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"Interactive Multimodal Branding in E-commerce:

An Empirical Investigation"

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Submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy (PhD)

Supervised By
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Related Publications

Rigas D., Hussain H.A. (2016). Interactive e-Branding in e-Commerce Interfaces: Survey Results and Implications. In: Nah FH., Tan CH. (eds) HCI in Business, Government, and Organizations: eCommerce and Innovation. HCIBGO 2016. Lecture Notes in Computer Science, vol 9751. Springer, Cham

Rigas, D., Hussain, H. A., & Riaz, N. (2016). Online Branding and Marketing: A User Perspective. International Journal of Socio-technology and Knowledge Development (IJSKD), 8(2), p.g. 27-38.

Rigas, D. & Hussain, H. (2015). “The Role of Brand Loyalty and Social Media in E-Commerce Interfaces: Survey Results and Implications for User Interfaces”. HCI in Business. Springer International Publishing, Switzerland. pp 347-357.

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Abstract

Interactivity improves the communication process between an organisation and a consumer. However, there are lack of good practice examples or guides to suggest how interactivity should take place to maximise its effectiveness. Therefore, the aim of this study was to see how e-branding through effectiveness, efficiency and user-satisfaction aids e-loyalty. In the process of exploring this, tangible and intangible attributes were assessed. As a result, a conceptual framework was proposed, tested and validated. The framework provides guidance on how e-loyalty can be aided through e-branding and how e-branding can be achieved through effectiveness, efficiency and user-satisfaction. These specific factors are under-researched and provide a unique insight to the Human and Computer Interaction.

This thesis followed a three-stage empirical style exploratory investigation (data collection, empirical investigation and validation of a proposed framework) which consisted a total of 150 consumer respondents, 50 in stage one and 100 in stage two, who shop online. First stage acquired data regarding current paradigms. For second stage consumers were required to fill a questionnaire, view an updated version of various interfaces with interactive multimodality characteristics. Respondents then shared views on how updated interfaces affected their perception of a brand.

Results highlighted that the current e-commerce interfaces are serving basic purpose but lack interactivity. Results further showed that effectiveness, efficiency and user-satisfaction do lead to e-branding and subsequently e-loyalty as hypothesised in the conceptual framework. The hypothetical tests validated the conceptual framework devised in the study. Validation of the framework was at the final stage of this thesis, which also recommended guidelines on how e-loyalty could be achieved through e-branding on the e-commerce. The study concluded with recommendations and good practice guidance on how best e-commerce interfaces could be updated to achieve long desired e-loyalty online from consumers through interactive multimodal branding.

Keywords: E-branding, E-loyalty, E-Commerce, Multimodal branding, multimodal interfaces, online loyalty, consumer behaviour

Chapter 1: Introduction

1.1 Introduction

Internet has completely revolutionised the way consumers behave online. Traditional purchasing method of buying in shops is becoming outdated as consumers are adopting and shifting towards e-commerce. Internet has become a marketplace where buyers sell, and consumers buy but due to the nature of these mediums there are differences between online and offline buying. For example, e-commerce interfaces do not have customer assistants, touch and feel of the product but include benefits such as paying for the items online and receiving items through post or collecting from stores. Moreover, e-commerce enables consumers to purchase items without the limitations of opening and closing timings (Lapoule, 2012).

According to the Office of the National Statistics (ONS), internet sales as a percentage of total retail sales was 21.5% as of November 2018 (ONS, 2018). Another study by a research firm Statista (2018) found the UK e-commerce market third largest in the world. Total e-commerce sales carried out in the UK in 2017 stood at £586.3bn (Statista, 2018). This was a rise from £506.3bn, which was the total figure for 2016. The rising trend of e-commerce pushed organisations to brand online (e-branding) and adopt techniques to interact with consumers.

A report from the ONS (2018) exhibited that 46% of all businesses registered in the UK had a website. An interesting finding in the ONS (2018) report was the use of websites in micro-enterprises (42%), was far less than businesses with 10 or more employees (82%). An astonishing finding in the report highlighted a fact that targeted advertising was only used by larger businesses. This significant increase in websites

allow customers to gather information regarding products and buy through the e-commerce channel. Interactivity also plays an important role, for example, live online chat systems are integrated into websites so that customers could ask or clarify doubts with online customer service assistants. Moreover, interactivity is also improved through the addition of a virtual personal assistant which answers most frequently asked questions. Indeed, an organisation has financial benefits, as well as operational benefits by operating online.

Firstly, operating online minimises operating costs as compared to brick and mortar stores. Secondly, online presence allows organisations to reach their target audience in an effective and efficient manner. Thirdly, customers and organisations are better connected, in a sense that questions and answers could be exchanged via e-mail, forums and online communities, which lacks when customers shop in-store. This overview of e-commerce and its popularity affirms that there is scope for further development within this area.

1.2 Research Motivation and Context

Recently, e-branding and e-commerce are gaining greater interest from both businesses and consumers. When e-commerce and e-branding are discussed, the discussion raises various questions. For example, what exactly is e-branding on the e-commerce? How is it different to traditional branding? An organisation carries out various exercises and adopts multiple techniques to brand on the internet, and there are multiple reasons for it. One of the reasons is loyalty, because an organisation expects customers to go through the repeat purchase phase. Ultimately, the question arises is how is e-branding carried out on the internet? What methods are successful and why? Does e-branding lead to e-loyalty?

The sole aim of internet was to enhance communication and to connect the world in a better and more efficient manner. It was not known that internet would become one of the most powerful technologies, ever. Today the internet has not only become a means of communication, but it has become a necessity in daily lives.

Whether one wants to search for information, shop, communicate, socialise, date, or just want to pass time, internet has something for everyone. Using internet for seeking information has become such a norm that organisations such as Google has created Alexa, and form of a Virtual Assistant, capable of carrying out various tasks. These tasks include, answering basic questions such as local weather and traffic updates, switching lights on or off, and ordering items online. Majority of the people refer to the internet as their first point of information, before seeking information from other sources such as friends or family. Social media could be partially blamed for this phenomenon of ‘continuous need for information’.

This type of phenomenon and frenzy has not been observed before. The internet today has become a friend, marketplace, bank, guide, navigation tool, dictionary, encyclopaedia and etc. Capabilities of the internet are limitless, and this potential has been exploited by large organisations to gain benefit. Online shops or e-stores were formed on the internet which allowed consumers to purchase goods and services, like what one would expect from a traditional physical store. Buying online offers convenience which consumers desire in today’s time. On a contrary, obvious drawbacks of buying online cannot be overlooked, such as returns process is longer and deliveries can be lost in transit.

Online presence allowed organisations to reach prospective buyers, but interactivity with customers was non-existent. Mainly because interactivity was not considered

important. The answer to the lack of interactivity and two-way communication was interactive multimodals and multimodality. This method included the use of text, audio and visual metaphors to communicate the message. Although multimodality today is widely accepted as a mode to interact with customers online, but the role of multimodality in e-branding is under-researched. It can be comfortably concluded that multimodals in e-stores make it unique and easy to remember. According to a survey carried out by D'mello and Kory (2015), multimodal systems have the potential to significantly outperform unimodal systems. Furthermore, according to Poria et al., (2017) there is a lack of comprehensive literature survey focusing on the successful methods employed in this area. This study therefore aims to explore and identify these unknown methods. Therefore, it has led to the formation of following research questions, aims and objectives.

1.3 Research Questions

Based on the background, research motivation and context, following research questions have been formulated to achieve aims and objectives.

1. *What are current multimodal e-branding practices on e-commerce platform?*

   Consumer responses will be analysed to see what modes of multimodality are being used to communicate the message from the websites to the consumers. Audio, video, animated characters, and other techniques involving these would be a part of the information collection process.

2. *What is the importance and effect of multimodal branding in e-commerce?*

   How would consumers react to websites which lack multimodality? If multimodals were not present, would communication and transfer of message be as effective? Does multimodal branding lead to loyalty and satisfaction?

3. *How existing methods of e-branding on e-commerce platform can be developed to acquire brand loyalty online?*

   It can be hypothesised Communication, interaction, satisfaction and other elements which take the user experience to different levels can lead to customers being loyal. How existing multimodals could be transformed and developed to achieve high levels of satisfaction leading to brand loyalty online.

4. *How including a Virtual Shopping Assistant (VSA) can help improve the perception of a brand on e-commerce interface, leading to loyalty?*

   Shopping assistants are common in a brick and mortar store, however VSAs on the e-commerce interfaces are uncommon. Interaction from these VSAs can help improve interaction and help is lacking for consumers in the online e-commerce platform. Such interaction will help businesses in providing a personalised service to customers, therefore analysing this area is essential.

5. *Future development in e-branding using a framework?*

   With dynamic changes in technology, e-commerce interfaces are also evolving constantly. Through research in this study, guidelines through an empirical framework will be developed, validated and proposed. These guidelines will outline the scope of future development in e-branding.

1.4 Research Aims

The **aim** of this study is to 'Investigate whether tangible (e.g. product presentation) and intangible (e.g. multimodal impact) attributes of effectiveness, efficiency and user-satisfaction lead to e-branding, ultimately leading to e-loyalty on the e-commerce'.

Effectiveness, efficiency and user satisfaction are broad terms and can be implied to multiple aspects and situations. Therefore, with regards to this study, the attributes of e-commerce, e-branding and e-loyalty are outlined in Table 1.1 below.

Term	Attributes (Tangible (T) and Intangible (I))
Effectiveness	• Successful transaction completion (T) • Multimodal impact (I) • Product presentation (T) • Information Quality (T)
Efficiency	• Speedy transactions (T) • Easy website navigation (T) • Help from VSA's (I) • System Quality (T)
User-satisfaction	• Overall e-commerce experience (I) • Ease of use (T) • Delivery Service (T)

Table 1.1: Outline of Tangible and Intangible attributes

Effectiveness: It refers to the successful completion of a transaction and the positive impact of multimodal interaction on consumers. Effectiveness in this study refers to, how interactive multimodality helps to an effective and successful completion of a transaction. How multimodality can convince and persuade consumers to trust and proceed with the transaction? Effectiveness also relates to product presentation and information quality.

Efficiency: It refers to the time taken to complete a transaction on e-commerce platform. Efficiency also assesses the role of interactive virtual assistants which aim to speed up transactions. Customers may feel confused during transaction processing; for example, leading to questions regarding security, privacy and personal information. Do virtual assistants reassure the customers by answering such queries, thereby

increasing the efficiency of transactions? Usable website navigation and system quality are also a part of efficiency for the purposes of this study.

User Satisfaction: after using any service, consumers are able to develop service satisfaction levels. The overall experience of consumers would be obtained and analysed. Post-simulation, satisfaction levels will be assessed. Ease of use of e-commerce interface and delivery service are other aspects, which constitute to user-satisfaction for the purposes of this study.

1.5 Research Objectives

In the light of described aims, following objectives for research have been devised:

1. Identify and critically assess existing paradigms of e-branding on the e-commerce and identify current weaknesses.

   The existing paradigms of e-branding will be critically assessed and evaluated for their importance and relevance in the modern-day e-commerce interfaces. Existing paradigms refers to the current practises of interaction on e-commerce websites. By assessing the current practices, weaknesses will also be identified.
2. Enhance specific attributes of effectiveness, efficiency and user-satisfaction on existing paradigms through the identified weaknesses: Enhancements will be adopted from the conceptual framework built on existing understanding and gap in knowledge.
3. Evaluate whether a Virtual Shopping Assistant (VSA) improves the perception of an e-commerce store. The use of VSAs is on the rise, therefore this study

will look into understanding how VSAs could be used on websites to improve the perception of an e-commerce store.

4. Developing a conceptual framework aiding e-loyalty through e-branding. Based on the gaps in literature and weaknesses identified in the current interfaces a conceptual framework will be developed with a view that by using the proposed framework, e-loyalty will be aided.
5. Empirical validation and evaluation of the proposed framework. Statistical tests will be used to empirically validate the framework. The attributes which are not found to have significant will be discounted from the final framework.
6. Produce a set of guidelines which will improve the overall experience on the e-commerce achieving e-branding and aiding e-loyalty.

1.6 Contribution

The thesis contributes in the area of human computer interactions, e-commerce interfaces and e-loyalty. The aim of this thesis was to derive empirically supported guidelines through creation and validation of a theoretical framework. The conceptual framework was based on a positivistic approach, that e-loyalty could be achieved through e-branding, which in-turn could be achieved through effectiveness, efficiency and user-satisfaction. The contributions from the study are relevant to the world of academia and business management. The contributions could be summarised in the following manner:

- Effectiveness on the e-commerce interface is achieved using multimodality, using methods such as audio, video, texts, or a mix of all of these (Rigas et al., 2016). Interfaces and websites where multimodality and interactivity was integrated demonstrated a higher effectiveness compared to interfaces where

multimodality lacked or was absent. Subsequently, successful transaction completion and information quality also showed strong links with effectiveness on the e-commerce which have not been tested before. The link between information quality and perceived ease-of-use was confirmed in a study by Ahn et al., (2004). However, the study did not test how information quality lead to effectiveness on the e-commerce. Impact of multimodality on respondents was also confirmed in a study by (Rigas et al., 2016). However, the study did not extend the link of effectiveness with e-branding aiding e-loyalty.

- Efficiency on e-commerce can be achieved through easy website navigation and/or speedy transactions. Whilst website navigation has been tested in various studies (Constantinides, 2004; Yen *et al*., 2007; Lim *et al*., 2009, Colla and Lapoule, 2011) but website navigation had not been tested with regards to efficiency. Website navigation includes the number of clicks which are required to perform a task or the errors and bugs which are faced with during use of interface. This study therefore contributes by filling this gap and by demonstrating, strong links between easy website navigation and efficiency.
- Furthermore, this thesis also contributes by highlighting the fact that efficiency on the e-commerce could be achieved through providing help through VSAs. System quality was tested by Ahn et al., (2004) but in the context of perceived ease-of-use rather than efficiency and e-branding. However, this study goes beyond the previous study and contributes that system quality leads to efficiency.
- Previous studies related to this subject area have not tested how e-branding could aid e-loyalty. Therefore, the most significant contribution which this study made was regarding how e-branding achieved through effectiveness, efficiency

and user-satisfaction on the e-commerce acts as a catalyst towards e-loyalty. This has been contributed through empirically validated framework and guidelines.

1.7 Structure of Thesis

There are 6 Chapters in this thesis, starting from introduction and ending with the appendices. The complete outline of the structure of the thesis is as following:

Chapter 1 Introduction – the first Chapter of the thesis outlines the research motivation and context, aims, questions, objectives, and contributions made through this study. This Chapter also includes the introductory aspects such as background of the study. Foundation of the study has been set out through this Chapter.

Chapter 2 Literature Review – this Chapter reviews an extensive range of relevant literature within the areas of multimodality, branding, loyalty and e-commerce. Furthermore, these topics are also critically reviewed through an in-depth analysis and discussion. However, strength of this Chapter is the identification of gaps in the knowledge, which was discovered through critical review. Subject areas covered in this Chapter are e-branding, e-loyalty, effectiveness, efficiency, e-commerce and multimodality. The Chapter also includes relevant sub-topics of the mentioned areas, this helping to explore the relevant literature in required detail. Some of the hypotheses and contributions originate and relate to this Chapter.

Chapter 3 – Conceptual Framework and Methodology – this Chapter discusses and outlines the overall methodology which has been adopted for this study. This Chapter explains and provides justifications of the methodology and data analysis techniques. Other topics covered in this Chapter are the ethical considerations, sampling techniques and the errors in the research survey. Lastly, this Chapter begins

with the introduction of a conceptual framework and related hypotheses, created through the identification of gaps in the current literature, and the data analysed in survey 1 of the study.

Chapter 4 Initial survey – aim of this Chapter was to answer research question one and understand the existing paradigms used on the e-commerce through data. The aim of this Chapter was to identify current multimodal e-branding approaches deployed on the e-commerce. This Chapter will not only explore current multimodal e-branding practices, but also help in understanding weaknesses or limitations present in current methods.

Chapter 5 Empirical Framework Validation – this Chapter tests the conceptual framework through survey and illustrations, in an empirical style survey. The aim of this Chapter was to test how would respondents react to an updated e-commerce interface. The updates to the interfaces were a result of findings from the first survey. Responses were recorded and assessed to understand if updated interfaces led to increased interactivity, e-branding and ultimately e-loyalty. Towards the end of this Chapter, all hypotheses were tested using chi-square tests, and a refined framework was presented.

Chapter 6 A customer perspective of e-commerce interface design – final Chapter of the thesis concludes the overall thesis with a summary of all the surveys, findings and contributions. This Chapter also outlines and discusses weaknesses of the thesis and provides directions for any future studies.

Chapter 2: E-Branding, Multimodality and E-Loyalty

2.1 Introduction

This Chapter reviews relevant literature to the topics of branding, multimodality, and loyalty within the context of e-commerce. The following topics are reviewed in this Chapter:

1. Branding and E-branding.
2. E-commerce.
3. Multimodal theories and the role of multimodal metaphors.
4. Effectiveness, Efficiency and User Satisfaction.
5. Online e-commerce assistants.

Firstly, this Chapter begins with an explanation of broad definitions of e-branding moving on to the importance of e-branding on the e-commerce platform. The third section of the Chapter reviews the current literature on multimodality, the theories and role of multimodality on the e-commerce interfaces.

The next section is about effectiveness, efficiency and user-satisfaction as they are core to this research. Throughout this Chapter all analysis will be revolving around these three topics. However, the use of Virtual Shopping Assistant (VSA) in the e-commerce will also become a part of the literature review.

2.2 Branding and E-branding

Branding according to Grzesiak (2015), exists in the mind of a consumer; and therefore, its management (branding) is the management of one's perception. The

findings of Grzesiak (2015) could be classed as a summary of what was explained by Hayes (2006). According to Hayes (2006), purpose of a brand is not just to display a sign but to convey a philosophy or experience. Grzesiak (2015) further went on to explain that a brand is an entire range which reassures a buyer of its uniqueness, and therefore influencing their purchase decision.

The aim of both traditional and e-branding according to Kall (2015) is to:

- Provide information about the brand.
- Build awareness about the brand.
- Enhance involvement and relationship with a brand.

These days most consumers are aware of the mainstream brands, and therefore the first two points in the aims of e-branding are already achieved. The findings of Kall (2015) outlines the aims of both traditional and e-branding practices. However, it lacks in identifying how these could be achieved, specifically for how a brand could enhance involvement and relationship in the online context. To engage with consumers and develop a relationship a brand needs to build its personality.

2.3 E-branding

Online branding or e-branding has become a topic of particular interest, and there is no book of e-marketing and e-business which does not cover this topic (Chaffey and Chadwick, 2016; Rowley, 2004). Traditionally, branding is known as the creation of value through different means, leading to customer experiences which prompts for repeat-purchase (Foroudi, 2019; Aaker, 1991; Chernatony & McDonald, 1992; Kapferer, 1992; Hankinson & Cowking, 1993). A brand is a name, term, sign, symbol, design, or combination of these which is used to identify the goods or services of one

seller or group of sellers, and to differentiate them from those of competitors (Kotler *et al*., 2002). According to Barreda et al., (2016) internet is a powerful tool in branding as it offers numerous ways to promote a business online.

Since internet has become mainstream, numerous industries have transferred marketing and operations online (Moss et al., 2013). Organisations have allocated considerable amounts of funds to create successful e-branding and e-marketing campaigns; with the view to establish a dominant presence in an e-market which is very crowded (Epstein, 2005). The influence which online branding can have on consumers is substantial (Barreda et a., 2016). It has become essential for organisations to build an online presence, and a strong online brand identity, because a strong brand identity ensures the customers regarding the unseen products (Ries & Ries, 2000; Bergstrom, 2000; Mitchell, 2000; Berry, 2000).

