usage process, it will immediately harm user privacy and data security. It is classified into three types of protection content: anonymous identifiers, anonymous protection, and privacy protection (Zhang, 2018). People's data security issues are more than just conventional issues of personal privacy; they are also depend on data analysis and study of people's information, as well as focused prediction of people's condition and behaviour (Zhang, 2018).

As per the researchers, it can be concluded that the data security of the consumers and privacy of the consumers are interconnected because consumer privacy is mainly dependent on the security of consumers' data. Hence the following hypothesis can be proposed:

H<sub>5</sub>: Data security affect on consumer privacy.

#### *N. Impact of Customer Service Towards Consumer Privacy*

Building trust with customers and providing secure service is the main quality of successful customer service Lovelock and Wirtz (2006) as cited in (Wirtz, Lwin and Williams, 2007) has stated that e-service businesses are rapidly using the internet for one-to-one marketing and service delivery to millions of clients, allowing them to provide personalized service and loyalty programs at a lower cost. However, changing marketing and customer service to the internet, on the other hand, comes with a slew of issues, including the advent of severe privacy concerns and also negative consumer reactions (Wirtz, Lwin and Williams, 2007). Thus, customers are always very careful of the websites whether they always protect them from fraud after a transaction (Rita, Oliveira and Farisa, 2019). The same study shows that website security and privacy are vital when evaluating the service quality of online

retailers. As a result, the website must provide assurance and security in order to enhance the website's authenticity as well as service quality. Moreover, with access to customer support channels, web site encourages service quality and privacy protection (Resnick and Montania, 2003). The same study has found that, when service quality link was prominent, there is no considerable difference in expectation of privacy protection. Therefore, typical e-commerce websites promote service quality and also privacy protection with links to customer service channels and privacy policies. Resnick and Montania (2003) identified that these connections, like customer service links, didn't provide any explicit information about how privacy was maintained. As per the previous researchers, it can be concluded that there is a notable impact on customer service towards consumer privacy. Hence, the following hypothesis can be proposed:

H<sub>6</sub>: Customer service affect on consumer privacy.

#### *O. Impact of Information Search Towards Consumer Privacy*

Information search on a website can take as an action of website familiarity (Li, 2014). Presently, information search and consumer privacy have become controversial topics. Recently researchers have found that all most all online companies gather personal information from those who visit their websites (Taylor, 2004). Moreover, various websites use cookies to store consumers' information, which can raise a variety of privacy problems (Li, 2014). Online businesses which gather data may use it for secondary reasons and may use it improperly (Li, 2014). Presently, requirements have gone beyond traditional "buyer beware" warnings, rather now researchers expect a basic understanding of privacy problems from consumers (Rapp *et*

al., 2009). In certain situations, the ease with which firms may acquire information from Internet searches and through online purchases and are directly linked to the loss of trust among consumers (Taylor, 2004). Consumers are becoming more conscious that their online purchases and other actions are tracked, catalogued, and sold (Taylor, 2004). Besides, consumers who have knowledge about privacy threats often express concern about how a website gathers and uses their information (Li, 2014). As per the previous researchers it can be concluded that there is an impact on information search towards consumer privacy. Hence, the following hypothesis can be proposed:

H<sub>7</sub>; Information search affect on consumer privacy.

### **3. Methodology**

#### *A. Research Design*

The research onion gives a quite exhaustive explanation of the key layers or steps which have to be performed to build a successful methodology (Raithatha, 2017). This study was conducted in accordance with the research onion. The research philosophy for this study is positivism. As the research approach, this study uses deductive approach where it recognizes the necessity to explore the relationship between variables. A survey is the research strategy to collect the data. The research choice of this research is mono method. The time horizon is cross-sectional. The data was gathered over one month of time period which helped to find the answers for the research question.

#### *B. Population*

A population is known as any collection of specified group of human beings or of non-human entities such as objects, educational institutions, time units, geographical areas,

prices of wheat or salaries drawn by individuals (Wani, 2017). Therefore, the population of this research is the people who were born during the period 1986- 2001 who are in the age range of 20-35 is this study's unknown population. The researchers select this age range of consumers because they are living with the technology, and they are known as technological people.

#### *C. Sample*

The sample is known as selected collection of certain components from the whole of the population (Wani, 2017). Researchers selected sample size according to the rule of thumb method. Roscoe suggested a rule of thumb to follow for selecting sample size, which is that the number of participants for the questionnaire should be greater than 30 but lower than 500 (Tan, Yuen and Ha, 2018). Therefore, as per the rule of thumb method in measuring the sample adequacy the most applicable sample size is to conduct this research is 113 franchise fast-food consumers. In order to narrow down the research sample is collected from consumers who use franchise restaurants in Colombo district Sri Lanka.

#### *D. Sampling Method*

Convenience sampling is used to collect data which involves identifying individuals who are mostly and conveniently available (Taherdoost, 2016) under non-probability sampling method, where sample of participants does not have to be representative or random, but there must be a good reason for including particular instances or persons over others (Taherdoost, 2016).

#### *E. Mediator Test*

A variable is considered as a mediator if it explains the relationship between both the predictor and criterion (Baron and Kenny, 1986).

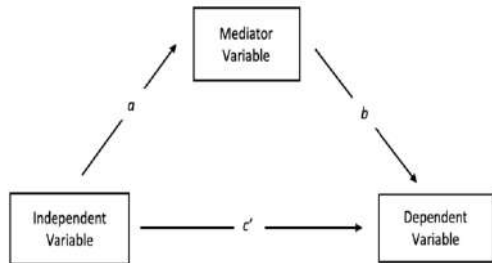


Figure 1. Mediator

Source: (Baron and Kenny, 1986)

Once the following conditions are met, a variable functions as a mediator: (a) variations in the levels of the independent variable significantly account for variations in the presumed mediator (i.e., Path a), (b) variations in the mediator significantly account for variations in the dependent variable (i.e., Path b), and (c) when Paths a and b are controlled, a previously significant relation is no longer significant (Baron and Kenny, 1986). Therefore, consumer awareness can be taken as the mediator in this research.

*F. Hypotheses*

H1; Consumer awareness on big data mediates the impact of data security towards consumer privacy.

H2; Consumer awareness on big data mediates the impact of customer service towards consumer privacy.

H3; Consumer awareness on big data mediates the impact of information search towards consumer privacy.

H4; Consumer awareness on big data affect on consumer privacy.

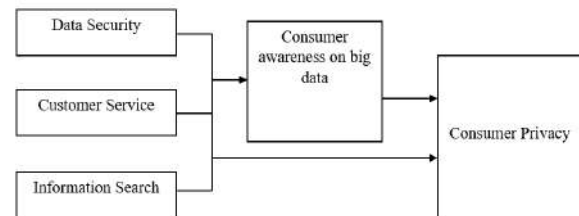
H5; Data security affect on consumer privacy.

H6; Customer service affect on consumer privacy.

H7; Information search affect on consumer privacy.

*G. Conceptual Framework*

Figure 2. depicts the conceptual framework. As independent variables, data security, customer service, and information search are considered. The dependent variable was chosen to be consumer privacy. Consumer awareness has been used as a mediator in this



study according to (Baron and Kenny, 1986).

Figure 2. Conceptual Framework

Source: Authors (2021)

*H. Operationalization of the Conceptual Framework*

Table 1. Operationalization

Variable	Indicators	Sources	Measur em-nts
Consumer awareness on big data	Usefulness level Effectiveness level	(Tennakoon and Lasanthika, 2020)	Five-point Likert Scale
Consumer privacy	Personal data Creditcard-information	(Ha, 2004)	Five-point Likert Scale
Customer service	Service level Return-handling/policies	(Rita, Oliveira and Farisa, 2019), (Blut, 2016)	Five-point Likert Scale

Information on search	Information quality Searching service-quality	(Le and Liaw, 2017)	Five-point Likert Scale
Data security	Safety on sanction Guarantee	(Ha, 2004)	Five-point Likert Scale

Source: Authors (2021)

#### 4. Data Analysis and Discussion

##### A. Data Presentation

###### 1) Demographic Information;

According to the response of the respondents, females comprise 58% of the sample, while males comprise the remaining 42%.

###### 2) Education Level;

In terms of the highest level of education, 69.0% of respondents have bachelor's degree as the highest educational qualification. The advanced level has been acquired by 18.6% of the sample. 7.1% have professional qualifications. As the highest degree of education, 3.5% of respondents have achieved master's degree and 1.8% of respondents have post-graduate diploma as their highest education level.

###### 3) Age;

According to the age of respondents, 88% of respondents are between the ages of 20 - 25, while 6% are between the ages of 25- 30 and ages of 30-35.

###### 4) Regular Consumers of Franchise Fast-food Chains;

In the questionnaire of this study, it asks from the respondents whether they are regular consumers of franchise fast-food chains in Sri Lanka. Regular consumers of franchise restaurants, all 113 respondents are regular

consumers of franchise fast-food chains in Sri Lanka.

###### 5) Regular Consumers of Franchise Fast-food Restaurants;

81.4% of respondents frequently use pizza hut and 18.6% of respondents do not frequently use pizza hut. Domino's is regularly used by 27.4% of respondents, while just 72.6% of respondents do not frequently use Domino's. 49.6% of respondents use KFC on a regular basis and 50.4% don't. 28.3% of respondents frequently use Mc Donald's and 71.7% of respondents do not frequently use Mc Donald's. 30.1% of respondents use Burger King on a regular basis, while 69.9 % do not. Other franchise restaurants are regularly used by 31.0% of respondents, while just 69.0% of respondents do not frequently use other franchise restaurants.