2.3.1 Importance of E-branding

Branding traditionally is known as a process through which value is created for customers in a way that customers are satisfied by the experience and return for a re-purchase (Aaker, 1991; Doyle, 1998; Hankinson and Cowking, 1993). Relationships are built once customers start trusting the brand, and trust on a brand comes through use, and any previous experience (Jevons and Gabbot, 2000; Doyle, 1998; AT Kearny Report, 1999). A brand which has a strengthened position and a unique identity in the market will attract more repeat business compared to brands which have not created a unique position in the market. Brands with a strong brand identity are difficult to imitate.

A brand with a strong presence in the market is also likely to have more control in terms of power as compared to customers (Chernatony and McDonald, 1992;

Kapferer, 1992). Such brands are also able to acquire premium prices as compared to generic and unbranded equivalents (Ibeh et al., 2005). Brands which become strong and gain market leadership, help to shift the competitive framework in company's favour, which are difficult to replicate (Aaker, 1991; Hankinson and Cowkin, 1993).

Moreover, even e-brands and branding on the internet has attracted considerable research attention (Aaker, 1991; Chernatony and McDonald, 1992; Kapferer, 1992) however the role of e-branding and the contribution to business performance remains questionable. Vast sums of money have been invested in online advertising and e-branding by internet start-up companies, without knowing any tangible outcomes. There are examples where organisations have invested substantial amount of capital which are more than their annual sales revenue (Epstein, 2005) but the return on the e-branding investment was unknown. It has been concluded by (Sinha, 2000; Chevron, 2000) that e-brands will diminish with time however others (McGovern, 2000; Carpenter, 2000) argue that it is impossible to survive on the e-commerce without e-branding. The latter argument further strengthens the need for this kind of study.

As online market is getting highly competitive authors advocate the importance of e-branding and insist on taking e-branding route for online success (McGovern, 2000; Carpenter, 2000; Ries and Ries, 2000; Bergstrom, 2000; Mitchell, 2000). According to Berry (2000), strong e-brands increase customer trust on physically unseen products or services. Furthermore, Carpenter (2000), suggest the 'extraordinary' growth in number of e-commerce websites that has led to a confusion and frustration amongst the average internet user. When customers are faced with many choices to choose from; the 'perplexed' customers according to (Ibeh et al., 2005) will turn to familiar brands, thereby establishing business relationships with specific internet brands and carry out business repeatedly with those brands.

For organisations which have built premier internet brands, their relationship with customers strengthens as choices online or number of online retailer's increase. This makes sense as customers have limited cognitive resources and time to minimise the information overload through applying mental shortcuts, one of them is e-branding. E-branding helps to reduce complexity and processing time of information, it also helps in enhancing relationship trust between customers and companies (Luhmann, 1989).

According to a study by Cheskin Research (1999), brand is at the top of a list of six marketplace fundamentals for building and maintaining trust on the internet; other fundamentals are navigability, fulfilment, presentation, technology and seals of approval. This finding has also been seconded by Bachnik and Nowacki (2018) who confirm that brand is an important element in building and maintaining trust on the internet.

2.4 Brand Personality

According to Solomon (2013), brand personalities are a mix of traits which are associated with a brand as if it were a real person. Brand personalities also exist online, and personality of a brand changes over time just like the personality of a person. If a brand has a successful brand personality, this can translate to loyal customers. However, it is not easy to build a successful brand personality. Only a handful of researchers have concluded that brand personality is important in building competitive advantage and brand loyalty (Plummer, 1985; Aaker, 1996).

Feelings about a brand and its personality are a part of brand equity. The word 'brand equity' is a sum of various questions and answers, such as; how a strong, unique and favourable connection has the consumer got with a brand within its memory?

Depending on how strong a connection is, the consumer will be willing to pay more. Based on these connections and feelings consumers also begin to show associations with brands. The same applies to online and offline shoppers. If a consumer is willing to pay premium price for a branded item in-store, the same applies online. However, physical attributes such as touch, smell and feel will be absent from the transaction until the product has been received. A product or a brand which communicates a unique brand personality always out-performs its competitors and acquires many years of loyalty (Solomon, 2013).

There are times when a brands' personality may not charm its buyers or prospective buyers. In such scenarios a brand must go through a 'repositioning' or 're-branding'. Meaning that a brand will go through a makeover, in-order to improve or enhance its strategy in order to increase the brand's appeal. People who shop for brands online see it as modern and expect the brand to treat clients the same way they are treated in-store. However, the non-presence of customer services and no human interaction when buying online, may affect the purchase decision negatively.

Furthermore, a brand may lose or damage its equity if it is unable to keep up with the expectation of customers online. As most of the retailers and high street shops have started to trade online, issues such as system failures and transaction problems are frequent and recurring. Such failures leave negative perceptions and associations and could damage a brand's equity and personality.

The effect of brand personality applies throughout the decision-making process and model. From the collection of information to the purchase decision, the personality of a brand plays an important role in convincing and pursuing the customer to purchase

a brand. If customers are satisfied with the purchase, it may lead to re-purchase, or in another words brand loyalty.

2.5 Loyalty

One of the main areas of focus of this study is loyalty. The term ‘loyalty’ is defined as a behavioural measure (Kumar and Shah, 2004). As per this definition, loyalty is defined as measure, meaning that there are various elements which if measured, can be used to calculate loyalty. These elements could be; the aspects of purchase behaviour (Ehrenberg, 1988; DuWors & Haines, 1990), purchase sequence (Kahn, Kalwani and Morisson, 1986), repeat purchase behaviour (Brown, 1952), purchase frequency (Broody and Cunningham, 1968), probability of product repurchase (Lipsten, 1959; Kuehn,1962), probability of purchase (Farley,1964; Massey, Montgomery, & Morrison, 1970). By assessing these aspects, it could be possible to measure loyalty.

When consumers have to choose between two similar products, the selection process narrows down to perception of the products (Belen del Rio et al., 2001a). Positive brands have positive associations, which are clear and act as catalysts to making decisions (Low and Lamb, 2000). Loyalty itself cannot be achieved straightaway; loyalty is achieved when there is a loyalty intention.

2.5.1 Loyalty Intention and Relationship Commitment

According to Chen et al., (2018), Roger (1996), Srinivasan et al., (2002), loyalty intention can be denoted by a favourable attitude towards a brand. This intention or attitude is a result of positive experiences or beliefs, that the quantity of value received from consuming a product is more than the value of not consuming it (Roger, 1996;

Srinivasan et al., 2002). Participation in active communication or other means of engagement with a brand is also a sign of brand loyalty. From an empirical finding of Silvia et al., (2017) it was indicated that engagement on social media pages such as Facebook may provide the needed information to customers. Therefore, satisfying the need for information and understanding, which is a result of active participation.

On the other hand, for consumers to stay loyal it is imperative that the relationship commitment with the brand is present. According to Garbarino (1999), relationship commitment is defined as the '*enduring desire to maintain a valued relationship*' and this ingredient is thought to be one of the most essential ones in maintaining a long-term relationship. Measuring relationship commitment is important because it provides an indication of whether an individual will keep the established relationship or not. Results from various studies have showed varied results; the most prominent one is from the study of Chang and Fan (2017), where Facebook fan-pages were assessed. Assessment results showed affective commitment was the most influential factor which indicated continued intention to use.

2.5.2 Loyalty Model

True loyalty of customers cannot be defined by repeat-purchase, because a repeat purchase may be trapped by 'inertia' (Reichheld, 1988). A customer may not buy the same product or a same item again from a brand because the needs of the customer may have been satisfied (Evans et. al, 2009). For example, a person may have bought an iPhone previously may not buy the same model or phone again. When it comes to buying on the internet a customer may not buy the same item multiple times or buy an updated variation.

The framework of Dick and Basu (1994) in Figure 2.1 describes loyalty as a result of two dimensions; the attitudinal and behavioural approach. The loyalty model conceptualised loyalty as a result of relative attitude of a person towards a brand or product or store, and ones' patronage behaviour (Evans et. al, 2009). Loyalty typology asserts that customers are divided in four groups. The '*true loyal*', that are customers with high attitudinal and behavioural loyalty. Second group is the *'spurious loyal',* that have low attitudinal but high behavioural loyalty. Thirdly, Dick and Basu (1994) describe people with high attitudinal and low behavioural loyalty as a *'latent loyal'*. Lastly, *'non-loyal'*, are consumers with low attitudinal and behavioural loyalty.

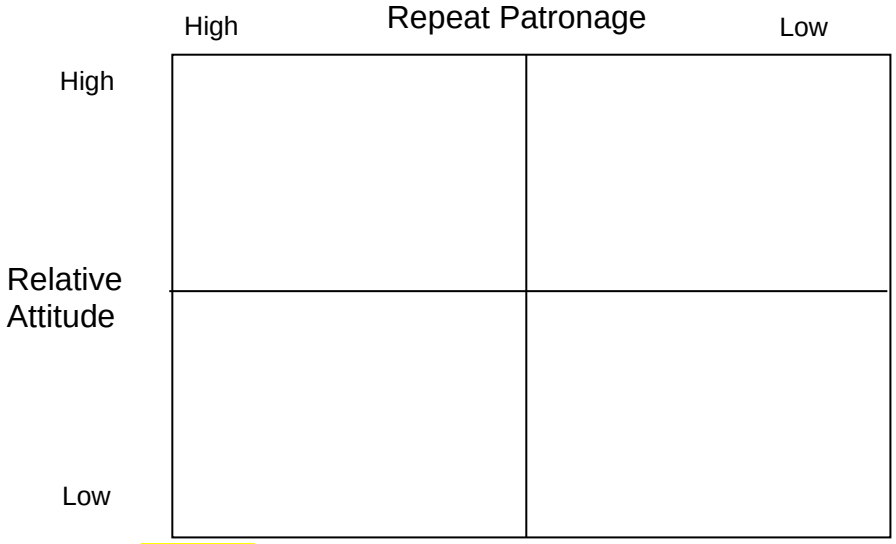


Figure 2.1: The Loyalty Typology, taken from Dick and Basu (1994)

Another brand loyalty model by Uncles, Dowling and Hammond (2003) describe brand loyalty as a construct of three dimensions. Two dimensions are similar to Dick and Basu's (1994) model. However, Uncles et. al (2003) add another variable to measure loyalty, which is *'emotional attachment'*. Little research has been done in this area to find out emotional attachment of a customer to a brand when purchasing online. It must be noticed that there is very little or no emotional attachment with a brand when buying online, mainly because a physical interaction is absent, and without a physical interaction chances of an emotional attachment is less likely. One limitation of the

above framework is that it does not assess emotional attachment, which is equally important in assessing brand loyalty. Sometimes emotional attachment which a brand plays stronger role as compared to physical interaction.

In addition to these dimensions, Evans et. al (2009) also argues that it will not be unfair to accept that *'satisfaction'* also leads to brand loyalty. If a person has bought fashion items on internet; and is satisfied with the purchase and the overall transaction, there are high chances of repeat-purchase. However, a research by McKenzie (1995) proved differently. The research proved that 66% of people who admitted having a favourite brand also bought from another brand recently (McKenzie, 1995). Another research confirmed *'satisfaction'* as an ineffective measure of loyalty (Reichheld, 1988). But taking this further, Jones and Sasser (1995) had identified another model for loyalty named as the *'loyalty grid'*. Moreover, loyalty of a customer can be measured or assessed from ones' purchase behaviour (Kumar and Shah, 2004) and till today Dick and Basu's (1994) model remains the most elegant model of loyalty.

2.5.3 The Loyalty Pyramid

Another loyalty model is the *'loyalty pyramid'* introduced by Aaker (1991). According to Aaker (1991), loyalty is an *'attachment'* which a customer has to a brand. The author explains further that, attachment helps to predict how likely a customer will switch away from a brand. Applicable to times when the brand makes a change, either in terms of the features or the price.

Loyalty pyramid in Figure 2.2 is divided into five parts and looks like a pyramid with not loyal and very loyal being the bottom and top most specs of the framework. Different consumers belong to different stages of the pyramid. Often e-commerce buyers are people that belong to lower level or first level of the pyramid. At this level,

main aim of customers is to save money and such consumers are least loyal because determinant variable is price. This type of consumers may not know about brands or buy brands during sale times. It is also concluded by Aaker (1991) that marketing is most effective at this stage of the pyramid. If a certain level of a pyramid has greater number of customers, it means that the brands policy is effective.

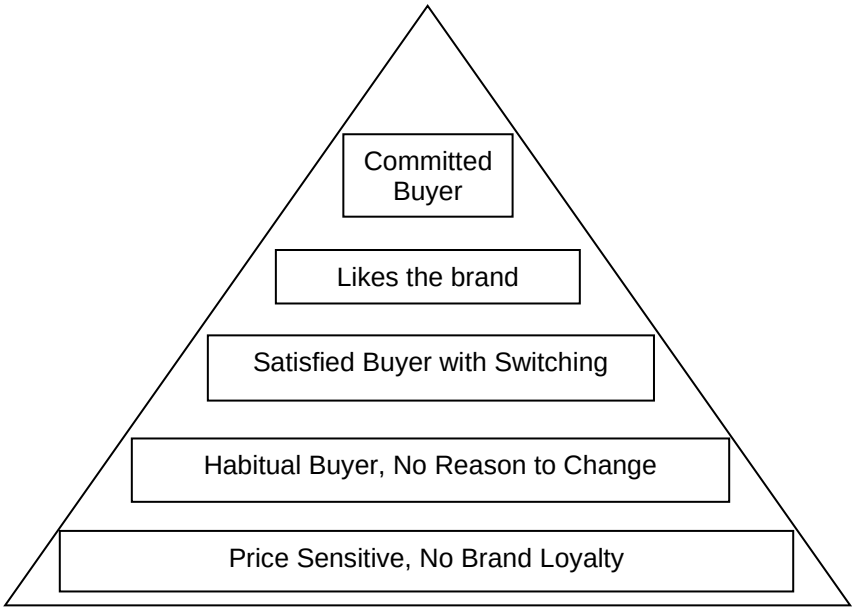


Figure 2.2: Brand Loyalty Pyramid, taken from Aaker (1991)

Moving up on the pyramid, second level is of habitual consumers who are not dissatisfied with their current brand but are vulnerable to change if another brand provides better benefits post-switching (Aaker, 1991). Further up on third spot are satisfied customers who are happy with their selected brands and would only switch if their switching costs are met. The switching costs include loss of time, or money, and loyalty advantages etc. The costs could also be compensations as well. Such as, automatically getting 10,000 loyalty points, when a consumer shops from an online store of a brand. At this point of the loyalty pyramid a marketing strategy must focus on about the quality of the products offered.

Fourth level is of people who like the brand and are emotionally attached with a specific brand (Aaker, 1991). These attachments may be a result of quality of the brand,

experience with the brand and associations of the brand such as its symbol. It is difficult to convince such customers to switch brands. Consumers under this category build emotional attachments with the brand and are unable to explain why they are attracted to the brand. Aaker (1991) describes this phenomenon as normal because consumers have an emotional attachment with the brand which does not have or need an explanation.

At the top spot in the framework are consumers who have used a brand and are very satisfied with it. These consumers are proud on using and discovering the brand (Aaker, 1991). These people closely associate themselves with the brand and the brand is involved in their daily lives. Consumers at this level of loyalty are rewarded equally by their preferred brand. Few of the ways through which they are rewarded by the brand is by giving preferential treatment when limited edition products or services are offered (Aaker, 1991).

When it comes to buying online, there are many factors to consider. Factors such as price, convenience, and previous experience play an important role. People which are already brand loyal, directly go to their preferred brand's website and purchase from there. However, when buying online, access to information is very handy and competitors are free to advertise on websites, thus attracting attention. If there is a better product, then there is no harm in seeing and trying out new products. This makes online buyers one of the most disloyal buyers. These models have been used because of their applicability in the context of buying online and offline.

2.6 Brand Community

Brand community is formed when a group of people who share same interest come together on a platform, because of the usage or ownership of a certain product (Solomon, 2013). Brands build and promote brand communities because it eventually leads to brand loyalty. Researchers discovered positive feelings in consumers for a brand, of which, they were a part of its brand community. Furthermore, such consumers tend to ignore any lapses or failures in service quality. More interestingly, such consumers do not switch brands even if competing brand offers products which are better or equally good. As McWilliam (2000) concludes, online communities *'thrive'* because of the number of benefits it provides to its participants.

In the case of buying online, if a group of friends share same interest in a product or a brand. They are most likely to form a brand community of themselves and would become loyal. When consumers are highly involved with a brand, emotional attachment with the brand occurs leading to the welfare of the company as discussed in previous section (Evans et. al, 2009).

However, if dominant community members go against a brand the whole community may fall under the influence. This is one of the dangers of brand communities online. Where there are multiple communities such as pages on social media platforms, controlling such behaviour becomes difficult or troublesome. Furthermore, there is a risk of brand hijacking, which means that control of the marketing of a brand is taken away from the marketers to the community to enhance the brand's evolution (Wipperfurth, 2005).

2.6.1 Connection with Brands

There is a strong relation between emotions and brands. Therefore, an organisation which successfully creates emotional associations with its customers gain competitive advantage and higher market shares, eventually leading to growth (Aaker, 1991; Chernatony & McDonald, 1992; Kapferer, 1992; Doyle, 1998). The issue of branding and e-branding has attracted a lot of interest, but their role remains unclear in creating a connection with the brand. Booker (2007) concludes business marketers must appeal hearts to ensure connection with brands are built.

Human beings develop emotional attachment with places, destinations, animals, special objects and brands (Richins, 1994; Schouten and McAlexandar, 1995; Price *et al*, 2000; Yuksel *et al*, 2010). Attachment further increases to celebrities and human brands (Thomson, 2006). Loureiro *et al.*, (2012), concluded that attachment of humans to brands consists of similar traits to those of an emotional bond which are similar to love. Additionally, Batra *et al*., (2008) identified seven dimensions of love with objectives: loyalty, attitude strength, satisfaction, negative effect, positive effect, self-related cognitions and perceived function quality.

Although invention of internet is undoubtedly beneficial, but the implication of real-time interaction in a real marketplace has made branding on the internet very complex. As a result, organisations are looking for e-branding techniques which would give them a competitive advantage and a distinctive edge to engage with prospective customers (Kenney & Curry, 2000). Engaging with customers allow organisations to initiate a process which result in a connection being made. Once a connection is made, a brand can then ignite feelings for itself through its characteristics and traits.

2.7 Technology Acceptance Model

The Technology Acceptance Model (TAM) by Davis (1989, 1993) explains the user acceptance of the information technology and its usage. Researchers have widely accepted and tested the technology acceptance through different means such as e-mail, voice, automated teller, spreadsheet, calculator and voice mail (Adams et al., 1992; Bagozzi et al., 1992; Chau, 1996; Davis et al., 1989; Fulk et al., 1995; Hendrickson and Collins, 1996; Igbaria et al., 1995; Szajna, 1996; Thompson, 1998). Shaw et al., (1997) has recommended technology acceptance model to investigate the behaviour of web users. As Davis (1993) suggested, the technology acceptance model provides fundamentals of why users 'accept' or 'reject' information technology, and how the acceptance of technology can be improved through sensible choice of system design features (Davis, 1993).