###### 6) Consumers Response on Whether Restaurants Gather Personal Information;

According to the consumers' response on whether restaurants gather personal information, 84% of respondents say yes when asked if franchise restaurants collect personal information such as their name, address, and phone number, while 16% say no.

###### 7) Likely Hood of Consumers Using Their Personal Information Without Permission;

If franchise restaurants use consumers' personal information without permission, just 4% of respondents agree, while 96% of respondents dislike.

##### B. Preparing Data for Analysis

###### 1) Accuracy and Completeness;

The researchers have used SPSS version 25.0 for statistical analysis and researchers have originally collected 153 questionnaires, but 36 of them were rejected during the screening process because they are incomplete. Next, the

researchers have used box plots to examine the remaining 117 respondents to determine if there is any variance heterogeneity. The dependent, independent, and mediating variables were all subjected to a box plot analysis, which revealed four outliers. Outliers in the unaccepted region of the box plot were easily detected, and those entails were removed from the data.

Accordingly, outliers are observations that have a specific set of features that distinguish them from the rest of the data (Hair *et al.*, 2009). There are 113 respondents remain for analysis after all steps have been taken.

### 2) Missing Data;

Missing data might occur as a result of data gathering or during the data entry process. The missing data provide a challenge when generalizing results (Hair *et al.*, 2009). However, researchers have not found any missing values in this research study.

### C. Testing for Parametric Assumptions

Researchers have tested for linearity and normality tests. According to the findings, the data set was distributed normally, and the linearity test showed linear relationships because all result was within the acceptable level of significance.

### D. Testing Validity and Reliability

Testing for validity and reliability has been done by researchers. As a result, validity and reliability are acceptable.

### E. Testing for Multicollinearity and Common Method Variance

Since all predictor and criterion variables reached the permitted level, the researcher's multicollinearity test revealed no multicollinearity in the data. Findings indicate that common method bias is not a substantial cause of data variance.

### F. Sobel Test

The Sobel test was used to determine the importance of mediating the influence of consumer awareness on big data between data security, customer service, information search, and consumer privacy. The below table shows (Table 2) the Sobel test results.

Table 2. Sobel test

Models	Sobel test Statistics
data security → consumer awareness	0.179
customer service → consumer awareness	0.114
information search → consumer awareness	0.739

Source: Survey Data (2021)

### G. Multiple Regression

The conceptual model is analyzed to examine consumer awareness mediates the connection among data security, customer service, information search, and consumer privacy. The entire effect is tested using multiple regression analysis. It is a mathematical approach for analyzing connections among variables. There are some stages in regression analysis suggested by (Baron and Kenny, 1986). They are (1) the total effect of the predictor variables (data security, consumer privacy and information search) on the dependent variable (consumer privacy), (2) predictor variables significantly impact the mediator (consumer awareness), (3) the mediator significantly impacts the dependent variable, (4) the direct effect of predictor variables on the dependent variable. If the direct impact is non-significant, complete mediation will be occurred; if the direct affect is less than the total affect, partial mediation will be occurred. In addition, multiple regression is used to assess the routes.

Using SPSS, the following tables were created to analyze the multiple regression.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.392	.154	.122	.664	1.909

Source: Survey Data (2021)

The above table provides the results of the model summary. The coefficient of determination, or R Square, is 0.154, as per the above table model summary. Despite the fact that this value is lower, the regression model is valid because the ANOVA result is significant. The Durbin-Watson test determines if there is autocorrelation by testing a null hypothesis of no autocorrelation against a lower and upper bound for negative autocorrelation and against a lower and higher bound for positive autocorrelation (Wagschal, 2016). The Durbin-Watson test statistic is 1.909, which falls between 1.5 and 2.5 (Marshall and Karadimitriou, 2018). It can be concluded that residuals are predictors which indicate the regression model is fit between independent variables and dependent variable.

Table 4. ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.631	4	2.158	4.899	.001
	Residual	47.654	108	.440		
	Total	56.195	112			

Source: Survey Data (2021)

The Table provides (Table 4) the ANOVA results for the regression model. If the F value is positive and the significance level is less than 0.05, the entire model is significant under 95%

confidence level. The probability of test statistics is 0.001 and also the F value is a positive value (4.899), as indicated in the table, which is extremely significant (Wagschal, 2016). As a result, the regression overall model is significant. It shows that the model is suitable for making the decision.