Several researchers have validated TAM using different applications including e-mail, voice mail, word processing, micro-computers, automated teller, spreadsheet, calculator, Web pages development software, among others (Adams et al., 1992; Bagozzi et al., 1992; Chau, 1996; Davis et al., 1989; Fulk et al., 1995; Hendrickson and Collins, 1996; Igbaria et al., 1995; Szajna, 1996; Thompson, 1998). Other researchers have recommended TAM for the investigation of Web user behaviour (Shaw et al., 1997). TAM provides a foundation for research on why users accept or reject information technology and how to increase user acceptance by judicious choice of system design features (Davis, 1993).

The attitude which a user has towards a system determines whether the system will be used by the user or not. How a consumer perceives the incentives of using a certain system creates cognitive beliefs, initiating a response. This response can be identified

as consumer behaviour, and cognitive beliefs is determined through attitudes of a consumer. Whether a consumer is going to use a system or not depends on two beliefs, the perceived usefulness and the ease of use of a system. Therefore, it is important to ensure that a system is not only easy to use but also useful for the user.

Moreover, system design is another important aspect which directly influences the perceived usefulness and ease of use of a system. System quality for the purposes of this study has been linked to efficiency. If a system is designed in a nice and lean manner, it will positively affect the attitude of a consumer towards it. This could also mean that a consumer may remember the brand and re-purchase based on the perceived usefulness and ease of use of the system. The technology acceptance model developed by Davis (1993) has four major components – perceived usefulness, perceived ease of use, attitude toward use, and actual system usage. The model has been seen from an e-commerce perspective for this study.

Perceived Usefulness and Ease of Use according to Davis (1989) and Lederer et al., (1999) is a particular system or process, which enhances the performance by reducing the time taken to accomplish a certain task. Similarly, it could be concluded for the e-commerce interfaces, that if a certain website, e.g. a checkout system, improves performance by reducing time to accomplish a task, it would be perceived as useful by its user.

The other hand perceived ease of use is linked to the belief that using a particular system would be free of effort (Davis, 1989). This can be applied or hypothesised in today's e-commerce interfaces, where an interface deemed to be easy to use will be favoured or preferred based on its easiness or effort free design.

According to Davis (1989) and Lederer et al., (1999), attitude towards use relates to the desirability of using a particular system or application. Where a consumer or user has an evaluation leading to negative associations, the desirability of using that particular system or interface significantly decreases. This means, consumers today favour simple and easy to use interfaces rather than complex and confusing websites.

2.8 E-Commerce

The World Wide Web or the internet has become primary way through which businesses connect with their customers (Hasley and Gregg, 2014). E-commerce in general has grown precipitously with the propagation of commercial websites, and the escalating approval of virtual transactions (Fang et al., 2014). Increased competition between businesses has shifted the focus to drawing customers to have relationships which are long-term and reliable (Alotaibi and Rigas, 2012). But with ever changing trends and the preferences of customers it is hard to predict what customers would want and like in a few years' time. Therefore, continuous innovation and learning consumer's behaviour online is essential to convince customers. As defined by Hasley and Gregg (2014), consumers form their opinions about the products being sold and the websites' host company, not the price.

Internet is a force for change, creating new business economies (Lambert, 2002), and altering the world's economies (Rayport and Jaworski, 2001). According to Hoffman and Novak (2009), during the past decade marketers have been accurate in predicting the Web usage and market potential of the Web. However, marketers were unable to predict the future direction of it. The UK government literature stresses the importance of such new technologies to the economy and to SMEs in particular. Although, Martin and Matlay (2001) contend that such wide-ranging beliefs over the Internet have yet

to be supported by any empirical evidence. Tidd et al. (2001) consider the Internet to be one of the “defining symbols” of twenty-first century innovation that has transformed conceptual notions of how consumers value knowledge to create a new e-economy. This is a departure from the post-industrial business age that is typified by physical goods, towards a knowledge led economy where service, information and intelligence are the main currencies (Rayport and Jaworski, 2001). There have always been “new economies” (Clayton, 2002). What makes this innovation different are four distinct characteristics: immediate access to world-wide markets of information; better speed to market; the transformation of business processes; and the shift in the balance of power between suppliers and customers as information becomes more widely available.

From the literature it can also be noticed that there has been a significant and an unstoppable shift towards online and digital retailing over the past years. This has resulted in organisations spending towards personalised and communicative marketing approaches, which prove to be beneficial for both consumer and the organisation (Anderson and Srinivasan, 2003; Cao and Li, 2015; Accenture Consulting, 2016).

2.8.1 E-Commerce and Social Commerce

Having explained the e-commerce, it is also important to understand the concept of social commerce. According to Li et al., (2013) social commerce can be defined as the addition of e-commerce capabilities to social networks. Therefore, allowing consumers to purchase goods from networks to which one is already connected. This is an interesting and rising concept as marketplaces are now emerging on social media

platforms, such as Facebook marketplace. Table 2.2 below outlines the distinct differences between the social and e-commerce.

Attribute	E-commerce	Social Commerce	Author
Customer connection	Customers interact individually and independently	Customers are a part of online social communities Social interaction and conversation between consumers is normal	Huang and Benyoucef (2013)
Customer control	Little or no customer control	Customers are empowered	Huang and Benyoucef (2015)
System interaction	One way browsing	More collaborative and interactive online experience	Huang and Benyoucef (2013, 2015)
Business goal	Shopping efficiency maximised	Focus is on social activities	Shen (2012), Wang (2012), Huang and Benyoucef (2013, 2015)
Website design	Product centred and catalogue based	User and customer cantered	Wang (2012), Huang and Benyoucef (2015)

Table 2.2: Differences between social and e-commerce

2.8.2 The New E-Economy

The new e-economy has been defined by Hamilton (2002) as a dynamic system of interactions between nations citizens, businesses and government that capitalise upon the online technology to achieve a social or economic good. The common understanding of e-commerce is that of a business which takes place online between, business-to-business, business-to-consumer, consumer-to-consumer and consumer-to-business (Rayport and Jaworski, 2001) and paper free (Lim, 2001).

The difference between e-business and e-commerce has been explained by Lambert (2002), who defined e-business as a full fledge business where technology is

important. On the other hand, Timmers (1999) and Rayport and Jaworski (2001) defined e-commerce as an undertaking of a business electronically or an electronic go-between two or more trading partners. However, Denby (2001) explains that e-commerce and e-business are no more than a business and commerce with an "e" on the front. This has been questioned by Lambert (2002) who says e-commerce shall not be seen differently despite the advancements in it as the advancements are based on old business rules. Based on this Denby (2001) agrees that a business does not have to forget the traditional qualities or working practices because e-commerce only adds on to these. However, it can be increasingly seen that businesses are struggling in operating through traditional methods.

Transformations on e-commerce are fast paced. As a result, organisations are constantly in a race to build new business models which make buying comfortable and a convenient experience. This is in addition to lower prices, integrated offering and customised products; which are hard to imitate on the traditional commerce (Harpin, 2000).

2.8.3 Reasons for Adoption of E-Commerce by SMEs

Whilst e-commerce has been adopted by most organisations these days, but academic literature seems to lack reasoning of such phenomenon. Literature and data can be found regarding Information Communication Technology's (ICT) adoption and the general use of internet but nothing specific about why e-commerce has been adopted by organisations. Chapman et al., (2000) recognises the use of ICT and how it can improve business competitiveness. Dongen et al., (2002) reaffirms the finding that SMEs have not only been adopting, but also testing new e-commerce models

despite their lack of resources. This shows how e-commerce has become vital for survival, not only for large organisations but also for SMEs.

Studies also highlight the fact that most of this early adoption was related to the eagerness of management, and to fulfil the need for better communication. Improvements in communications also meant that most businesses could enter into world markets prior to establishing more important business relationships (Chappell et al., 2002). This model has now completely changed, and businesses not only choose to adopt e-commerce for improvement in communication, but because e-commerce allows a business to instantly reach a wide range of audience. These benefits coupled with the power of social media means businesses now can be international from start.

The adoption of e-commerce by SMEs is not only important for the firm but also for the socio-economic development, in both developing and developed countries (Erumi-Esin and Heeks, 2015). One of the other reasons why organisations adopt e-commerce is because the management associate's online presence with sales volume, profitability and market share (Boohene et al., 2015, 52). These studies highlight the importance of e-commerce adoption not only from a firms' perspective but also from economy's perspective.

Some older studies such as those of Beveren and Thomson (2002) found the reason for e-commerce adoption was branding related. This is certainly true as many organisations push branding through e-commerce and internet channels these days. For e.g. multinational organisations with presence in many parts of the world use e-commerce to communicate with its customers. This is supported by a finding from Myers (2000) who conclude that as a company grows, it becomes difficult for it to

communicate with its customers. With these benefits and reasons for e-commerce adoption, there are many reasons which also act as barriers for e-commerce adoption.

2.8.4 Barriers to E-Commerce Adoption

Earlier studies such as those of Kalakota and Robinson (2001), highlighted that organisations do not adopt latest technological updates because of issues related to management responsibility. However, as time has moved on this has changed, and technology is not only easily adoptable but skills and expertise in this area has also improved. Even then, there are organisations which still face barriers to e-commerce adoption. According to Ndyali (2013), barriers to e-commerce adoption are; internet security, legal and regulatory barriers, and limited use of Internet banking as obstacles, this finding was also confirmed by Kabanda and Brown (2017). Other factor such as interoperability was also found out by Timmers (1999) which acts as a barrier to e-commerce adoption.

Furthermore, as technology has advanced there are various platforms which could be used for e-commerce thereby increasing the complexity of e-commerce services (Bodorick et al., 2002; Dongen et al., 2002). Whilst integration of e-commerce sounds easy and simple, there are complexities involved. Various elements such as the nature, size of business and/or the number of suppliers present in the supply-chain affect the integration of e-commerce. Barriers which exist today deter consumers and organisations from taking full advantage of e-commerce (Valarezo et al., 2018).

In addition to the barriers highlighted above there are other factors which deter e-commerce adoption. Barriers such as internet penetration and equipment are some additional factors which still deter e-commerce use. Barriers are not only from an organisations side, but barriers are also from user's or consumer's side. These barriers

include concerns and perceptions. The barriers found out by various studies include lack of trust in the vendor, lack of familiarity of the vendor, language barriers, non-secure payment links, parcel delivery efficiencies, costs in foreign currency (Gefen, 2000; Gomez-Herrera et al., 2014; Cardona et al., 2015a; and PayPal, 2016). Some other barriers discovered by Chaparro-Pelaez et al., (2016) in their study relate to risk and the perception towards risk.

The risks are divided into two types, one is related to the transmission of personal information (Vijayasarathy, 2004) and payment details (McKnight et al., 2002); while other risk is related to product. The risk related to product is that consumers cannot examine the products before purchase (Choi & Geistfeld, 2004), and this therefore also acts as barrier to e-commerce adoption. Having discussed the adoption and barriers to e-commerce it is also very important to discuss the development of e-commerce, as it is a major topic in this thesis.

2.9 Existing Paradigms of E-Branding

2.9.1 E-Commerce and Interactivity

Initially the aim of internet was to share information but over the years it has evolved from information sharing to every other imaginable virtual activity, including online commerce. Whilst internet continues to grow, several factors of interactions are missing from the e-commerce as compared to face to face interactions (Chadwick, 2001). According to Barreda et al., (2016), one of the drawbacks of the e-commerce is lack of opportunity to physically experience the service or use other senses to perceive the quality of the product. Therefore, according to many authors an effective interactive website design is critical to the success of electronic commerce. Additionally, the functionality, usability, ease-of-navigation and interfaces of the

websites are other vital building blocks to ensure sustainable success (Palla et al., 2013; Constantinides, 2004; Yen *et al*., 2007; Lim *et al*., 2009, Colla and Lapoule, 2011). These findings and literature highlight weaknesses and scope for further development on e-commerce.

The major difference between traditional marketing and online marketing is the *'interactive'* attribute (Liu, 2012; Wang et al., 2013). Furthermore, Dholakia and Zhao (2009) concluded that website interactivity helps meet customer expectations through providing a number of fundamental elements. But Hasley and Gregg (2014) argues that businesses do not understand the *'user-website interaction'* aspect. This study therefore investigates the aspect of *'interactivity'* between user and website. It also investigates how interactivity through multimodalities help or aid the decision-making process.

It has been agreed by Senger *et al*., (2002) and Alotaibi *et al*. (2012) that interactions need to be managed and aided throughout the buying cycle, most importantly in web-environments. Interactions are of two types, face to face and e-dialogue, each have their own distinctions; but e-dialogue involves the transfer of both tactic and explicit knowledge (Dous *et al*., 2005; Garcia-Murillo and Annabi, 2002; Gurgul *et al*., 2002).

According to Yen (2014), Interactive e-commerce websites must have three antecedents in order to have a positive purchase effect on the customer; Information richness, retailer brand and extended offers. These three dimensions of e-commerce are considered to have the strongest impact on purchase decision online (Burt and Davies, 2010; Kim and Kim, 2004, Chu *et al*., 2005; Hume, 2008).

According to Ibrahim et al., (2017), social media is changing how consumers interact and search for information. This is supported by the fact that these days without social media interaction lives are incomplete. Whether it is to understand about a product or to find out more about a travel destination, social media plays a vital and important role. Therefore, it can be said that most of the brand and consumer engagement these days is online on the internet and mostly via social media platforms, where the client journey begins. The engagement on the internet is defined as communication or interaction with consumers (Ibrahim et al., 2017). Once this communication is built, consumers are then welcomed on to organisations interfaces where the rest of purchase process continues. It is vital for these interfaces to be interactive. Using multimodality is one of the ways through which interfaces can be interactive and engaging with consumers.

2.10 Multimodality

According to Rodriguez et al., (2013) multimodals can be defined as *"... the existence of multiple modes of communication, in order to manage meaning construction through the effective integration of a repertory of resources suited to the needs of different users"*. According to Shimojo and Shams (2001), humans rely more on multimodal information as compared to unimodal. Mainly because the multimodal method shows the expressions such as facial expressions of the person speaking which helps in the decision-making process (Porial et al., 2017). The use of multimodal metaphors on the e-commerce has also been recommended by Rigas et al., (2016) to enhance communication and deliver the required information.

Moreover, multimodality is a case where at least two inputs (senses) or outputs (medium/devices) modes (sub-modes) are involved (Pauwels, 2012). Often there is

confusion between two similar yet different concepts of '*multimodality* and *multimedia'*. According to Culache and Obada (2014), the former refers to cultural technologies of representation such as 3D objects, colours, writings, music, layout, still and dynamic images etc; and the latter refers to the cultural technologies currently used for disseminating messages such as World Wide Web, ratio, television etc.

2.10.1 Flow Theory

Making use of multimodality in an effective manner requires comprehensive planning and execution. Flow, as described by positive psychologists is a state of mind which is sometimes experienced by people who are deeply involved in some event, activity, object to such an extent that they are totally immersed in it (Csikszentmihalyi, 1977; Culache and Obada, 2014).

Flow theory can be used to effectively integrate multimodality to manage different sets of signs or modes, such as design, layout, sound and content therefore influencing a users' website experience. The integration of multimodality into e-commerce interfaces will enhance the experience by making it enjoyable, long-lasting and self-rewarding. The use of flow theory has been evident since 1975 in various fields such as education, management, marketing and sports. A study in 1996 by Hoffman and Novak used a flow construct in online environment and concluded that optimal experience or flow can have positive marketing outcomes. These outcomes included increased learning, exploratory behaviour, positive subjective behaviour and increased patronage (Hoffman and Novak, 1996). From these findings it can be assumed that loyalty can be achieved through multimodality online.

2.11 Multimodal Metaphors

As e-commerce advances, and interfaces develop with a rapid pace, various vital subjects are neglected. One of the under-researched areas is the use of multimodal metaphors in e-commerce websites. Websites have recently started to include chat systems, but these systems are completely different to multimodal metaphors. According to Lakoff (1993) *"Multimodal metaphor research derives from a natural convergence between advances in metaphor theory, particularly Conceptual Metaphor Theory (CMT)"*. As the theory advances, multimodality metaphors are becoming increasingly complex and salient (Bateman, 2014; Jewitt, 2009).

One of the significant reasons why multimodal metaphors are important for e-commerce is because of the fact that metaphors help and mediate to perceive an abstract entity in terms of another more concrete one (Skorczynska, 2014). Metaphors can also be explained as specific concepts which are understood by people and are often recognised and remembered. Two sets of component concepts compose metaphors, the target component and the source component. The target component can be defined as the original idea which needs to be transmitted and the source concept is in which a specific target concept is being viewed (often referred to as the borrowed idea).

In any multimodal metaphor target and source domains are expressed exclusively and predominantly in two different modes. One of the most frequent modes according to Skorczynska (2014) is the verbal one. According to Forceville (2009), modes which can be considered can be two or more from the following; written language, verbal sound, static and moving images, music, non-verbal sound and gestures. There is very little evidence of multimodal metaphors being applied or adopted in e-commerce

interfaces. When a multimodal metaphor is applied on e-commerce, a justified decision has to be made regarding the modes being chosen. Mainly because the chosen metaphors will affect the overall meaning. This is because '*meaning expressed through one mode cannot be directly translated by another*' (Skorczynska, 2014).

2.12 Role of Multimodal Metaphors

Multimodal metaphors are highly capable, and literature confirms its superiority over unimodal systems (D'mello and Kory, 2015). In other words, multimodal systems are capable of outperforming unimodal systems. Statistical information from the study of D'mello and Kory (2015) found multimodal systems are consistently (85% of systems) more accurate than their best unimodal counterparts.

2.12.1 Building Trust Through Multimodal Interactive Metaphors

The word *'trust'* has been used on multiple occasions within this study. For any transaction to be successful trust must be built and developed. Various studies (Chen et al., 2004; Hansen, 2013; Mohamed et al., 2012) of online consumer behaviour cite trust as a significant factor leading to a consumer purchase decision. Because trust is such as vast topic and multiple definitions exist it is safe to conclude that there is no consensus amongst authors on the definition of online trust.

One of the more widely used definitions of trust according to Osama and Ahmed (2013) is by Contanza and Lynda (2012) who defined trust as "*the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party"*. Trust is also important because through trust, relationships with consumers are initiated (Kim & Forsythe, 2010). Therefore, it

could be safely concluded that within marketing literature trust is positively related to a consumers' experience with a selling party (Keystone, 2008).

With the help of interactive multimodal metaphors, the process of building trust online can not only be made easier but also expedited. This is due to interaction from multimodals on the e-commerce interface. Once trust has been built with consumers, buying behaviour can be influenced. Previous studies by Chang & Chen (2008), Ganguly et al (2012), Dash & Saji (2007), and Chen & Barnes (2007) have found a significant positive relationship between trust and online purchase behaviour.

2.12.2 Perceived Usefulness of Multimodal Metaphors

One of the early definitions of perceived usefulness is of Davis (1989), who defined perceived usefulness as the degree to which a person believes that a particular system will enhance their job performance. This definition was updated by Chen (2009) who added the context of increased productivity and purchase behaviour influence. The aim of multimodal metaphors on e-commerce will be to persuade consumers or to provide information. Keller (2009) discovered, if multimodal metaphors were used in corporate setting, it would help by increasing persuasiveness in communicating brand values. This however has not been tested in an e-commerce setting.

2.12.3 Perceived Ease of Use of Multimodal Metaphors

According to Davis (1989), perceived ease of use refers to measuring the degree of how using a particular system will be free of effort. In the context of online purchasing, according to Jaturarith (2007) ease of use was regarding how using a particular technology will ease a process. Multimodal metaphors can be used to communicate with consumers, delivering vital information regarding a purchase. Therefore, not only improving the purchase process but also making it easier.

In the context of online purchasing, it can be implied that a consumer believes buying online provides convenience. However, due to growing number of websites and marketplaces through which a consumer can shop, the task of online buying may also seem daunting. The task of purchasing online has become daunting because of the sheer number of choices available. Therefore, the addition of multimodal metaphors on websites will be regarded as convenient, simplifying the purchasing process. Multimodality also helps consumers by reducing efforts. For example, interactive characters will provide answers to questions in an engaging manner as compared to simple frequently asked questions section. Where there is lack of interactivity it may leave the consumer dissatisfied and without answers to some last-minute questions. This could mean an incomplete purchase.

Ease of use according to Broekhuizen & Jager (2003), Salisbury et al., (2001), Swaminathan et al., (1999), Zeithaml et al., (2002) and Monsuwe et al., (2004) can also be considered as the usability or efficiency attribute in the online context. Usability or efficiency meant; ease of navigation, ease of ordering, download speed, ease of search function, overall website design and ease of internet purchasing.

2.12.4 Multimodality and Loyalty

Gaining consumer loyalty has always been important for organisations, whether it be online or offline. According to Senger *et al*., (2002), use of IT with the aid of multimedia improves perception of trust. However, when price differences are minimal consumers tend to buy from online stores which they trust (Strader and Shaw, 1999). Furthermore, when trust develops for a website, customers proactively look for new content on it (Rhea, 2000). Moreover, looking for new content on a website does not effectively translate into a purchase.

There have been no researches carried out about a relation between multimodality and loyalty in an e-commerce environment. Whilst issues and the benefits of multimodality in e-branding remains unclear there have been multiple contradictory findings. Authors have concluded that e-branding will come to an end (Sinha, 2000; Chevron, 2000) but others (McGovern, 2000; Carpenter, 2000), argue that an organisation cannot be successful on the internet without e-branding. Therefore, after looking at the current and previous literature regarding interactive e-branding, this area needs research about successful practises, weaknesses and developments. Will the development of appropriate interactive multimodal branding will lead to brand loyalty through satisfaction, trust, and ease of use? The literature also shows a gap in the area of Artificial Intelligence (AI) where online assistants would interact and would have the ability to deal with customer queries.

Existing literature draws out importance of multimodality to acquire loyalty and create e-branding environment on the internet, but the existing literature does not emphasise on the use of *'interactive'* multimodality, which is a significant area and still under-researched.

2.13 Effectiveness

For organisations to successfully create effective websites, it is important to establish *'contributors'* to website effectiveness. Once the contributors are known, an effective website can be created. Effectiveness for the purposes of this study is about the successful completion of the transaction and the positive impact which multimodals will have on the consumer. Some questions to ask are: How interactive multimodals help for an effective and successful transaction completion? How multimodals convince and persuade consumers to trust and go through with the transaction?

There are very few literatures which actually look into the effectiveness of multimodals when buying online. Therefore, the effectiveness of multimodals in an online commerce context was of interest. Chen (2018) discusses the importance of website usability, in order for the website to be effective, rather than the role of multimodals in making the website effective. Similar studies have been conducted by Fang and Holsapple (2007), Lee and Kozar (2012) and Galleta et al., (2006). It is quite clear from their findings that for a website to be successful, it must be usable and understandable by the user. If websites are not usable and understandable, the effectiveness will also be minimal.

According to a study by Deng and Pool (2010), about effect in interfaces, it was found that visual complexity is multifaceted and can be measured through elements such as the amount of text, number of links and graphics and etc. Regardless of the visual complexity Chen (2018) suggested that a website should be updated regularly. One of the reasons for this could be the need for information, as the need for information changes over time, so does the website. If websites are not updated regularly, it would not only provide outdated information but could also affect user-satisfaction, negatively.

High profile websites during the past decades have had failures according to Plamer (2002). The failures were mainly because of poor usability. Poor usability also results in users turning away to other websites, even if the information quality is rich McKinney (2002). Users will only be able to complete a successful transaction or to interact with websites if a website is usable. Studies by Nielsen (2000), Hwang and Kim (2007), and Venkatesh and Agarwal (2006) concluded that website usability is dependent on its visual complexity. This could be one of the reasons why websites have evolved to such a great extent, in terms of visual presentation. According to Chen (2018), visually

complex websites see a lower level of traffic as compared to websites which are not visually complex.

According to Poria et al., (2017), vocal and facial expressions which are used to express data are more effective along with the textual data, because it provides better cues. An example can be of reading a textual product specification about a certain item on the internet; and going to a store where a customer services representative explaining the same specifications face to face. The more effective method is the latter one because of better interaction, which includes sentiment and also includes facial expressions.

Facial expressions aid consumers in their decision making (Rigas and Hussain, 2016). From the current e-commerce environment, element of effectiveness is missing. As a result, websites do not have the level of interaction which are present in stores or which a person is able provide. It was concluded by Shimojo and Shams (2001), that human beings rely more on multimodal information as compared to unimodal information.

One of the other reasons human beings rely more on multimodal information is because it is able to provide a better understanding of the speakers' intention. Such interactions are currently missing in the existing websites. This means consumers do not go through the phase of assessing seller's intention. Effectiveness on websites with help of auditory and visual mediums will provide more information than they provide alone. This can be exemplified through how human brain uses different sensory inputs to validate events. Through using multimodal interaction, the human brain is able to compensate for any incomplete information which hinders the decision-making process (Poria et al., 2017) as shown in Figure 2.3.

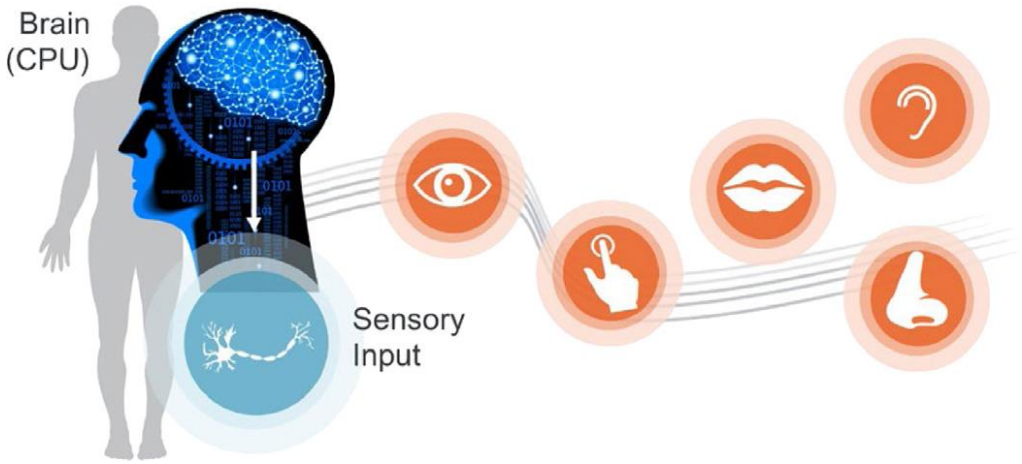


Figure 2.3: Multisensory information for decision making, taken from Poria et al., (2017)

2.14 Efficiency

Efficiency has many meanings, for example it is defined or assessed on how many outputs have been achieved from a particular input (Achabal et al., 1984). For this study, efficiency is about speedy transactions on the e-commerce platform. Moreover, it is also about exploring the role of interactive multimodals and virtual assistants to speed up the transactions.

Secondly, it must be noted that efficiency is a broad terminology and is understood differently by different subject areas. With regards to the e-commerce and this study, efficiency is regarding how quickly a transaction can be completed. The speed of a purchase is dependent on various elements, and not just one. According to Yang et al., (2016), efficiency on the e-commerce can be of two types, financial or website output performance based. Each of these elements have inputs and outputs, the efficiency and performance-based outputs are clearly outlined in Table 2.3.

For the purposes of this study only front end of the interfaces were assessed and analysed. Backend operations or elements such as hardware or servers were not a part of this study and it was assumed that all hardware technology was the latest.

Indicator	Dimension	Name	Definition	Metrics
Website performance outputs	Website importance	Back Links	Any link received by a web node (web page, directory, website, or top level domain) from another web node	Interactive with other sites
	User Engagement	Average time on site	Updated daily, based on last 3 months. Daily time on site per visitor estimates as minutes and seconds	Engagement or users' experience
	User scale	Unique visitors	Users with different IP addresses, counted by the mean in the last 3 months	Website traffics and users' scale

Table 2.3: Indicators for website efficiency evaluation, taken from Yang et al., (2016)

2.15 User-Satisfaction

According to various authors (Valle and Wallendorf 1977, Bolton 1998, Kim and Stoel 2004, Sanchez-Franco 2009, Shiau and Luo 2012), user-satisfaction is an evaluation of the whole process; starting from the buying stage to the consumption experience. It can either be for a good or service and can be measured through time duration. There is a strong link between branding, loyalty and user-satisfaction and this has been mentioned in various studies. Wang et al., (2018) suggests customer satisfaction influences loyalty of a consumer with a company. The first to argue the importance of satisfaction was Swan and Combs (1976) who emphasised that satisfaction is linked with performance and when expectation falls, its leads to dissatisfaction. Another definition of satisfaction was by Poisz and Von Grumbkow (1988), who described it as a discrepancy between observed and desired.

The concept of satisfaction is present from a long time. There are two principal interpretations of satisfaction within the literature – satisfaction through *'process'* and satisfaction through *'outcome'* (Parker and Mathews, 2001). The early concept of satisfaction was defined as a post-purchase evaluation, regarding a specific purchase decision (Oliver, 1980; Churchill and Suprenant, 1992; Bearden and Teel, 1983; Oliver and DeSarbo, 1988). Price also plays an important role in the process of evaluating satisfaction. Prices on internet are transparent, which has led to increased competition and as a result, pricing power has shifted from producers to consumers (Nisar and Prabhakar, 2017). In recent times more communication is directed towards consumers promoting various products and services. The aim of this communication is to convince the consumers to buy. More than 200 senior marketing managers agreed to the customer satisfaction metric and highlighted its importance in the current e-commerce era (Statista, 2015). As user-satisfaction is important, interesting questions have been raised regarding its levels on e-commerce platforms (Nisar and Prabhakar, 2017).

As sales on e-commerce increases, it poses with interesting questions regarding customer satisfaction levels. Various studies by Cao and Li (2015) and Ansari et al., (2008), show systematic differences exist between online and offline buying environments, including consumer satisfaction levels. On one hand, e-commerce provides the opportunity to consumers where they can collect information, collaborate with others and see reviews left by others so to improve the purchasing process (Bamfield, 2013; Brynjolfsson et al., 2009). On the other hand, it may not be able to achieve the desired customer satisfaction levels due to lack of security, human contact, relevant privacy, up-to-date service and poor design of websites (Pauwels et al., 2011; Bamfield, 2013).

The importance of customer satisfaction is such that a business cannot survive or maintain competitiveness without achieving minimum levels of customer satisfaction. According to Chen et al., (2018), loyalty intention can be influenced through customer satisfaction and relationship commitment.

2.15.1 Influencing Satisfaction: Customer Need

If an organisation is able to influence satisfaction, it would be much easier to target customers. However, the secret ingredient to influence satisfaction is unknown. One of the major things to assess is the *'reasoning and understanding'* of why consumers buy a range of products or services from a particular company or brand. One of the elements of satisfaction is fulfilment, as found by (Parker and Mathews, 2001). When a customer has a sense of fulfilment, satisfaction is achieved.

According to Maslow (1943), motivation theory suggests that people have the desire to satisfy their needs. Furthermore, it can also be said that satisfaction is an end-point of the motivational process. Moving further on to the needs of a consumer, it is best described by Solomon (1999), who describes needs as two dimensional, *utilitarian* and *hedonic*. The utilitarian is considered to be the desire to achieve some functional or practical benefit, whereas hedonic is an experiential need which involves emotional responses or fantasies.

Needs of consumers online have changed rapidly. Consumers do not just want to buy items online but also look for information, reviews and seek out conversations with other similar users who have used or are in the process of buying a similar product. As the dimension of customer need changes, e-commerce interfaces should also change and be able to adapt these changes.

2.15.2 Influencing Satisfaction: Customer Value

After understanding consumer needs, another factor and major aspect is to understand customer value. According to Woodruff (1997), customer value is another important contributor to customer satisfaction. What is value? According to a classic definition by Zeithaml (1988) value can be fined as “what I get for what I give”.

A study by Monroe (1990), defined customer value as the ratio between benefits and the sacrifice. This definition and explanation was seconded by Kotler (2000), who suggested customer value (delivered) can be calculated by finding the difference between total value and total customer cost. Total customer value can be defined as the benefits or range of benefits which a customer expects when buying a product or service. On the other hand, customer cost is a cost which the customer will expect to incur in evaluating, using and obtaining a product.

These days one of the major costs which a customer evaluates is the *‘cost of time’* in not only ordering a product but also getting the product from the retailer. According to Jun et al., (2004), there is a significant relation between overall service quality perception and satisfaction. Service quality in this study refers to convenience, in terms of time. Another study regarding value by Heinonen et al., (2019), suggest value can also be created through interactions. One of the major elements missing in today’s e-commerce interface is the interaction between firm and customer. A study by Heinonen et al., (2019) suggest value is created solely within the service interaction.

2.15.3 Influencing Satisfaction: Customer Cost

The levels of satisfaction and dissatisfaction faced by a customer result from service quality encountered and the service quality which was expected (Oliver, 1980). When purchasing online, apart from the actual cost of the product, a consumer also assesses

and evaluates the cost in terms of time, convenience and trust. One of the significant factors which organisations and e-tailers need to be aware of is *buyer sensitivity* to a loss compared to gain (Monroe, 1990). Where a service or product leaves buyer with a dissatisfaction, the perceived loss was higher than the value. This could not only lead to negative reviews but also service failures. Therefore, e-commerce interfaces and service must be designed in a way that consumers are never in a situation where loss outweighs gains of purchasing online.

Reviewing the literature regarding customer cost, there is little evidence of studies carried out which assess customer satisfaction in terms of customer cost. Compared to the need and value, cost seems to be a neglected area. Most literature discusses perceived cost; and discusses it from a perspective of monetary terms (Anderson et al., 1993). A study for example by Lacobucci et al., (1994), analyses customer evaluation from the perspective of what they got for what they paid. When a consumer makes a purchase online, organisations must be aware that consumer most certainly use reference prices, since prices are now transparent and can easily be compared. The term *reference pricing* means that a consumer has a low and high price level for a given product.

For the same product a consumer may be willing to pay a higher price if there are value added aspects involved. The best example could be of electronic items sold by John Lewis's, which come with an additional two years' warranty in addition to the manufacturer's warranty. This added value is perceived as an important criterion in the decision making and a consumer perceives the extra two-year warranty to be worth the extra price. Scenarios such as these are applicable when consumers do not choose to pay the lowest available price. Other costs outlined by Kotler (2000) are time, energy and psychic costs.

2.16 Online Shopping Assistants

It is no secret that current e-commerce demand requires for better communication online. With lack of human presence in the online environment, and the cost of humans to interact online with consumers unfeasible; a feasible solution is required. The solution to this issue of dealing with millions and billions of e-commerce and internet users was then developed in the form of VSA.

During last couple of years, VSA in the form of Google Home, Apple's Siri, Amazon's Alexa and others are becoming house-hold names (Chattaraman, 2018). The reason why there is such a growing demand for such devices remains unknown. However, it will be safe to assume, that such devices are live and provide instant answers to consumers queries. According to a study by Gartner, (2016) global sales of Virtual Personal Assistant (VPA) devices will reach to $2.1 billion by 2020. This number and the amount of sales are significant given the fact that this is a new technology which has not been widely adopted yet.

Even though this technology is not widely adopted but it has slowly started to take over. The same study by Gartner (2016) also predicts that 3.3% of the households will have adopted the VPA for their homes by 2020. One of the reasons recognised by Chattaraman (2018) is the ability of these devices to understand voice-based requests and communicate using natural language to achieve a wide variety of tasks. Currently, VPA devices according to Chattaraman (2018) communicate in natural language and accomplish tasks such as reading the news, getting sports information, reading weather forecast and ordering products from online stores.

There is a significant gap in this area because technology is used in a limited manner, as it is only trained to *follow* the commands. However, in case where digital assistants

will be deployed as shopping assistants, a totally opposite approach will have to adopted where digital assistant will enhance the customer buying experience. This will be done through helping consumers with day to day queries, which are currently being handled by e-mails, social media and other communication channels. Whilst the underlying objective of VPA and digital assistants is to facilitate daily tasks of users, there are various unanswered questions; for example, how can a machine communicate with a human in the most *'naturalistic way"*?

For example, when asking for the weather, should the digital assistant also add a personal touch and say, *'stay warm"*? Or when buying something online it could say *'great choice"*? This way of communication is known as the social-oriented way of communication, where style of conversation is conversational. Compared with task-oriented communication style, the style of communication is formal. In an online shopping environment this could be adapted according to the type or service. For example, purchasing services could be more formal styled, whereas purchasing products such as clothes could be more social-oriented.

2.17 Affective Computing, Multimodality and E-Commerce

One of the interesting area relevant to this study is *'affective computing'*. According to Poria et al., (2017), affective computing is an emerging field which aims to enable systems to understand, feel, infer, interpret and recognize human emotions. This new concept of affective computing goes beyond typical computing where a consumer's image is just understood through analysing consumer data. The affective computing will equip current systems to understand consumers more intimately. Once consumers are known more intimately, multimodality could be used more effectively.

Through understanding consumer emotions organisations will be in a better position to not only target consumers but also to produce and offer what will be liked. Furthermore, emotions and sentiments play a crucial role in everyday lives and influence how consumers behave. Poria et al., (2017) concluded, emotions and sentiments aid decision-making, learning, communication and situation awareness. To understand consumers' better, organisations are going above and beyond in enhancing their systems. With so many platforms and places where consumers interact, organisations do not miss any opportunity to collect consumer data.

As a result, emotion and sentiment analysis have also become a new trend in social media, helping other users to understand the different opinions expressed on different platforms (Balasz and Velasquez, 2016; Sun et al., 2017). According to Cambria et al., (2014), with the advancement of technology it has now become easier than ever to share information through social media, more of which is done through sharing videos rather than texts. According to YouTube (2018), number of users which use the platform are in excess of one billion, which is equivalent to almost one-third of the internet. This is just one platform, other platforms very popular with consumers are Facebook and Instagram. If combined, it could provide significant data regarding anything imaginable, also known as Big Data.

As sheer number of users are using these platforms, it is inevitable that there will be a great amount of interaction. Videos are constantly uploaded on social media platforms comparing and contrasting with like for like products Poria et al., (2017). It is evident that the aim of these videos is not only to educate and inform the consumer but also to help consumers. Videos can help consumer in making an informed decision or to aid their buying process. The reason why videos are so successful these days as compared to other forms of reviews is because through a video the audience can

see and detect the emotions and sentiments from the opinions (multimodality). According to Rosas et al., (2013), texts only convey words and phrases related to each other which are not sufficient for extracting associated effective content. However, on the other hand according to Poria et al., (2017) videos are an example which provide a better multimodal environment in terms of *'vocal and visual'* modality.

2.18 Concluding Critical Summary

By looking, understanding and analysing the e-commerce platform it is without a doubt that e-branding, e-commerce are the marketing techniques which are of great importance. When e-commerce and e-branding are discussed there are many aspects and views which are also taken into consideration. Such as how e-branding works and how is e-branding carried out on the internet. When an organisation brands itself on the internet, the role of loyalty also comes into play as organisation wants customers to go through re-purchase process. Ultimately the question arises is; how is it done? What methods are successful and why?

Looking from the start when the internet came into being, the sole reason of the internet was to provide ease of communication and to connect the world in an efficient manner. It was not known that internet would become one of the most powerful technologies on the planet. Today, internet has not only become a means of communication, but it has become a database of all the information which one expects to find.