Table 5. Coefficient Table

Model	Coefficients <sup>a</sup>				
	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	1.002	.346	2.891	.005
	Data Security	.052	.110	.474	.636
	Customer Service	.137	.123	1.115	.267
	Information Search	.282	.115	2.456	.016
	Awareness	.165	.088	1.882	.062

a. Dependent Variable: Privacy

Source: Survey Data (2021)

The closeness is 0.000 when compared to all significant values, which is highly significant. Data security, consumer awareness and customer service have significant values of 0.636, 0.062 and 0.267 respectively which are greater than 0.05. Therefore, data security and customer service are considered as independent variables with no impact on the dependent variable of consumer privacy. According to the Beta value of 0.240, information search has a positive impact on consumer privacy. Consequently, the information search is affecting positively on consumer privacy while data security, customer service and consumer awareness do not affect.

#### H. Summary of the Result

Table 6. Summary of the result

H	Predicted Affect	Decision
H <sub>1</sub>	Consumer awareness on big data mediates the impact of data security towards consumer privacy	Do not accept
H <sub>2</sub>	Consumer awareness on big data mediates the impact of customer service towards consumer Privacy	Do not accept
H <sub>3</sub>	Consumer awareness on big data mediates the impact of information search towards consumer privacy	Do not accept
H <sub>4</sub>	Consumer awareness on big data affect on consumer privacy	Do not accept
H <sub>5</sub>	Data security affect on consumer privacy	Do not accept
H <sub>6</sub>	Customer service affect on consumer privacy	Do not accept
H <sub>7</sub>	Information search affect on consumer privacy	Do not reject

Source: Authors (2021)

## 5. Discussion and Conclusion

### A. Discussion

The main objective of this study is to explore the consumer awareness on big data and its impact on consumer privacy and analysis the factors according to the consumer's point of view. There are two sub-objectives in this study. Firstly, the main factor affects on consumer privacy. Secondly, the factors affect on consumer awareness of big data. The objectives have been fulfilled in this research according to the research findings.

Nield, Scanlan and Roehrer (2020) have revealed that customers are well-informed and aware about data security and customers have a high level of awareness when it comes to data breach preparation, according to specific study findings. However, findings of this study contradict the findings of the previous study because consumer awareness on big data does

not mediate the impact of data security towards consumer privacy.

Previous researchers found that people's data security issues are more than just conventional issues of privacy; they are also depend on the analysis and study of people's data, as well as the targeted prediction of people's condition and behaviour (Zhang, 2018). However, findings of this study contradict with the previous findings because data security does not impact consumer privacy.

Moreover (Kshetri, 2014; Görgens, 2019) have found that clients are aware that businesses utilize their information to target them with customized advertisements but they do not like to enclose their data with third parties. It means consumers are very much aware with their privacy. In contrast, Kshetri (2014) also stated that big data is more likely to harm the wellbeing of naive, vulnerable, and technologically illiterate consumers due to lack of awareness. However, findings of current research further revealed that consumer awareness on big data does not mediate the impact of customer service towards consumer privacy. Therefore, according to current research findings customer service is not strong enough to link consumer privacy and consumer awareness.

Previous studies have suggested that Shifting marketing and customer service to the internet, comes with a slew of issues, including the advent of severe privacy concerns and negative consumer reactions (Wirtz, Lwin and Williams, 2007). In contrast, Resnick and Montania (2003) have found that when service quality link was prominent, there is no considerable difference in expectation of privacy protection. Consequently, customer service has a significant impact on consumer privacy according to previous research findings. Nevertheless, this study's results seem inconsistent with the findings of previous researches, because findings of current

research revealed that customer service does not affect consumer privacy.

According to the findings of Bailey (2013) the primary source of creating awareness was internet surfing. The research further reveals that the internet is an essential source of information and that customers are aware of product review websites and are likely to visit them. In contrast to the prior research, the findings of the current study depict a different situation. The study reveals that consumer awareness on big data does not mediate the impact of information search towards consumer privacy.

Previous researchers have discovered that information search can cause a variety of privacy issues (Taylor, 2004; Li, 2014). The findings of this study are also in accord with findings of the previous studies, therefore information search affects on consumer privacy.

The only accepted hypothesis among the aforementioned is that information search affects consumer privacy for the following reasons. When searching for information on franchise websites, customers are concerned about their privacy. Consumers believe that restaurants can use some of their search history records to collect personal data, according to research findings. As previously stated, these websites can obtain users' names, credit card numbers, phone numbers, and other personal data by using search history records. Maybe these restaurants sell saved consumer data to third-party companies for a monetary value, and occasionally if the website is hacked, the data may be handed over to an unknown party. Therefore, the concerning of consumers is fair enough.

The findings of this study indicate that data security has no affect on customer privacy. The majority of consumers believe that if they provide their personal data anonymously,

their identity will be protected. The authors located that; customer service does not affect on consumer privacy. This is because all the customers believe that these franchise restaurants provide excellent customer service, therefore they assume that their data is safe with these companies.