Whether one wants to shop, communicate, socialise, date, or just want to pass time, internet has something for everyone. Using internet to seek for information has become such a norm that applications such as Google are working to take things to

next level where people will be able to talk to a virtual person. These days' children, teenagers and adults' first point of information is the internet before seeking for other sources of information such as friends or family. Social media plays an important role too.

It is certain that this unknown phenomenon and frenzy was not known before. It was only known after the internet was formed and within the past decade. The internet today has become a friend, marketplace, bank, guide, navigation tool, dictionary, encyclopaedia etc. Capabilities of the internet are limitless, unnoticed by large organisations and corporations which are always looking for opportunities to reach out to consumers. Online shops were created allowing consumers to buy online, as they could buy from physical stores. Online purchasing came with added convenience, goods are delivered to a consumers' doorstep. On a contrary, obvious drawbacks of buying online were longer returns process and lost deliveries as an example.

Apart from obvious drawbacks, purchasing online had various limitations. Such as, interaction between organisations and consumers was non-existent. To address this, organisations will have to integrate audio and visual metaphors, known as the multimodal metaphors. One of the ways through which these metaphors could be introduced is through interactive characters. Although multimodals are accepted widely as a way to interact with customers online, but the role of multimodality in e-branding is under researched. This gap has led to find or explore how e-branding can take place through multimodality. The literature also lacks in defining effectiveness, efficiency and user-satisfaction of multimodals on e-commerce.

Chapter 3: Methodology and Conceptual Framework

3.1 Introduction

This Chapter explains the overall methodology applied in this study. Justifications for each chosen method has also been discussed in this Chapter. Furthermore, the Chapter also outlines any other possible methods which could have been adopted for this study. This Chapter also includes details of sampling techniques, pilot studies, error in the research surveys, ethical considerations and lastly the conceptual framework which was developed as a contribution of this research.

3.2 Conceptual Framework

From the literature review and first survey findings in the next Chapter, it was evident that consumers on the e-commerce are not satisfied with the current interfaces. Furthermore, from the findings in the first survey it was also evident that there is a lack of understanding of e-branding on e-commerce. This lack of understanding therefore affected e-loyalty. Based on these findings and the lack of study in this area discovered during the literature review, conceptual framework below was created.

The conceptual framework in Figure 3.4 conceptualises that effectiveness, efficiency, and user-satisfaction lead to e-branding which ultimately aids e-loyalty. To test the validity of the conceptual framework, links between each of the components of framework were tested separately. For example, link between effectiveness and e-branding, efficiency and e-branding and user-satisfaction and e-branding was tested independently. The links between the sub-components were also tested with their

main components. Once these had been assessed, link between e-branding and e-loyalty was tested. There were four main hypotheses and 11 sub-hypotheses created from the framework as a result (total 15 hypotheses).

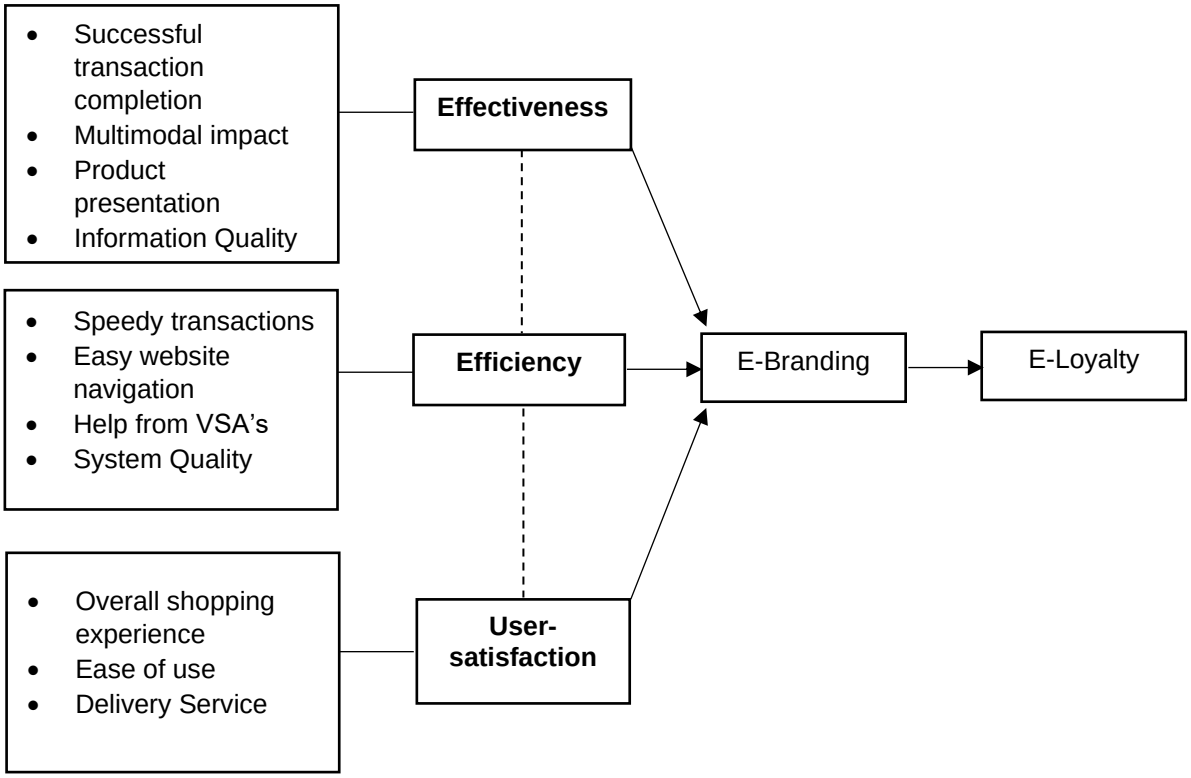


Figure 3.4: Conceptual Framework

3.3 Hypotheses

As the framework includes links between different variables, the links were tested through statistical testing. The most effective and efficient method to test the link between two variables is hypothesis testing. Based on how the framework was developed, following hypotheses were devised for testing:

H1: Effectiveness on the e-commerce leads to e-branding (Q29).

- H1a: Successful completion of a transaction leads to effectiveness on the e-commerce (Q25).
- H1b: Multimodality on the e-commerce has a positive effect on the effectiveness (Q37).
- H1c: Product presentation leads to effectiveness on the e-commerce (Q13).

- H1d: Information Quality influences effectiveness of the e-commerce website (Q21).

H2: Efficiency on the e-commerce leads to e-branding (Q30).

- H2a: Speedy transaction is a result of e-commerce efficiency (Q33).
- H2b: Easy navigation of the e-commerce pages' lead to efficiency on the e-commerce (Q24).
- H2c: Real time assistance from VSAs will lead to efficiencies on the e-commerce (Q35).
- H2d: System Quality improves the overall efficiency on the e-commerce platform (Q26).

H3: User-Satisfaction on the e-commerce leads to e-branding (Q31).

- H3a: Overall shopping experience leads to positive user-satisfaction on the e-commerce (Q23).
- H3b: Ease of use on the e-commerce leads to user-satisfaction (Q12).
- H3c: An efficient Delivery Service leads to User-Satisfaction (Q22).

H4: E-branding on the e-commerce leads to e-loyalty (Q36).

3.4 Methodology Overview

This research adopted Quantitative methods of data collection so that a deductive approach to relation between theory and research could be explored. This method works with the norms of natural scientific models and positivism (Bryman, 2012). Quantitative methods were used for both stages of the study. This allowed the results to be compared and contrasted. By employing quantitative method of data collection, results could also be validated by cross-examination to see if any discrepancies or

similarities are present. Research of a particular subject or topic allows a further understanding of what is inadequately understood (Bryman and Bell, 2015).

3.5 Unit of Analysis

The unit of analysis were individuals, who were familiar with e-commerce and purchasing online. Consumers were a part of the quantitative data collection, which was conducted through a self-completion questionnaire. Respondent samples from both stages were analysed to assess opinions about the effectiveness of multimodal e-branding techniques. Specifically, in stage two, consumers were shown updated interfaces to which their reactions were noted. The data was collected at the University of West London for both stages of the study.

Consumers were the main focus of study, the aim was to acquire personal perception about multimodal metaphors, such as audio and visual aids when purchasing online. The data including that of perceptions was collected and analysed to observe whether multimodals have a positive or negative effect on e-branding.

3.5.1 Sample

For the first survey, 50 respondents were selected through convenience sampling. Through this method of sample selection, the element of biasness was eliminated. This was deemed to be a appropriate number of respondents for the first stage, which aimed to gather perceptions about current paradigms. This also enabled to generalise the findings from the sample to the population from which it was selected from (Bryman, 2012).

For the second survey, which included the illustrations, sample of 100 respondents were selected through the same method of convenience sampling. The selection of same method for sample selection ensured consistency between the two surveys.

Moreover, the methodology was created in such a way that it could be replicated for future studies. Pilot study was carried out before the main surveys to ensure that the whole research instrument is robust and is capable of delivering results. At this stage any deficiencies identified were incorporated in the final questionnaire.

3.6 Three-Stage Empirical Investigation

The empirical investigation sample consisted of 100 respondents, also known as an experimental group by Bryman and Bell (2013). Respondents selected for the study were through a convenience sampling, so that the difference between two groups are attributable to manipulation of the independent variable (Bryman and Bell, 2013). The thesis was carried out in a three-stage investigative process which involved the initial survey stage, empirical investigation stage and the validation stage as shown in Figure 3.5. Each stage had its own importance, contribution and built up upon previous stage. If any of the stages were missing or not carried out, the whole process could not have been completed or provided sound results.

1. **Stage 1: Data Collection.** Data at this stage was collected from 50 respondents in a survey style data collection. This stage was where the respondents' attitude and viewpoints were collected to understand whether the current methods of e-branding are effective and efficient? This stage was also used to understand current weaknesses of the e-commerce interfaces. The data was collected through questionnaires first and the responses were

analysed to see the current preferences and current understanding of multimodals. This survey also informed of respondent activity on the internet.

2. **Stage 2: Empirical Exposure.** at this stage, respondents were exposed to the empirical aspect of the study where the effectiveness, efficiency, satisfaction was analysed, and hypotheses tested. It was assessed whether effectiveness, efficiency and user-satisfaction led to e-branding. Lastly, links between e-branding and e-loyalty were assessed through the data collected. Respondents were shown various illustrations of well-known websites which were updated to include findings from the first survey. The illustrations included variations in how the information was presented, how interaction could be improved on websites and how the overall layout of the website could be improved to lead to efficiency.

   Respondents were then given a post-illustration survey questionnaire to complete, based on their observations of the updated interfaces. The interfaces used at this stage were those which are commonly used such as from the retail and the grocery industries. The aim of using familiar interfaces was to not confuse respondents. If new interfaces were designed, respondents would have found it difficult to understand the interfaces and the updates in them. Towards the end of analysis, the formulated framework in Stage 1 was tested, and the refined framework was proposed.

3. **Stage 3: Validation and Guidelines.** at this stage conceptual framework created during initial stages of the study was validated through hypothetical testing. Once the recommended framework was validated, recommended e-commerce guidelines were outlined. Moreover, at this stage, the Suitability, Feasibility, Acceptability including the Applicability of the new proposed

guidelines and framework were assessed. As this was the last stage it also included future recommendations and areas of study including limitations of this study, or how this study could have been carried out differently.

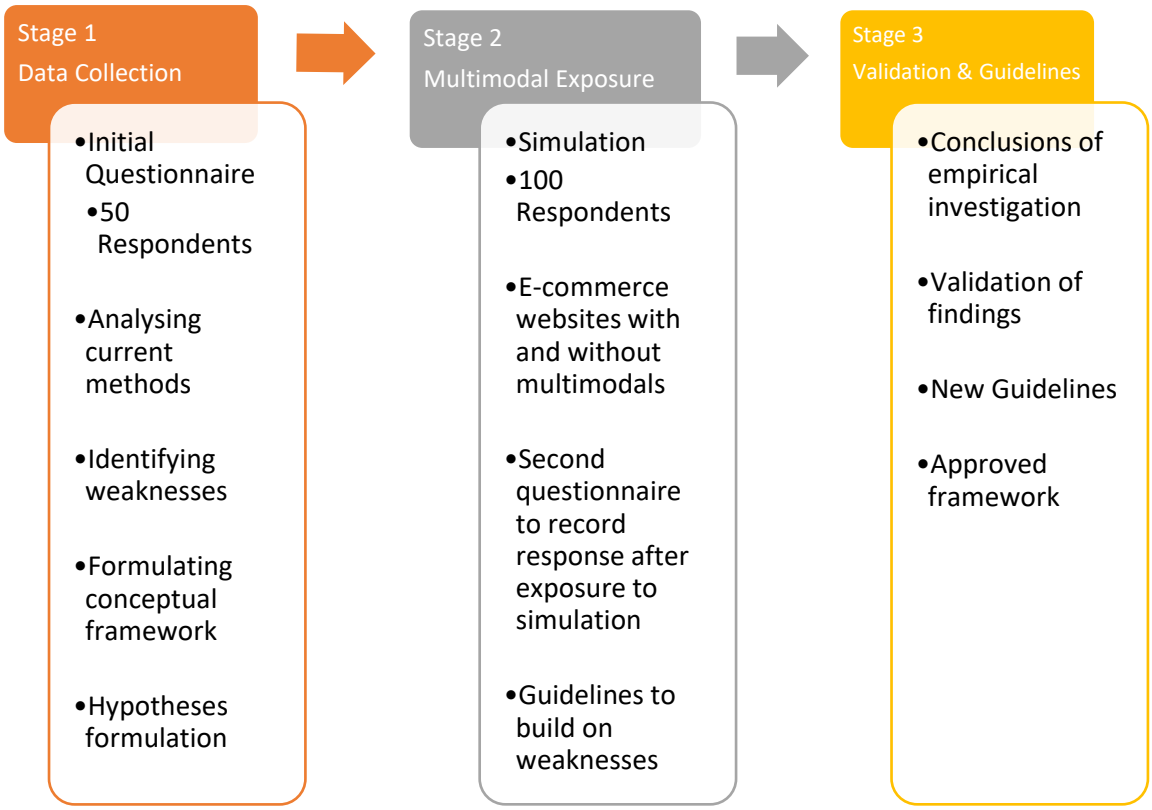


Figure 3.5: Empirical Investigation Process

3.7 Pilot Study

Pilot study is an important stage in any research and carried out prior to the main data collection and provides essential feedback. As this study, involved two surveys including an illustration of updated e-commerce interfaces, there were two pilot studies carried out. Main aim of the pilot study was to learn about any limitations of the questionnaire and the selected e-commerce platforms at this stage. The pilot study helped in understanding flaws which would otherwise be unknown.

For first survey, after the questionnaire was finalised it was piloted with 10 respondents, which included peers. Feedback and comments received were considered and updates were made accordingly. One of the benefits of carrying out pilot study with peers is to gather specific and relevant feedback related to the topic. For the second survey, which included illustrations of the updated interfaces, 20 respondents were requested to participate in the pilot study. Feedback was recorded and updates were made to ensure the survey was robust and captured the required information.

3.8 Errors in Research Survey

Although the research was carried out with utmost care and all measures were taken to minimise any deficiencies, including pilot study. The chance of error still exists in research and the author was aware of such errors. There are four types of errors which are present in researches (Bryman and Bell, 2011).

Firstly, there is a chance of error in sampling, which was eliminated by carrying out the research through a random convenience sample. Meaning, there was no criteria to select respondents who would answer the questionnaire. Secondly, there is a chance of sampling-related error which means that a wrong sample has been selected and will result in non-response and inaccurate sampling frame. Nothing of this sort was observed during the data collection. This was also tested during the pilot testing phase.

Thirdly, an error can also be caused through a wrong data collection method and problems with wording of the questionnaire or the administration of research. To reduce the effect of this type of error, the data collection was carried out through electronic method. Collecting data through electronic methods reduced the chance of

error to less than 1%. Pilot study carried out prior to the administration of main questionnaire helped update any improper words or replace questions which were not directly related to this study.

Last but not the least, data processing error is one of the type of errors which has a very high chance of occurrence. Export method was used to transfer data to SPSS which meant values had no manual intervention and the data was transferred automatically, thereby eliminating data processing error chances. The method of collecting data electronically is a much safer method and increasingly becoming popular to collect data. This method of data collection coupled with other considerations eliminated the chances of errors in research survey.

3.9 Ethical Considerations

In addition to all other considerations ethical considerations was also at the heart of this study. It is ultimately the responsibility of any researcher to ensure that none of the respondents are affected in any way as a result of the study. For the purposes of this study, data storage, confidentiality, including anonymity were the three main ethical aspects which were relevant. Anonymity included the anonymity of any business interfaces which were used at any stage of the study. As interfaces of businesses were used and enhanced, all signs which would identify any brand or organisation were removed, without affecting any other attribute.

The first and foremost issue was of confidentiality and anonymity of the respondents. The data collection carried out was anonymous and respondents had the option to opt out of the participation anytime during the survey. If respondents opted out mid-way during the survey, the responses would not be saved. Collected data was kept at a

safe location until the data was transferred into a relevant software for analysis. Transferring into a soft format meant that the transfer of the data into numbers so that it could be analysed through IBM Statistical Package for the Social Sciences (SPSS). Once the data was transferred into a soft copy format, it was kept in an external storage device which was password protected and encrypted.

3.10 Summary of Planned Investigation

This Chapter has outlined the stages which will be followed in this study. Starting from exploring the existing paradigms, which will also highlight the weaknesses, the study will move on to the next Chapter. At this stage, hypotheses will be tested after weaknesses identified in the previous stage are applied to the current interfaces. Data collection will be quantitative, across the study to ensure reliability, validity and stability of the study. Other methods of data collection could also have been adopted for this study however it would have made the study complex and would have yielded varying results. Furthermore, deductive approach planned for this study will help to link theory and framework.

Once hypotheses have been tested, answers will be used to either validate or reject the proposed framework in Section 3.9. After validation or rejection of the framework, guidelines will be provided in the last Chapter of this thesis. The guidelines will also be the conclusion and contribution of this study, including future study recommendations.

Chapter 4: Stage 1 – Exploring Existing Paradigms of E-Commerce

4.1 Introduction

This study was designed as a three staged empirical investigation. First stage of the investigation included the vital step of understanding the current e-commerce environment. This stage was a vital step to reach to the experiment phase of the study and therefore it was important to gather existing impressions. Through the information acquired from respondents, current deficiencies of the e-commerce platform were identified. Complexities are involved within the literature of e-commerce, e-branding and e-loyalty, but the only relevant factors will be questioned and tested within this survey.

The Chapter is divided into various different sections, starting with the aims and objectives, this Chapter analyses data and provides meaningful insights regarding current e-commerce paradigms. The approach of having separate aims and objectives for each Chapter is an effective method to stay focused. Once aims and objectives have been outlined, the survey design and methodology for this survey is explained. The explanation of survey includes the justification of adopted methodology. After survey design, the questionnaire design and choice of questions have been explained. Data analysis and discussion has been carried out after methodology section. After discussion, the conclusion to the Chapter is outlined.

4.2 Aims

The aim of this Chapter is to understand the current view point of respondents regarding e-commerce interfaces; with regards to effectiveness, efficiency and user-satisfaction. This Chapter and survey findings will act as a feeder for the second phase of this study. The second aim of the Chapter is to devise hypotheses and conceptual framework through the findings of survey carried out in this Chapter. The creation of a framework and hypotheses will also address a known gap in literature. Therefore, this Chapter will not only identify but will also fill this gap with an empirically supported answer.

4.3 Objectives

This Chapter is a setting stone for this study. Therefore, it is important to achieve the objectives of this Chapter. Achieving these objectives are important as these objectives will define how the study progresses forward. This Chapter will aim to address two main research objectives of this study, outlined in Section 1.5. Research Objective 1 and 4, which are about identifying existing paradigms on e-commerce and constructing an e-branding conceptual framework which exceeds the existing benchmark. As previously stated in Section 1.5, the research objectives are:

RO1. Identify and critically assess existing paradigms of e-branding on the e-commerce and identify current weaknesses.

The existing paradigms of e-branding will be critically assessed and evaluated for their importance and relevance in the modern-day e-commerce interfaces. Existing paradigms refers to the current practises of interaction on e-commerce websites. By assessing the current practices, weaknesses will also be identified.

RO4. Developing a conceptual framework aiding e-loyalty through e-branding. Based on the gaps in literature and weaknesses identified in the current interfaces a conceptual framework will be developed with a view that by using the proposed framework, e-loyalty will be aided.

4.4 Survey Design and Methodology

The design of methodology for any study is an important pillar. According to Bryman and Bell (2011), the methodology depicts how data will be collected. To conduct a survey in this Chapter various methodologies have been assessed, before a final selection was made. The final selection was to adopt a questionnaire-based approach. A detailed thought process was applied to construct this survey, including selection of the methodology. An incorrect methodology would have led to incorrect results and analysis. The implications of incorrect results and analysis could have been drastic for this study.

Two relevant epistemological approaches were considered for this survey, positivistic and interpretivist. Interpretivism denotes that people and their institutions are different from natural sciences and shall not be mixed. The study of social sciences therefore requires another study which is different from social sciences and reflects the distinctiveness of humans as against natural order. Further, Wright (1971) explains that this clash is between positivism and hermeneutics.

On the other hand, this stage has applied principles of positivism because it is the explanation of laws which can be assessed by creating hypotheses and testing them. Created hypotheses will be tested through statistical models in the validation stage of the study. If hypotheses are tested positive, the explanation of laws will be agreed

upon. However, if hypotheses result in negative, then a further research can be recommended.

After carefully analysing both epistemological considerations, best mode for this survey will be positivism because it generates the hypotheses and tests the laws and frameworks. Using the positivistic approach will help create hypotheses and frameworks therefore also achieving the research objectives.

4.4.1 Data Collection

For the data collection method to be employed by this survey, there were two obvious choices, qualitative and quantitative data collection. The nature of quantitative research is that it is designed around numbers. This method relies on the collection of data in numbers and creates a relation between these numbers and the theory (Bryman and Bell, 2011). For the purposes of this survey, target respondents were consumers who purchase online. Therefore, quantitative method was the best approach, as views from many people of different age groups could be collected and analysed in numerical form.

Qualitative method on the other hand could also have been employed where respondents could have been interviewed or focus groups could have been carried out. However, this method was not deemed suitable because of various reasons. Firstly, the aim of this survey was to understand the existing paradigms of e-commerce. This included identifying the weaknesses and strengths of it therefore collection data through interviews would have limited the number of respondents which could have been approached for answers. Where the number of respondents would have been limited the data quality could also have been reduced and limited. Secondly, whilst the qualitative method would have provided more detailed

information, it would also have required a lot of time to not only analyse but also to assess and interpret the responses.

Other factors which were relevant and had been taken into account were the facts that quantitative methods are used for studies which are very structured, as compared to qualitative where the studies are not structured. The aims, objectives and questions of this study are very clearly structured and therefore it would have been a misfit if qualitative method was used for this survey. Quantitative method also proves to be beneficial because it is analysed using statistical software such as SPSS, and when the answers to questions are unknown. Whereas in a qualitative survey style, the researcher has the expectation of the answer and therefore the purpose of the data collection is to prove that answer (AIU, 2012).

For this study and survey the answers were unknown, the only known aspect is the problem or the gap in the literature which will be filled with the outcomes of this study. As the aim of this survey is to help create hypotheses and a conceptual framework it was best to deploy the quantitative method of data collection. Furthermore, this study is for academic purposes therefore this is the most efficient method. However, if this study was for other purposes such as business or consultancy, qualitative methods could have been used.

4.4.2 Sampling

Sampling is the name given to a method which is used to select the respondents. Convenience sampling was used from the various sampling methods available. For example, if any type of random sampling was used, it would have been impossible to include an individual from every unit of the population. Therefore, reason for using

convenience sampling method was its simplicity, efficiency and it allowed anyone to participate.

Convenience sampling was employed for the survey because it increased the number of respondents who could be approached for the survey. Because of the convenience sampling anyone could be approached irrespective of their traits. To summarise, this method was adopted because it allowed the researcher to obtain data and trends without the complications of a random sample method. However, one of the most significant drawbacks of the convenience sampling is that the data could not be generalised, and sample is not representative of entire population. For this survey 50 valid responses were selected. There were a total of 60 respondents of which 10 responses were invalid. The invalid responses did not become a part of analysis.

4.4.3 Questionnaire Design

The survey was designed to follow a quantitative data collection method. Within quantitative method of data collection, the most famous form of data collection method is through a questionnaire. According to Grazino and Raulin (2004), questionnaire is one of the most famous forms of data collection methods in the social sciences. The questionnaire may seem like a very simple because a set of questions are posed which the respondent has to answer, but it provides a lot of answers in the background. According to Grazino and Raulin (2004), detailed planning is necessary to create and make the questionnaire successful. Given the various formats of a questionnaire, a self-completion style questionnaire was created for this survey.

A lot of detail and planning went into the creation of the questionnaire. One of the core concepts in creating the questionnaire was the aim of this survey; which was to gather the viewpoint of the consumers regarding current paradigms on the e-commerce.

Furthermore, the aim of the questionnaire was to understand how these problems could be solved through providing some pre-conceptualised answers, such as the use of VSA's.

The questionnaire was designed in a format, or it can also be said that it was designed in a structure. The first part of the questionnaire focused on collecting 'factual' information. This section of factual information collected demographic information of the respondents. Second stage of the questionnaire obtained 'content' information. The reason to collect content information was because it allowed the researcher to understand the knowledge and attitudes of respondents towards this subject and topic (Bryman and Bell, 2011). The reason why both of this information were vital to collect was because it allowed the researcher to identify potential relationships between variables and the demographs (Milbrath et al., 1991).

There were a total of 42 questions in the questionnaire, in which various types and styles of questions were asked. Likert scale, vertical style, yes or no type questions were spread across the questionnaire. All questions were compulsory to answer, however there were some questions which were not filled by respondents and those responses were classed as invalid and were not used as a part of the analysis.

4.4.3.1 Demographic Information

The first part of the questionnaire was regarding demographs, in which a total of nine questions collected this information; to create a profile of the respondents. Questions ranged from gender to age to the qualification and the number of hours used on the internet. This information helped to understand how proficient respondents were on the internet, as proficiency on the internet also links with how well a respondent is able to shop online and is aware of e-branding on the e-commerce. If respondents were

not able to understand e-commerce and e-branding, it is likely that they would not be able to understand the technology which is applied on e-commerce interfaces.

4.4.3.2 Online Purchase Behaviour

The second part of the questionnaire collected information pertaining to online buying behaviour. This information will further add on to the profile of the respondent. For the survey to be valid it is also important that respondents have shopped online at least once, as someone who has not shopped online will not be a valid respondent and will also not be aware of the online shopping environment. Within this section a total of 13 questions were asked from respondents which mainly aimed to understand how consumers shop online. For example, what device was used to shop online, the last time internet was used to shop online, category of goods bought online during last shopping, whether social media played a role in online purchase, how often social media influenced online purchases, and what were the most important factors to shop online.

This section of the questionnaire also collected information regarding navigational aspects of the e-commerce, such as how easy current websites were to navigate and whether the current presentation of products was clear. There was one open ended question within this section asking respondents to describe the word interactivity in a few words or sentences. This open-ended question would not only allow the respondents to explain what they understand by the word interactivity, but it will also show how aware respondents are regarding interactivity on the internet. One of the aims of asking this question was to ascertain if respondents understood the term interactivity. The next question was a continuation of the previous one, which asked how respondents rate interactivity on the e-commerce. These questions will help

understand the existing paradigms of e-commerce and would help build on the weaknesses.

4.4.3.3 Effectiveness, Efficiency and User-Satisfaction

As one of the major themes of the study, it was imperative to include questions which would help understand current effectiveness, efficiency and user-satisfaction levels on e-commerce. This section of the questionnaire included eight questions. The aim was to understand how accurate, fast, reliable, and secure current e-commerce platforms were, according to respondents. Effectiveness in this study relates to how a product presentation created an urge to buy. Therefore, the same question was posed in a yes or no style question. One of the major stages of buying online is paying for the purchases, some retailers are well-known for slow check out processes and some are known for swift checkout options. Respondents were asked about the average current checkout times and were given five options with timings to choose from.

When purchasing online, there are times when transactions get cancelled due to various reasons and this directly affects user-satisfaction. A question was asked to record if respondents faced such situations and if transactions were cancelled because of issues on the e-commerce website. Richness of information, speed of websites and overall buying experience were other questions which were asked in this section. Last question was a random question which allowed respondents to select multiple options and regarding the thoughts which go in respondents' minds before buying online. Some of the options in this question were delivery times, risk of fraud, security, getting wrong items etc.

4.4.3.4 E-Branding

Branding has a direct connection with loyalty. Therefore, one of the questions this study will answer is whether e-branding affects and aids e-loyalty on e-commerce. This section of the questionnaire acquired information regarding e-branding and consisted of only six basic questions. The questions captured knowledge regarding e-branding which respondents possess. A unique perspective which is being explored in this study is, how multimodal affects e-branding? Therefore, questions were asked regarding multimodal branding. As this is a new term, which is not used very often, respondents were asked if they are aware of this term. Respondents were also asked if they encountered multimodal branding on the e-commerce.

To further understand the knowledge of respondents in this area and to also construct a clearer picture, respondents were asked if they have ever come across interactive characters on e-commerce and whether interactive characters will help in a re-purchase decision. Moreover, respondents were also asked if an interactive e-commerce website will help remember an online webpage or a brand. This was one of the most important questions as it would help define the framework.

4.4.3.5 Intelligent Information Seeking

In the last part of the questionnaire, questions regarding how easy or difficult it was to search for information on the e-commerce websites was asked. Information regarding how VSAs could help consumers in buying online was also obtained. Six questions were created for this section, which included one open ended question. Respondents were questioned if they refer to 'Frequently Asked Questions' on e-commerce websites and whether they have come across VSA's. This section concluded by

asking if respondents were comfortable in being assisted by VSAs online. The final questionnaire is included in Appendix A.

4.4.4 Pilot Study

Once the questionnaire was created, a pilot study was carried out. The pilot test at the initial stage highlights any errors within the questionnaire, which can be rectified at this stage rather than at a later stage. Apart from the mistakes in the questionnaire, responses from the pilot study also give an indication of what to expect from final results, these could also be considered as the preliminary results. As Bryman and Bell (2011) explains the aim of pilot study is to ensure that the research instrument operates well as a whole.

For the purposes of pilot study, 10 respondents were selected from University of West London. Respondents completed the questionnaire and provided feedback, which was considered. As a result, some questions were re-arranged to enhance the overall impact of the questionnaire. Once the answers were analysed using SPSS, correlations between variables were tested and the answers received were different from each other therefore forming a valid variable to test, as per Bryman and Bell (2011).

4.5 Data Analysis

To analyse collected data, one of the various techniques could be used. There is a misconception that any data analysis technique could be applied to any data (Bryman and Bell, 2011). Furthermore, as the number of respondents and data increases the smaller number of techniques could be applied to analyse the available data. To

analyse the data collected, descriptive statistical analysis will be used. This type of data analysis includes univariate, multivariate and bivariate analyses.

Each type of analysis has its own benefit over the other. Between the three data analysis methods, the most appropriate analysis will be used for each question. Where needed, crosstabs will also be used to further disseminate data and get a detailed understanding of it.

4.5.1 Proficiency on the Internet

It was important to understand respondent profile, Figure 4.6 shows respondent profiles divided by gender. The data was cross-tabulated by gender to provide a better understanding. It was observed that the number of both the genders were equal at 50%. The number of male and female participants in age group 18-24 was the highest at 26.70% and 20% respectively. Most of the participants were single, amounting to 61.70% of the sample. Most of the respondents were educated to a bachelor's degree (45%) or having a master's degree (18.30).

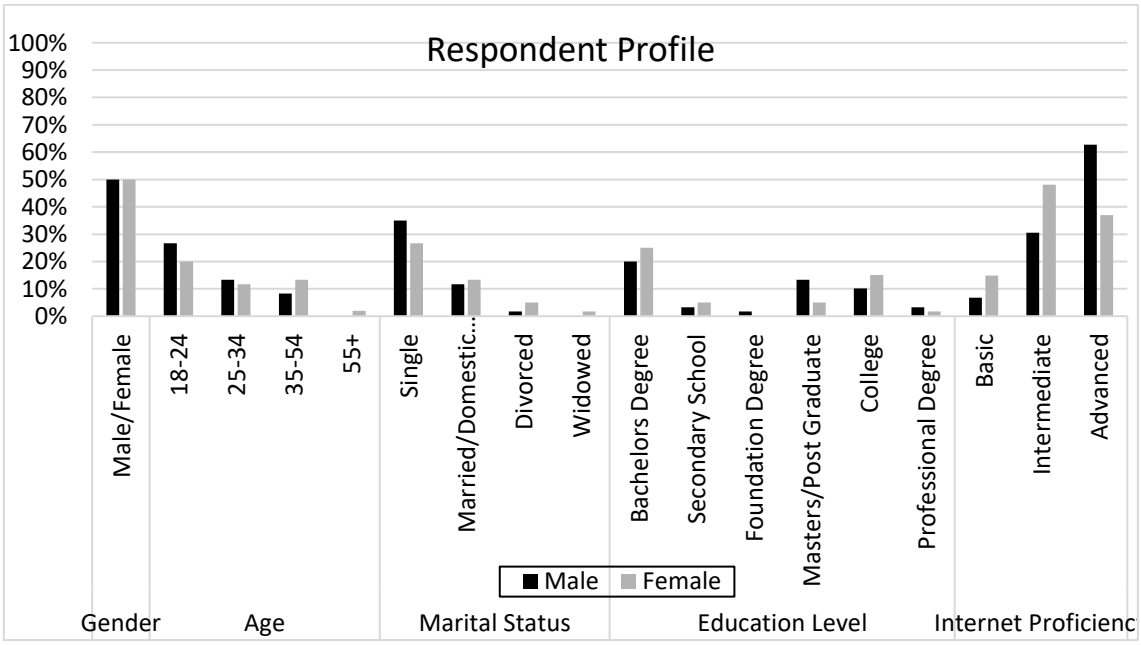


Figure 4.6: Respondent profile

In regard to the internet proficiency, most of the males (62.70%) described themselves as advanced users of internet, as compared to females at 37% which showed that males were more proficient on using the internet. On the other hand, 48.10% of the females described themselves as having an intermediate or Practical Application knowledge of using the internet.

4.5.2 Internet Usage

Figure 4.7 shows the data which was linked to the internet usage profile of the respondents. 58.30% of the respondents were internet users for more than 8 years and only 1.3% of the respondents started using the internet in the last 1-3 years. When respondents were questioned about the frequency of accessing the internet, results showed 65% of the respondents accessed the internet 6-10 times daily.

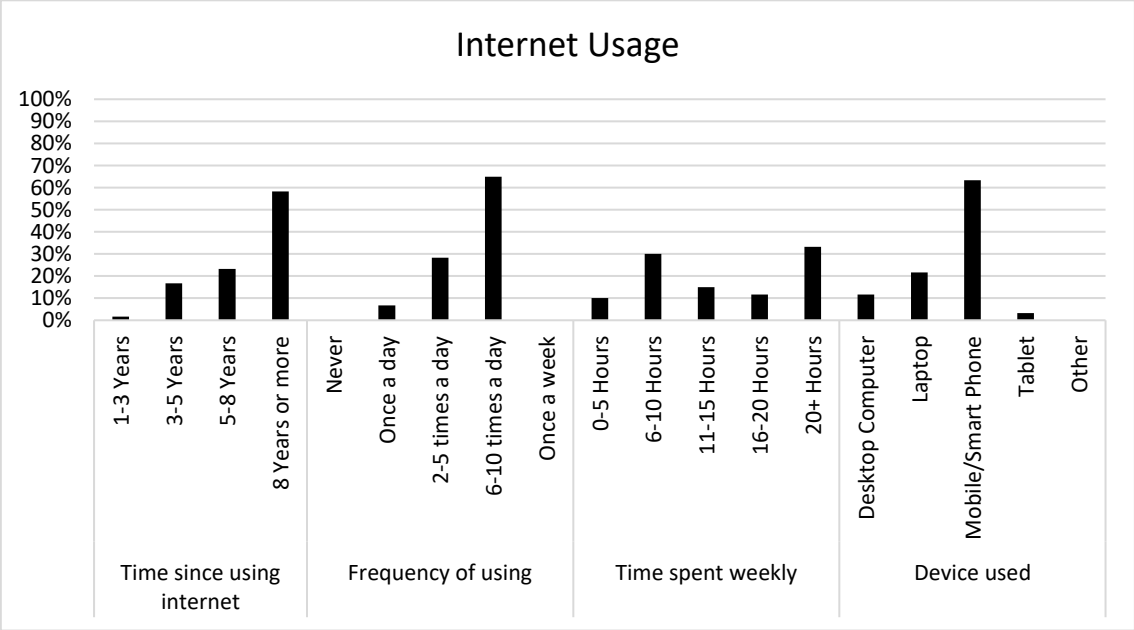


Figure 4.7: Internet usage statistics

This has been possible because most of the respondents used their mobile or smart phones to access the internet (63.30%). Lastly, it was found out that on average 33.3% of the respondents spent more than 20 hours weekly on the internet. The results also

showed that at least 30% of the respondents spent 6-10 hours weekly on the internet. Only 10% of the respondents spent 0-5 hours weekly on the internet.

This showed that most of the respondents were familiar with the internet and spent almost one day during a whole week on the internet. This can also be related to the importance of the internet in daily lives.

4.5.3 Buying Online and Social Media Influence

Customers were asked about online buying behaviours and the influence which social media has on buying behaviour. Figure 4.8 shows that out of the 100 respondents 91.70% agreed they shop online, compared to only 8.30% who do not shop online. The influence from social media was not much of value as only 55% of the respondents were influenced from social media whereas 45% were not influenced by the social media.

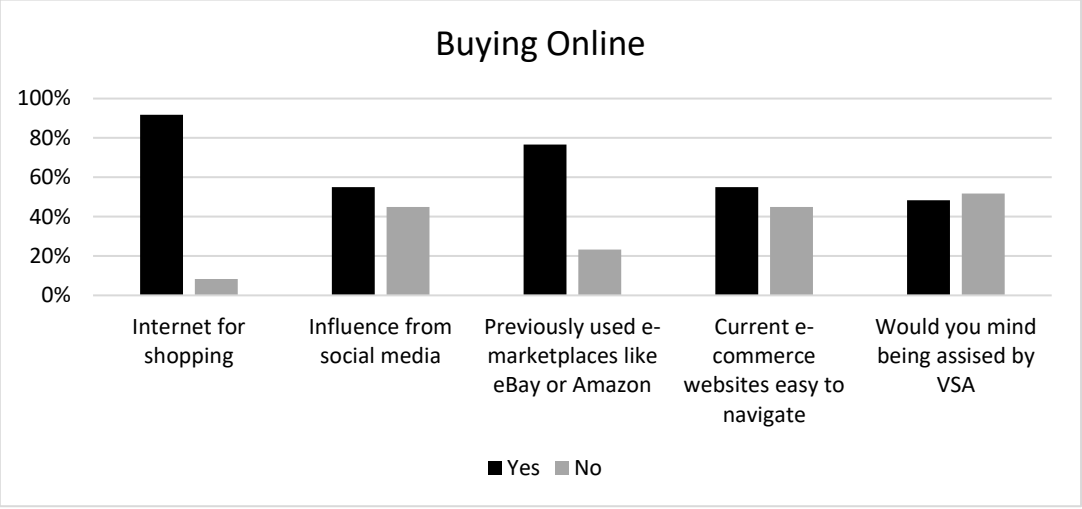


Figure 4.8: Buying online

More than 75% of the respondents agreed to have shopped from e-market places such as Amazon or eBay. Only 23.30% respondents did not use e-marketplaces for buying, which confirmed that there is still a large market. When respondents were questioned about the ease of navigation of the current websites 55% of the

respondents agreed that current e-commerce websites were easy to navigate whereas 45% disagreed. The 45% of the respondents which did not agree is significant and show the lack of development in the e-commerce interfaces.