### *B. Conclusion*

Researchers have chosen this issue due to the lack of knowledge of the consumers on big data. The authors anticipated to identify factors that affects consumer awareness and privacy in big data. Answers to the following research questions can be illustrated based on the analyzed results.

Q1; How the consumer awareness on big data affect on consumer privacy?

As per the finalized research data and results, it is quite obvious that the variable of consumer awareness on big data has no affect on consumer privacy. It indicates that the majority of customers are unaware of the importance of big data and how it affects consumer privacy.

Q2; What are the factors affect on consumer awareness on big data?

When examining the factors affecting customer awareness of big data with special reference to franchise fast-food chains in Sri Lanka, various factors such as data security, customer service, and information search were considered. According to the research findings, there is no impact between consumer awareness and the aforementioned three independent factors. This indicates that consumer awareness has no mediating impact.

Q3; What are the main factors affect on consumer privacy?

According to the findings of this study, the authors discovered that just one variable has



an affect on consumer privacy, which implies that information search is the only variable that has an affect on consumer privacy.

According to the researchers observation answers for the research questions have been met.

## **6. Recommendation**

The authors provide certain recommendations, as in prior research studies. The following recommendations are made based on the findings of this study. According to results, the most important element affecting customer privacy is information search. Consumers believe that providing personal data to franchise websites is the only way which can affect to their privacy. However, almost all franchise restaurants manually acquire customer personal data using their staff members. When franchise restaurants manually gather data from frequent customers, they are willing to provide their personal data without reluctance. Consumers are unaware of why they gather data, what they do with it, and do they sell it to third-party companies? However, researchers recommend consumers that give data to websites is not the only way to affect their privacy; manual data gathering can also affect consumer privacy. The findings demonstrate that there is a significant impact on customer privacy while searching information on franchise restaurant websites. As a result, in order to build strong relationships with customers, franchise restaurants should give adequate privacy policies for those who use their websites.

According to the research findings, data security has no affect on consumer privacy. The majority of customers assume that if they give their data anonymously, their identity will remain protected. This is due to the fact that anonymous protection cannot protect their identity. As a result, experts advise people not to disclose their personal information without

concerning their identity and without knowing why the data is being collected. Researchers recommend that organizations use a convenient approach with a guarantee to gather data in order to overcome this difficulty.

According to the findings, there is no affect on consumer privacy and customer service. It indicates that if the service quality and return handling /policies are satisfactory, consumers are willing to provide their personal data. Despite the fact that restaurants provide excellent customer service, researchers recommend consumers to be concerned about providing personal information. According to the researchers observation, above mentioned things can be recommended.

## **7. Limitations and Future Studies**

It's important to recognize the limits of findings of this study, therefore the researchers can offer more useful suggestions for future studies. As with many research studies, the authors located several limitations of this study. The research was done to carry out only in the Colombo district in Sri Lanka because it is practically difficult to cover all the districts. Therefore, future studies can be carried out with a wider sample covering a larger geographical area. Through conducting surveys in other districts as well as other countries, and comparing various cultures, it is recommended that the findings and conclusions be cross validated. Data were gathered from people who were born during the period 1986 – 2001 who are in the age range of 20- 35. This is because people in this age group have a proper knowledge on modern technology and most of them have access to technology devices. In this study, the questionnaire was used as the sole source of primary data. Further research might use qualitative approaches like interviews and focus group discussions to provide a more accurate understanding of customers'

intentions about the usage of big data in franchise fast-food chains. However, the current study used quantitative approach and conducted a survey to gather data. Due to the pandemic situation, the survey was conducted via online to reduce the physical contact with consumers and only 113 fast-food consumers were selected for the questionnaire. Since this study used a non-probability sampling method as the research sampling method, it refrained from generalizing the results. The conceptual framework of the research did not incorporate any moderating factors and any control variables between consumer privacy and independent variables. Therefore, it can be concluded that future researchers can use these to develop their researches.

## References

- Adil, T. and Izhar, T. (2016) 'A Research Framework on Big Data awareness and Success Factors toward the Implication of Knowledge Management: Critical Review and Theoretical Extension', (May). doi:10.6007/IJARBS/v6-i4/2111.
- Radiozaman, K.R. (2009) 'Personal information', *Economist*, 391(8632). doi:10.5005/jp/books/10966\_2.
- Bagley, A.W. and Brown, J.S. (2015) *LIMITED CONSUMER PRIVACY PROTECTIONS AGAINST THE LAYERS OF BIG DATA are governed by "click-wrap" agreements in which consumers agree provider or an entire computing ecosystem through various layers of privacy protection to consumers, this article propo.*
- Bailey, A.A. (2013) 'Consumer Awareness and Use of Product Review Websites', *Journal of Interactive Advertising*, 6(1), pp. 68–81. doi:10.1080/15252019.2005.10722109.
- Baron, R.M. and Kenny, D.A. (1986) 'The Moderator-Mediator Variable Distinction in Social Psychological Research. Conceptual, Strategic, and Statistical Considerations', *Journal of Personality and Social Psychology*, 51(6), pp. 1173–1182. doi:10.1037/0022-3514.51.6.1173.
- Blut, M. (2016) 'E-Service Quality: Development of a Hierarchical Model', *Journal of Retailing*, 92(4), pp. 500–517. doi:10.1016/j.jretai.2016.09.002.
- Crawford, K. and Schultz, J. (2014) 'Boston College Law Review Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms BIG DATA AND DUE PROCESS: TOWARD A FRAMEWORK TO REDRESS PREDICTIVE PRIVACY HARMS'. Available at: <http://lawdigitalcommons.bc.edu/bclr%5Cnh> <http://lawdigitalcommons.bc.edu/bclr/vol55/iss1/4>.
- Data security (2021) Sisense Documentation.*
- Deb, kumar suman, Deb, V. and Jain, R. (2018) 'Artificial Intelligence- Creating Automated Insights for Customer Relationship Management', pp. 758–764.
- Fasana, S.F. and Haseena, A.G. (2017) 'Promotional Mix as the Strategic Tool for Improving Brand Equity (A Case in Franchise Fast Food Restaurants in Sri Lanka)', *International Journal of Engineering and Management Research*, 7(6), pp. 6–11.
- Fisher, K., Erdelez, S. and McKechnie, L. (2005) *Information Search Process, Rutgers School of Communication and Information*. Available at: [http://wp.comminfo.rutgers.edu/ckuhlthau/isp\\_chapter/](http://wp.comminfo.rutgers.edu/ckuhlthau/isp_chapter/).
- Görgens, A.M. (2019) 'How can Artificial Intelligence use big data to form a better customer experience? CC-BY-NC', pp. 1–12.
- Ha, H.Y. (2004) 'Factors influencing consumer perceptions of brand trust online', *Journal of Product & Brand Management*, 13(5), pp. 329–342. doi:10.1108/10610420410554412.
- Hair, J., et al. (2009) 'Multivariate Data Analysis (7Th, 2009).Pdf', p. 739.
- Harper, A.A. (2016) 'The impact of consumer security awareness on adopting the Internet of Things: A correlational study', *ProQuest Dissertations and Theses*, (October), pp. 1–136.
- Holloway, B.B. and Beatty, S.E. (2008) 'Satisfiers and dissatisfiers in the online environment: A critical incident assessment',

- Journal of Service Research*, 10(4), pp. 347–364. doi:10.1177/1094670508314266.
- Information Search* (2018) Monash university. Available at: <https://www.monash.edu/business/marketing/marketing-dictionary/i/information-search> (Accessed: 27 September 2021).
- Ishak, S. and Zabil, N.F.M. (2012) 'Impact of consumer awareness and knowledge to consumer effective behavior', *Asian Social Science*, 8(13), pp. 108–114. doi:10.5539/ass.v8n13p108.
- Jain, P., Gyanchandani, M. and Khare, N. (2016) 'Big data privacy: a technological perspective and review', *Journal of Big Data*, 3(1). doi:10.1186/s40537-016-0059-y.
- Jansen, B. and Rieh, S.Y. (2013) 'The Seventeen Theoretical Constructs of Information Searching and Information Retrieval', *Journal of the American Society for Information Science and Technology*, 64(July), pp. 1852–1863. doi:10.1002/asi.
- Kankanhalli, A. et al. (2016) 'Big data and analytics in healthcare: Introduction to the special section', *Information Systems Frontiers*, 18(2), pp. 233–235. doi:10.1007/s10796-016-9641-2.
- King, L. (2014) *Alarm Over The 'Gold Rush' For Citizens' Big Data*, *Forbes*.
- Kirsten, M. (2015) 'Ethical issues in the big data industry', *MIS Quarterly Executive*, 14(2), pp. 67–85. Available at: <http://kirstenmartin.net/wp-content/uploads/2013/11/Martin-MISQE-Big-Data-Ethics-2015.pdf>.
- Kshetri, N. (2014a) 'Big data ' s impact on privacy , security and consumer welfare', *Telecommunications Policy*, pp. 1–12. doi:10.1016/j.telpol.2014.10.002.
- Kshetri, N. (2014b) 'Big datas impact on privacy, security and consumer welfare', *Telecommunications Policy*, 38(11), pp. 1134–1145. doi:10.1016/j.telpol.2014.10.002.
- Kwon, O., Lee, N. and Shin, B. (2014) 'Data quality management, data usage experience and acquisition intention of big data analytics', *International Journal of Information Management*, 34(3), pp. 387–394. doi:10.1016/j.ijinfomgt.2014.02.002.
- Lamba, H.S. and Dubey, S.K. (2015) 'Analysis of requirements for Big Data Adoption to maximize IT Business Value', *2015 4th International Conference on Reliability, Infocom Technologies and Optimization: Trends and Future Directions, ICRITO 2015*, pp. 1–6. doi:10.1109/ICRITO.2015.7359268.
- Le, T.M. and Liaw, S.Y. (2017a) 'Effects of pros and cons of applying big data analytics to consumers' responses in an e-commerce context', *Sustainability (Switzerland)*, 9(5). doi:10.3390/su9050798.
- Le, T.M. and Liaw, S.Y. (2017b) 'Effects of pros and cons of applying big data analytics to consumers' responses in an e-commerce context', *Sustainability (Switzerland)*, 9(5). doi:10.3390/su9050798.
- Lee, H. et al. (2015) 'Compensation paradox: The influence of monetary rewards on user behaviour', *Behaviour and Information Technology*, 34(1), pp. 45–56. doi:10.1080/0144929X.2013.805244.
- Li, Y. (2014) 'The impact of disposition to privacy, website reputation and website familiarity on information privacy concerns', *Decision Support Systems*, 57(1), pp. 343–354. doi:10.1016/j.dss.2013.09.018.
- Lovelock, C. and Wirtz, J. (2006) 'SERVICES'.
- Lutkevich, B. (2020) *Consumer privacy, search data management*. Available at: <https://searchdatamanagement.techtarget.com/definition/consumer-privacy> (Accessed: 27 September 2021).
- Lycett and Oracle (2012) *Big data analytics, IBM*. Available at: <https://www.ibm.com/analytics/hadoop/big-data-analytics> (Accessed: 27 September 2021).
- Marshall, E. and Karadimitriou, S.M. (2018) 'Outliers , Durbin-Watson and interactions for regression in SPSS Investigating outliers and influential observations', *University of Sheffield [Preprint]*, (unusual x). Available at:

[https://www.sheffield.ac.uk/polopoly\\_fs/1.531431/file/MASHRegression\\_Further\\_SPSS.pdf](https://www.sheffield.ac.uk/polopoly_fs/1.531431/file/MASHRegression_Further_SPSS.pdf)

Mejias, R.J. and Balthazard, P.A. (2014) 'A Model of Information Security Awareness for Assessing Information Security Risk for Emerging Technologies', *Journal of Information Privacy and Security*, 10(4), pp. 160–185. doi:10.1080/15536548.2014.974407.

Michigan state university (2020) *Michigan state university*. Available at: <https://www.michiganstateuniversityonline.com/resources/business-analytics/dining-on-big-data/> (Accessed: 13 August 2021).

Minhas, S. and Chandel, P. (2018) *Consumer Awareness and Consumer Protection: An Empirical Evidence, book depository*.

Moorthy, J. et al. (2015) 'Big Data: Prospects and Challenges', *Vikalpa*, 40(1), pp. 74–96. doi:10.1177/0256090915575450.

Nakao, A.N. et al. (2019) 'Performance of services and products in a fast food franchise chain: Reflections about the home delivery model', *International Journal of Business Excellence*, 19(1), pp. 85–99. doi:10.1504/IJBEX.2019.101716.

Nield, J., Scanlan, J. and Roehrer, E. (2020) 'Exploring consumer information-security awareness and preparedness of data-breach events', *Library Trends*, 68(4), pp. 611–635. doi:10.1353/lib.2020.0014.

Perreault, L. (2015) 'Big Data and Privacy: Control and Awareness Aspects'.

Phelps, J., Nowak, G. and Ferrell, E. (2009) 'Privacy Concerns and Consumer Willingness to Provide Personal Information', *Economist*, 391(8632). doi:10.5005/jp/books/10966\_2.

Poza, D. (2021) *What Is Data Security? Top Threats and Best Practices, Auth0 Inc*.

Raithatha, Y. (2017) 'Understanding the economic impact terrorism has on the destination decision making: Northern Irish tourists'.

Rajput (2020) 'Omni Academy', pp. 1–18.

Rapp, J. et al. (2009) 'Advertising and consumer privacy: Old practices and new challenges', *Journal of Advertising*, 38(4), pp. 51–61. doi:10.2753/JOA0091-3367380404.

Resnick, M.L. and Montania, R. (2003) 'Perceptions of Customer Service, Information Privacy, and Product Quality from Semiotic Design Features in an Online Web Store', *International Journal of Human-Computer Interaction*, 16(2), pp. 211–234. doi:10.1207/S15327590IJHC1602\_05.

Rita, P., Oliveira, T. and Farisa, A. (2019a) 'The impact of e-service quality and customer satisfaction on customer behavior in online shopping', *Heliyon*, 5(10), p. e02690. doi:10.1016/j.heliyon.2019.e02690.