These numbers show that most of the consumers have had an experience of shopping from e-market places. However, there are still a large number of consumers who have still not used e-market places. Ease of navigation is at satisfactory levels but still there are a large number of respondents who disagree that websites are not easy to navigate. Consumers seem to get influenced from social media and this is one of the significant factors which contribute to their buying behaviour.

When customers were asked whether they mind being assisted by a VSA, the responses were divided, 48.30% selected that they would mind whereas 51.70% were for people who would not mind being assisted by virtual assistants. This highlights the willingness of acceptance of technology by the consumers, and points towards an area which is underdeveloped and under researched.

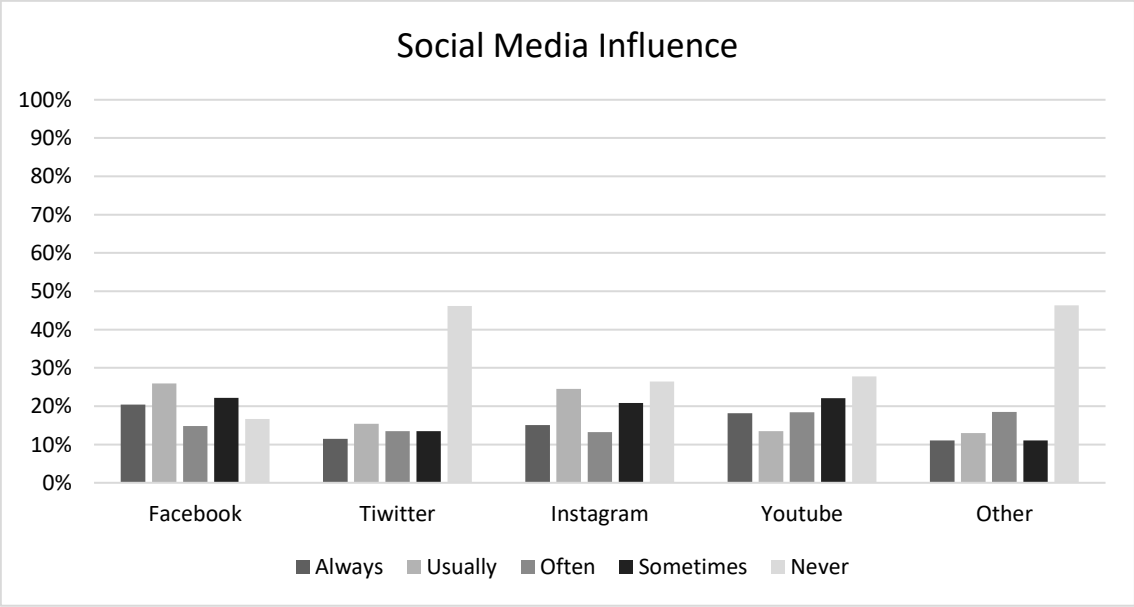


Figure 4.9: Influence from social media

In Figure 4.9, impact of the most common social media platforms was obtained from consumers and was checked through a Likert-Scale type question. The answers showed that 20.40% of the respondents were always influenced from Facebook whereas 46.20% were never influenced by Twitter. The second most influential platform was YouTube, at 18.20% which always influenced consumers, partially because consumers are able to see the items or review of the items before purchasing which highlights the absence of details on the e-commerce platforms.

On the other hand, it was Facebook and Instagram which usually influenced people. Facebook being usually influential 25.90% and Instagram being 24.50%. Mainly because of the integration between these two apps allows users to share their posts simultaneously and one being a platform for sharing pictures only therefore having a higher impact factor.

4.5.4 Influencing Factors to Purchase Activity

As most of the respondents shopped online, it was also asked about the factors which led to the online buying and the factors which refrained from it. The results are depicted in Figure 4.10 and Figure 4.11.

Figure 4.11 shows the factors which deter the shoppers from buying online. These are the factors which need improvements and developments. Delivery times (76.70%) was the top worry factor for consumers where the item would not be received on time. This may be due to many reasons such as the unprecedented demand of goods online, meaning the systems are not built to sustain such demands. Second factor is the risk of credit card frauds, 48.30% of the respondents were worried of credit card frauds online. The third most refraining factor was getting the wrong item (46.70%) and then subsequently returning those items (43.40%) back to the vendor.

Figure 4.10: Factors to shop online

Results confirm, Time saving (55.20%), Convenience (53.40%) and Price (50.90%) were the top three factors to shop online (see Figure 4.10). These results re-confirm the findings by Rigas and Hussain (2015). However, the difference is that brands or e-brands do not form a part of the most important factor. These findings are supported by the fact that consumers have lack of time these days and look for convenience.

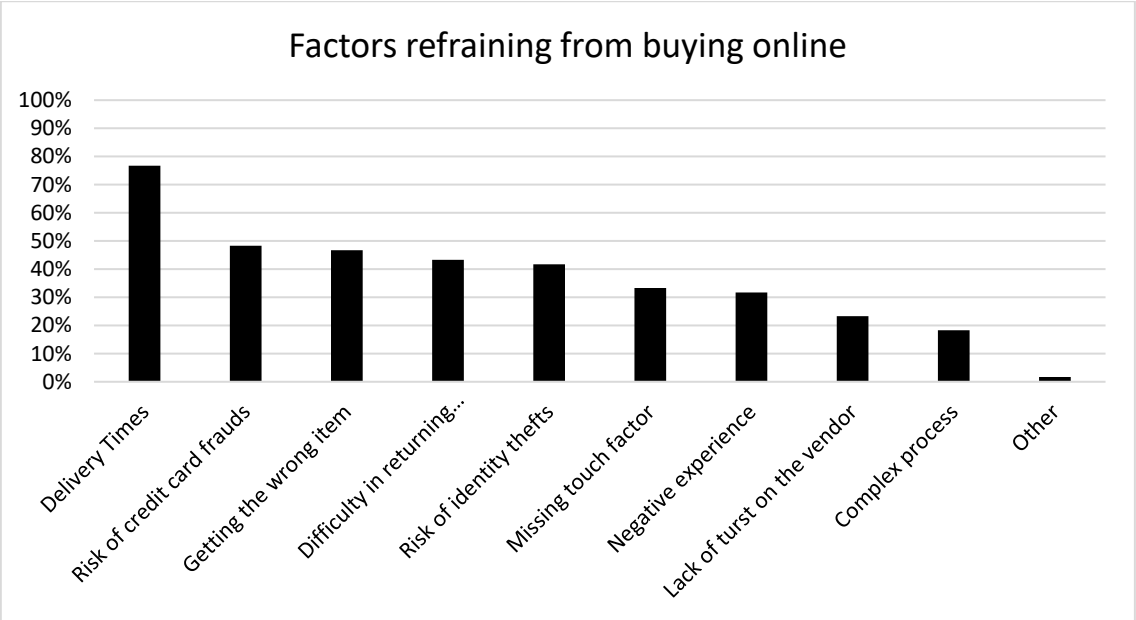


Figure 4.11: Factors refraining from buying online

Therefore, return cost or lower prices are not important aspects. An important finding is that 9.10% of the consumers never follow the recommendations from their friends and 29.10% of the respondents follow it sometimes.

4.5.5 Knowledge of Multimodal and E-Branding

Multimodal branding although not a new phenomenon but lacks appreciation and application into the e-commerce interfaces. Respondents were questioned of their knowledge about multimodal and e-branding. In Figure 4.12 answers show that 61.70% of the respondents are aware of what e-branding is whereas 73.40% of the respondents were unaware of what multimodals are. Furthermore, 65% of the respondents did not come across multimodal e-branding and only 35% of the respondents came across multimodal e-branding.

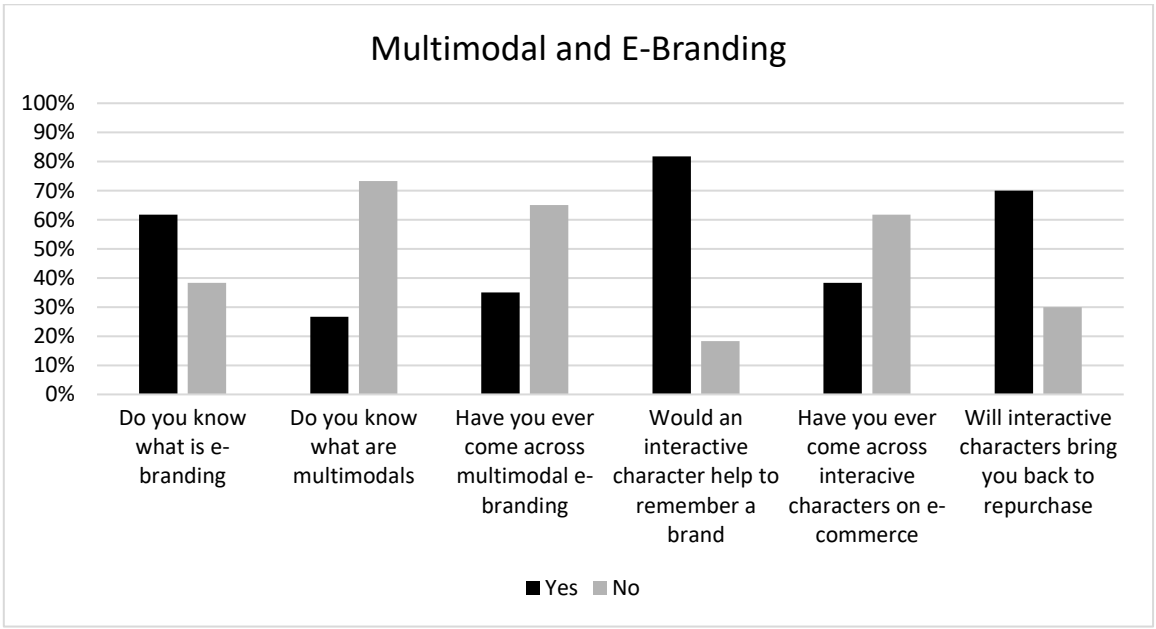


Figure 4.12: Multimodals and e-branding

When respondents were questioned about remembering an e-brand through an interactive character, 81.70% of the respondents agreed that an interactive character will help to remember and recognise an e-brand. Adding on to this 61.70% of the

consumers never came across an interactive character on the e-commerce interface. Lastly consumers were questioned about repurchasing form an e-commerce website with interactive characters, and 70% agreed that interactive characters will bring them back for more.

From Figure 4.12 it can be seen that consumers do not have much knowledge about what multimodals are however on the other hand it can be seen that there is awareness about e-branding. This could be because e-branding is related to branding however the term multi-modality is not very-well known and therefore there is little awareness about it. When there is not much awareness about the word, then even if consumers see a multimodal, it will be difficult for it to be recognised. Results show that multimodal e-branding on the e-commerce will not only bring consumers back for more but it will also help consumers remember a brand.

4.5.6 Current Interfaces and Artificial Intelligence

Current interfaces are very simple and plain or do not have much details which does not have any interactivity at all. Consumers were asked whether current interfaces and providing information could be improved through VSAs and 58.30% agreed that they would like assistance from VSA's. Moreover, 66.70% of the respondents have never seen a virtual assistant which means that there is still a gap in the development and interactivity features on the e-commerce platforms, as illustrated in Figure 4.13.

It was also found out that 60% of the consumers go to Frequently Asked Questions section on a website which could easily be replaced by VSA's, leading to better efficiency and user-satisfaction.

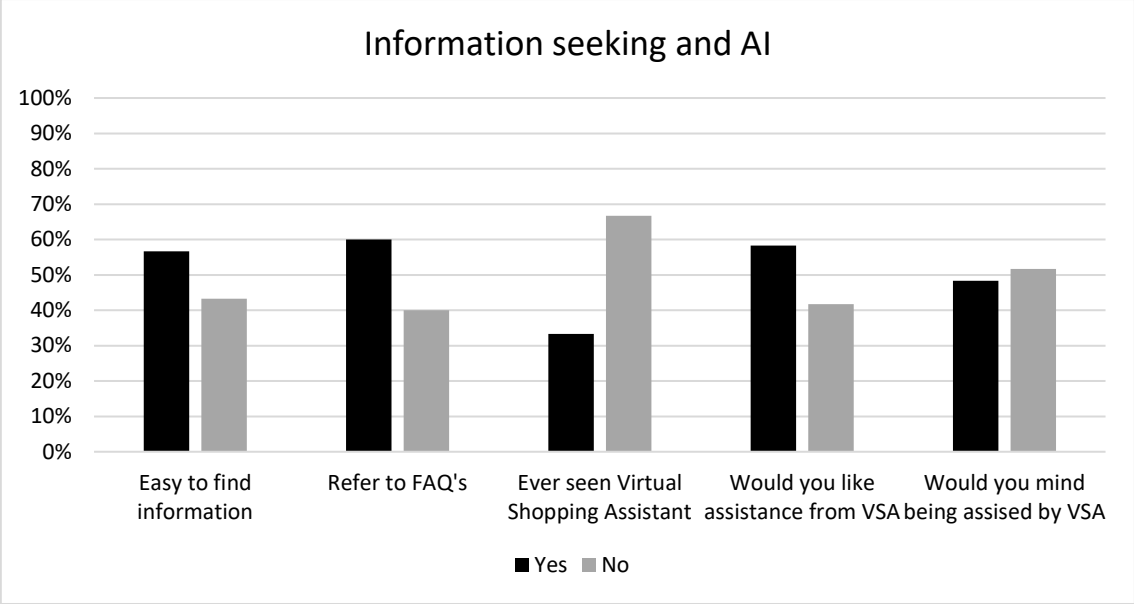


Figure 4.13: Information seeking and AI

4.5.7 Effectiveness, Efficiency and User-Satisfaction

To know more about the effectiveness, efficiency and user-satisfaction of the current e-commerce interfaces, respondents were asked about presentation, checkout times and the user-satisfaction at the end of a successful transactions.

In Figure 4.14, 54% of the respondents felt that the current presentation created an urge to buy. However, 46% of the respondents did not feel the urge to buy from the current presentational styles. Secondly, 60% of the respondents informed that their transactions were cancelled before completion because of an error, this could be due to various reasons such as internet disconnection or card authentication failure.

Furthermore, 61.70% respondents confirmed that the current checkout times were quick, whereas 38.30% of the respondents disagreed suggesting that the current checkout times were not as quick and could be improved further. Lastly, a significant number of respondent number (44.15%) showed that there was no satisfaction from the overall buying experience.

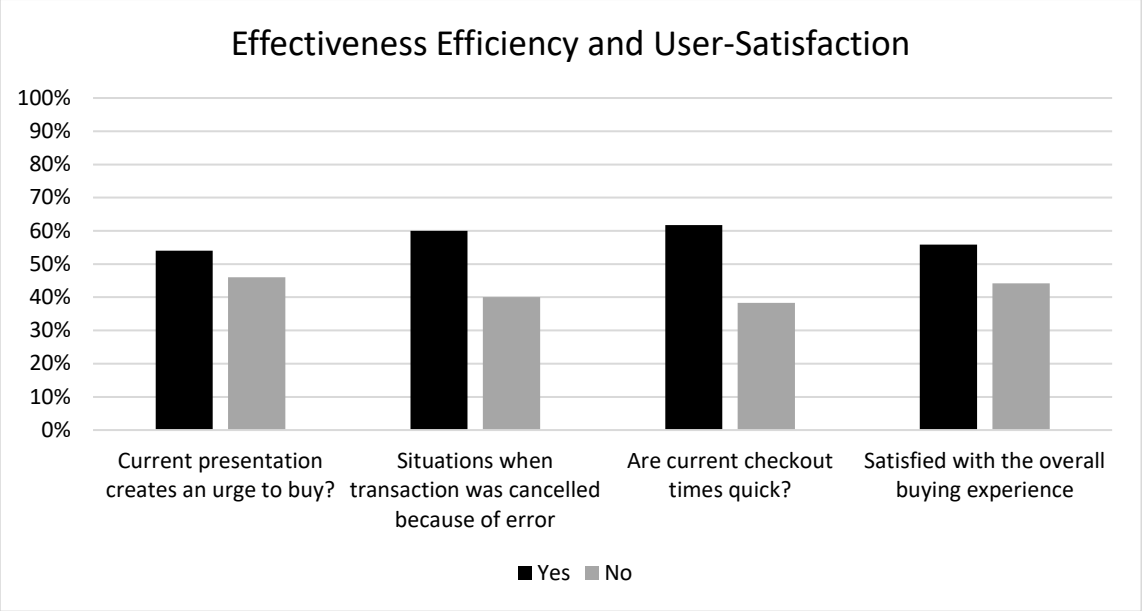


Figure 4.14: Effectiveness, Efficiency and User-Satisfaction

4.5.8 Conclusion: Implications for Interactive E-Branding on E-commerce

Data collected from respondents show that most of the respondents were either advanced or intermediate internet users, which meant that consumers have become technology friendly as compared to the previous decade. Among respondents, most of the respondents have been using the internet for 8 years or more accessing the internet 6-10 times a day and spending more than 20 hours a week, which shows that internet has become a utility and necessity rather than a luxury. From the survey it was also found out that 91.70% have used the internet to shop; and would like to be assisted by the VSA because it will help them in real time and provide the needed information without referring to the FAQ's, thus improving interactivity.

It was found from research that Social media like Facebook influences consumers to shop online, whereas Twitter does not have much influence. On the other hand, YouTube also ranked high in the influence factor, mainly because consumers are able to see product review before buying actual products. The main factors to shop online

have changed from prices to time saving and convenience and price stands at the third main motivation of purchasing online.

When it comes to e-branding and multimodal e-branding, consumers were aware about e-branding but were not aware of either multimodals or multimodal e-branding. Furthermore, consumers had not noticed this kind of branding on the e-commerce platform. These results highlight the importance of knowledge of multimodal e-branding, which is missing from the current e-commerce interfaces. Respondents also agreed that an interactive character will help remember and recognise an online brand and bring back for more. This clearly indicates the missing factor in today's e-commerce interfaces. Furthermore, the survey also showed that current interfaces have effectiveness and efficiency issues through the presentation of products and cancellation of transaction which is another scope for improvement. Overall, there was a partial satisfaction from the current interfaces which could be significantly improved through integrating interactivity.

Chapter 5: Stage 2- Empirical Framework Validation

5.1 Introduction

Moving on from the first stage of the experiment where initial data and viewpoint of respondents was gathered, this is the Second Stage of the study. At this stage, a simplistic approach has been adopted, in which respondents will be exposed to different designs of e-commerce interfaces. Some of the interfaces were untouched whereas others were updated to include findings from the previous survey. The interfaces were updated to include the findings from the first survey and as published by Rigas and Hussain (2016), to enhance the overall interface.