Rita, P., Oliveira, T. and Farisa, A. (2019b) 'The impact of e-service quality and customer satisfaction on customer behavior in online shopping', *Heliyon*, 5(10), p. e02690. doi:10.1016/j.heliyon.2019.e02690.

Roca, J.C., García, J.J. and de la Vega, J.J. (2009) 'The importance of perceived trust, security and privacy in online trading systems', *Information Management and Computer Security*, 17(2), pp. 96–113. doi:10.1108/09685220910963983.

Salleh, K.A. and Janczewski, L. (2016) 'Technological, Organizational and Environmental Security and Privacy Issues of Big Data: A Literature Review', *Procedia Computer Science*, 100, pp. 19–28. doi:10.1016/j.procs.2016.09.119.

Senaratne, N. (2020) *The Growing Need for Privacy and Data Protection in Sri Lanka, Institute of Policy Studies of Sri Lanka (IPS)*. Available at: <https://www.ips.lk/talkingeconomics/2020/01/13/the-growing-need-for-privacy-and-data-protection-in-sri-lanka/> (Accessed: 27 September 2021).

Shahid, H. (2021) *What are Internet Cookies and How They Invade Your Privacy?, PureVPN*. Available at: <https://www.google.com/amp/s/www.purevpn.com/blog/all-about-internet-cookies-scty/amp/> (Accessed: 27 September 2021).

- Smith, M. *et al.* (2012) 'Big data privacy issues in public social media', *IEEE International Conference on Digital Ecosystems and Technologies* [Preprint]. doi:10.1109/DEST.2012.6227909.
- Taherdoost, H. (2016) 'Sampling Methods in Research Methodology; How to Choose a Sampling Technique for Research Hamed Taherdoost To cite this version : HAL Id : hal-02546796 Sampling Methods in Research Methodology; How to Choose a Sampling Technique for', *International Journal of Academic Research in Management (IJARM)*, 5(2), pp. 18–27.
- Tan, K.S., Yuen, Y.Y. and Ha, L.N. (2018) 'Factors affecting knowledge governance implementation among Malaysian SMEs', *Management Science Letters*, 8(5), pp. 405–406. doi:10.5267/j.msl.2018.4.006.
- Taylor, C.R. (2004) 'Consumer Privacy and the Market for Customer Information', *The RAND Journal of Economics*, 35(4), p. 631. doi:10.2307/1593765.
- Tennakoon, W.D.N.S.M. and Lasanthika, W.J.A.J.M. (2020) 'A Study on Big Data Awareness among Management Undergraduates in Sri Lanka', *Sri Lanka Journal of Economic Research*, 8(1), p. 137. doi:10.4038/sljer.v8i1.128.
- Terzi, D.S., Terzi, R. and Sagioglu, S. (2016) 'A survey on security and privacy issues in big data', *2015 10th International Conference for Internet Technology and Secured Transactions, ICITST 2015*, pp. 202–207. doi:10.1109/ICITST.2015.7412089.
- Tubbs, F. (2021) *The Impact of Big Data on Marketing, the data administration newsletter*. Available at: <https://tdan.com/the-impact-of-big-data-on-marketing/24044>.
- Udurawana, Y. (2015) 'A Study on Factors Affecting on Consumers Fast Foods Buying Behaviour (Reference to Pizza Hut in the Anuradapura City Area, Sri Lanka)', *SSRN Electronic Journal*, 2014, pp. 882–891. doi:10.2139/ssrn.2690346.
- Unalan, M. and Yaprakli, T.S. (2017) 'Consumer privacy in the era of big data: a survey of smartphone users concerns', *Pressacademia*, 4(1), pp. 1–10. doi:10.17261/pressacademia.2017.509.
- Wagschal, U. (2016) *Regression analysis, Handbook of Research Methods and Applications in Political Science*. doi:10.7748/nr1996.10.4.1.318.c6066.
- Wani, S.R. (2017) 'Edu/Research Methodology/Sampling', *Population and Sample*, pp. 1–7.
- Wirtz, J., Lwin, M.O. and Williams, J.D. (2007) 'Causes and consequences of consumer online privacy concern', 18(4), pp. 326–348. doi:10.1108/09564230710778128.
- Woerner, S.L. and Wixom, B.H. (2015) 'Big data: Extending the business strategy toolbox', *Journal of Information Technology*, 30(1), pp. 60–62. doi:10.1057/jit.2014.31.
- Zhang, D. (2018) 'Big Data Security and Privacy Protection Dongpo Zhang', 77(Icmcs), pp. 275–278.
- Zhang, J. *et al.* (2018) 'Data Security and Privacy-Preserving in Edge Computing Paradigm: Survey and Open Issues', *IEEE Access*, 6(1dc), pp. 18209–18237. doi:10.1109/ACCESS.2018.2820162.

## Abbreviations

ABRASEL - Brazilian Association Bar and Restaurant

PII - Personally Identifiable Information

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