Through updating some of the interfaces with multimodal affects and AI, respondents were faced with various types of customised e-commerce websites. This exposure helped to understand how users perceived the updates. The exposure also aided to understand how it adds to the current effectiveness, efficiency and user-satisfaction levels. Respondents were asked whether updates to the interfaces will act as a stimulus to come back for more. Through their responses, hypotheses and the framework will be validated or rejected.

5.2 Aims

In the previous survey it was concluded that most respondents were advanced or intermediate users of internet and had been using the internet for more than 8 years or more. This finding was also confirmed by Rigas and Hussain (2016) in their study incorporating UK internet users. From the survey it was concluded that majority of the

respondents shop online and would like to be assisted by a VSA's as it will help respondents in real time rather than by a delayed response. Influence of social media also formed a part of results, where respondents declared the power of social media to influence their decision making.

Previous survey also highlighted a fact that respondents were aware of e-branding but were not aware of multimodal e-branding. It could be argued that respondents would not have noticed multimodal e-branding if awareness lacked. However, upon primary research it was found that multimodal e-branding is either not used on current e-commerce interfaces or its presence is very limited. These identification of deficiencies on the current e-commerce interfaces led to the findings of the first experiment to be applied and tested in this experiment.

The aims of this experiment is to assess and analyse how changes discovered in the first survey, after adoption, will be perceived by public when applied in real life scenarios. The aim of this experiment is to also test and validate the conceptual framework formed earlier, thereby testing how efficiency, effectiveness and user-satisfaction leads to e-branding and aids e-loyalty.

5.3 Objectives

This Chapter will achieve RO2, RO5 and RO6 as RO1 and RO4 have been achieved in Survey 1. This experiment will achieve the following objectives:

RO2: Enhance specific attributes of effectiveness, efficiency and user-satisfaction on existing paradigms through the identified weaknesses: Enhancements will be adopted from the conceptual framework built on existing understanding and gap in knowledge.

RO5: Empirical validation and evaluation of the proposed framework. Statistical tests will be used to empirically validate the framework. The attributes which are not found to have significant will be discounted from the final framework.

RO6: Produce a set of guidelines which will improve the overall experience on the e-commerce achieving e-branding and aiding e-loyalty.

Effectiveness: It refers to the successful completion of a transaction and the positive impact of multimodal interaction on consumers. Effectiveness in this study refers to, how interactive multimodality helps to an effective and successful completion of a transaction? How multimodality can convince and persuade consumers to trust and proceed with the transaction? Effectiveness also relates to product presentation and information quality.

Efficiency: It refers to the time taken to complete a transaction on e-commerce platform. Efficiency also assesses the role of interactive virtual assistants which aim to speed up transactions. Customers may feel confused during transaction processing; for example, leading to questions regarding security, privacy and personal information. Do virtual assistants reassure the customers by answering such queries, thereby increasing the efficiency of transactions? Usable website navigation and system quality are also a part of efficiency for the purposes of this study.

User Satisfaction: after using any service, consumers are able to develop service satisfaction levels. The overall experience of consumers would be asked and analysed. Post-simulation, satisfaction levels will be assessed. Ease of use of e-commerce interface and delivery service are other aspects, which constitute to user-satisfaction for the purposes of this study.

5.4 Question

As this Chapter tests the frameworks and updated paradigms of the e-commerce, therefore this Chapter will achieve RQ4 and RQ5 of the study in addition to the other aims and objectives of the study.

One of the significant questions which this Chapter will answer are the future development areas in the e-branding area. In addition to the validation of the new paradigms this Chapter will also point towards further developments which are learned through post simulation discussions with the participants. The research questions which will be answered in this Chapter are:

RQ4*. How including a Virtual Shopping Assistant (VSA) can help improve the perception of a brand on e-commerce interface, leading to loyalty?*

Shopping assistants are common in a brick and mortar store, however VSAs on the e-commerce interfaces are uncommon. Interaction from these VSAs can help improve interaction and help is lacking for consumers in the online e-commerce platform. Such interaction will help businesses in providing a personalised service to customers, therefore analysing this area is essential.

RQ5. Future development in e-branding using a framework?

With dynamic changes in technology, e-commerce interfaces are also evolving constantly. Through research in this study, guidelines through an empirical framework will be developed, validated and proposed. These guidelines will outline the scope of future development in e-branding.

5.5 Experimental Design and Methodology

Methodology of an experiment is core to achieving reliable, valid and stable results. This Chapter has been designed in a two-staged methodology where the respondents will be subject to two simulations, one without multimodals and the next with multimodals. The first stage, where respondents will be exposed to simulations without multimodals is to refresh the minds of respondents. At this stage, respondents will observe and analyse every detail of the websites and any interactions. Once current interfaces are observed and interacted with, respondents will then be exposed to the newly built interfaces which will show a different style of the same website and different methods of interaction.

This exposure to two same but different interfaces will allow respondents to record their responses in the provided questionnaire. The respondents were selected through a convenience sampling method, similar to survey one, in which there is no bias involved. Therefore, allowing and giving chance to everyone who wishes to participate in the simulation. The selection of same method also ensured consistency between methodology in the study.

5.5.1 Measures

For the purposes of this survey the following measures were adopted.

- Ease of use by Klein (2007), Page Thomas (2006);

Variables	**Factor Items**
Perceived ease of use	- Is easy to use - Is easy to become skilful at using - Learning to operate is easy - Is flexible to interact with - Interactions are clear and understandable - Is easy to interact with

Table 5.4: Perceived ease of use scale, taken from Klein (2007)

- Information and System Quality, and Delivery Service Ahn Ryu Han (2004);

Construct	Measures	Questionnaire
Information quality	Contents variety	(The web site) has sufficient contents which I expect to find
	Complete information	(The web site) provides complete information
	Detail information	(The web site) provides detailed information
	Accurate information	(The web site) provides accurate information
	Timely information	(The web site) provides timely information
	Reliable information	(The web site) provides reliable information
	Appropriate format	(The web site) communicates information in an appropriate format
	Better purchase choice	(The web site) provides selective information for purchase choice
	Comparison shopping	(The web site) provides comparative information between products
System quality	Design	(The web site) has an appropriate style of design for business type
	Navigation	(The web site) has an easy navigation to information
	Response time	(The web site) has fast response and transaction processing
	System security	(The web site) keeps transactions secure from exposure
	System availability	I can use (the web site) when I want to use it
	Functionality	(The web site) has a good functionality relevant to site type
	Error free transaction	(The web site) keeps error-free transactions
	Multimedia	(The web site) provides an appropriate video-audio presentation
Delivery service	Reliable delivery	(The web site) delivers the right product which was ordered

Construct	Measures	Questionnaire
	Package safety	(The web site) delivers products with safely packaged
	Timely delivery	(The web site) delivers products at promised time
	Return easiness	It is easy to return the product delivered

Table 5.5: Information Quality construct, taken from Ahn et al., (2004)

- Patronage/loyalty intentions – Kim Fiore Lee (2007);

Variables	Factor Items
Online store perception	- The online retailer's Web site has an attractive character - The colour schemes of this online retailer are attractive - The overall design of this online retailer is interesting - The layout of this online retailer makes it easy to browse for the product you want - Overall, the layout of this online retailer makes it easy to navigate this site
Online shopping enjoyment	This Web site would create a shopping experience that would - Be entertaining - Be enjoyable - Be interesting - Be fun - Be exciting - Be appealing
Online shopping involvement	This Web site would create a shopping experience that would - Be important - Be of concern to me - Be relevant - Mean a lot to me - Matter to me
Desire to stay at an online store	- I would like to stay at this online store as long as possible - I enjoyed spending time at this online store - I would probably spend more time shopping on this retailer's - Web site than I planned
Patronage intention towards an online store	- I would visit this online retailer again - In the future, I would very probably shop at this online retailer - I would patronize this online store of this retailer

Table 5.6: Patronage Intentions, taken from Kim et al., (2007)

Level of exposure to stimulus could affect evaluation with an increase in exposure leading to a more positive response towards stimulus (Zajonc, 2001), the exposure was therefore limited to 5 minutes. Other measures which were referred to but not used were:

- Internet competence Van Deursen and Van Dijk (2009);
- Perceived information overload Chen Shang Kao (2009);
- Perceived interactivity through interactivity scale by Liu (2003);

5.5.2 Questionnaire and Simulation Design

As this is a major and final data collection of the study, a robust questionnaire and simulation was vital. Compared to the first survey which was about understanding existing paradigms, rather than testing a framework or new knowledge, this phase of the study had various stages. In the first experiment respondents shared their opinions on how they see the current e-commerce, and what improvements they would like to see. This experiment is more empirical in a sense that respondents will be first shown a set of pictures where they will see how a normal interface looks like. Respondents will then be exposed to an updated and altered interface which will have incorporated the effective and efficient methods such as the integration of AI.

Respondents answered 21 pre-simulation questions, after which, respondents were shown a set of pictures from different scenarios. It must be noted that all pictures used were selected randomly and there was no bias or motivation in choosing the pictures. Some of the brands were more known brands which consumers shop from on a daily or more frequent basis. One of the reasons to select such brands were that they would provide more insight as compared to brands from which consumers shop less or are not familiar with. The brands belonged to fashion retail and grocery industries which are one of the most popular sectors from which consumers shop online.

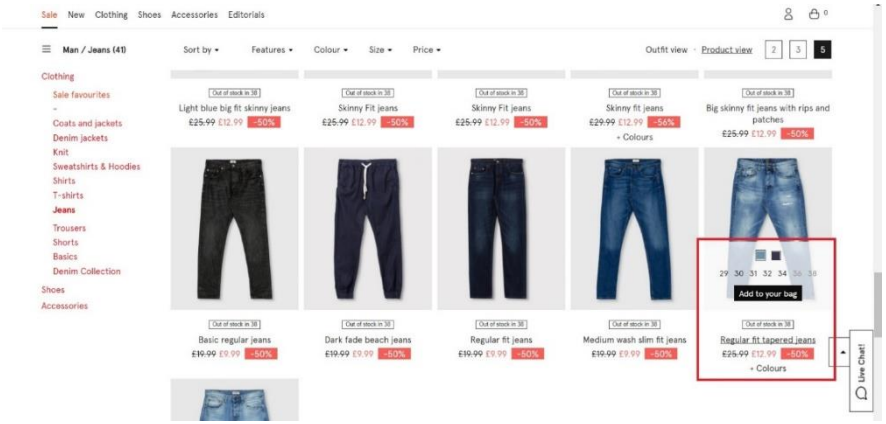


Figure 5.15: Presentation effectiveness (thought to be poor)

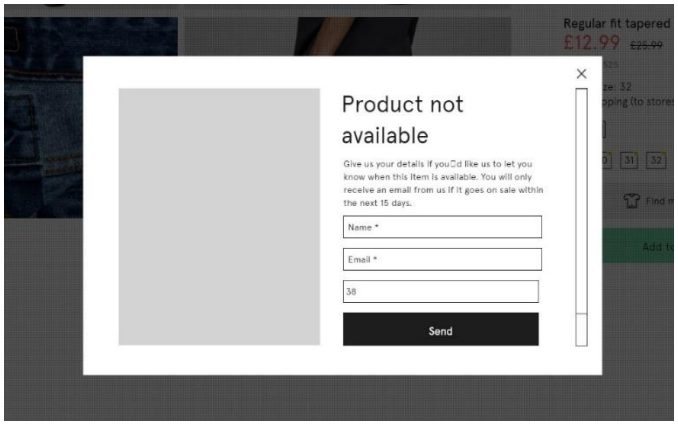


Figure 5.16: Message received for items out of stock

Figure 5.17: Live chat with an online customer representative

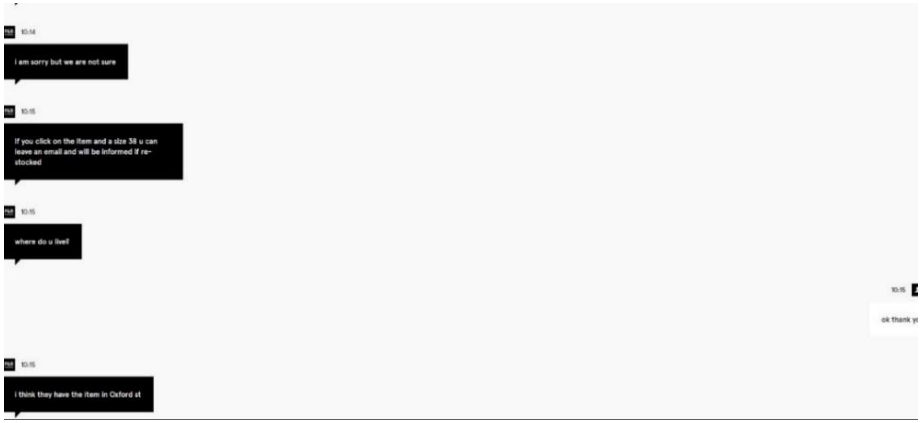


Figure 5.18: Live chat with an online customer representative

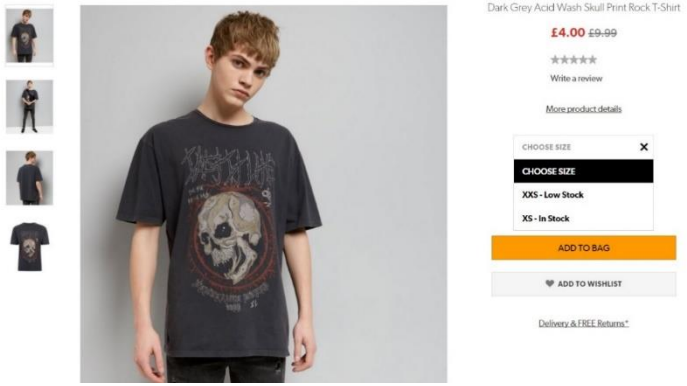


Figure 5.19: Information on sizes of stock

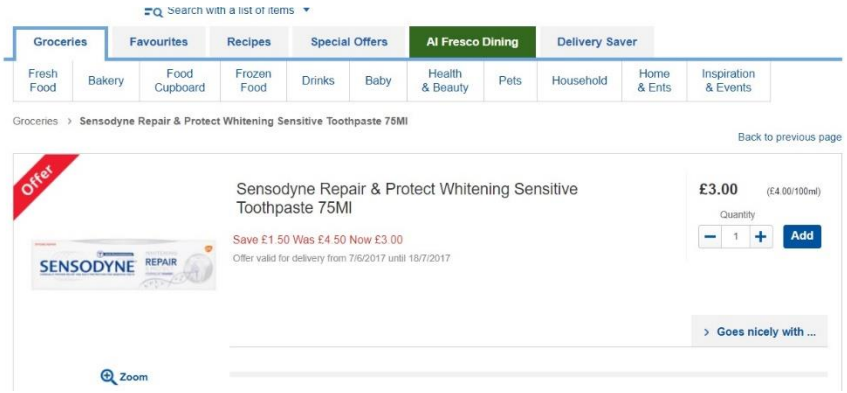


Figure 5.20: Current checkout systems

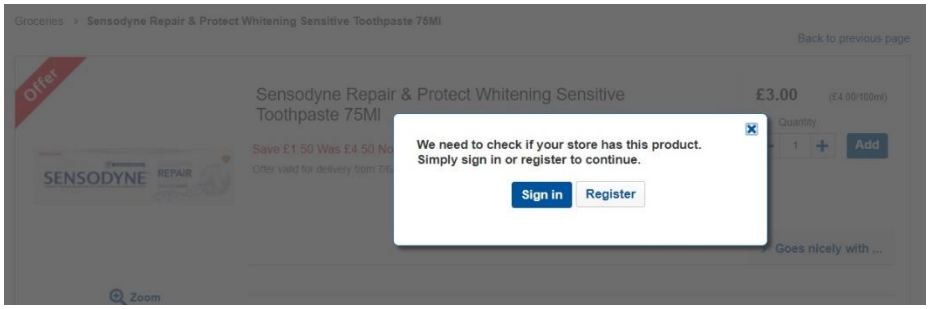


Figure 5.21: Current checkout systems

Figure 5.22: Social media posts without emojis

Figure 5.23: Social media post with too much information

Figure 5.24: Social media posts with emoji and quick link to the product

- **Presentation effectiveness**

Figure 5.15 illustrates an example from a website which is also followed by many other online fashion retailers. The illustration shows how so much information is crammed into a small box, which easily causes confusion amongst customers. The red box in the diagram shows that for a single item the size, colour, discount and etc. are included within the same picture. The aim of this interface was to improve efficiency; however, it also causes confusion because it also shows that the specific item is out of stock even through the sizes which are out of stock are in grey.

Whilst information present for the item is in good detail and provides basic information, but when the product is interacted by hoovering the mouse, the information becomes ineffective and rather confuses the customer.

- **Message received for items out of stock**

Online marketplace allows an organisation to quickly sell its products. However, this process may also make the selling process difficult if it is not managed efficiently. One of the more usual issues which consumers face while buying online are the out of stock or product not available problems. Figure 5.16 shows that even though the item was showing in stock, when it was tried to purchase it, the item showed out of stock. Instances such as these not only lead to service failures but also customers lose confidence in the service provided.

From the illustration above the message states that the product is not available however the system requests for the details of the customer for them to be informed when the product comes in stock. This mechanism is not only used by one or two retailers, but multiple retailers use this kind of a system to inform consumers. There are many drawbacks of using this system and consumers may not feel comfortable in

sharing their personal information. The aim of this system is to reach consumers when the item is back in stock however these days' consumers are after 'instant' or 'real-time' information and this system fails to meet such purpose.

- **Live chat with an online customer representative**

One of the other popular methods these days to interact with customers is the live chat system. The live chat system is used to speak to a representative from the company. There are various benefits and drawbacks of using the live chat. One of the benefits is that some information could be provided, and the drawback is the accuracy of the information. In screenshots displayed in Figure 5.17 and Figure 5.18 above a particular arrival of an item was enquired from the representative. The representative did not have an answer as to when will the item arrive and this means the customer may not buy the item from this particular store. Furthermore, it can also be seen that the replies take a little time because of the responses being typed by a representative. This also makes the conversation prone to errors and delays.

At the end of this conversation in Figure 5.18 it can be seen that there was no definitive answer to the customers query and the representative was not able to inform the customer when will the product arrive. This leaves the customer dissatisfied and there is a significant chance that the customer will look for the same product with another seller. This is a significant area which requires improvements and updates to ensure user-satisfaction.

- **Information on sizes of stock**

When it comes to buying online one of the most important aspects is to know whether the stock for a particular item is there or not. Some of the e-commerce retailers do not provide clear indication of what stock is left until the consumer opens the product's

page and only to know that the item is not available in their required sizes. In a scenario where the consumer does not get the size they are after this leaves them dissatisfied with the e-retailer because accurate information was not provided, or the presentation could have been better to show which sizes are available and which are not.

From Figure 5.19 it can be seen that a consumer only gets to know that the only available sizes are XXS and XS which are in stock and other sizes are not at all available. If this information was shown in the previous page, it would have saved the step of coming to this page. Some of the e-commerce websites remedy this by allowing to filter according to size but even on those websites there have been instances where sizes are not available or get out of stock while the shopper is shopping for other items.

- **Current checkout systems**

The current checkout systems are not one of the most efficient and intelligent checkout systems as there are plenty of weaknesses in the current systems. These weaknesses were identified in previous experiment and where also highlighted during the survey. Shoppers should be allowed to buy items in an efficient manner (e.g. without registering). Efficiency here could be the number of clicks to buy, the accuracy and speed of purchasing an item.

Images in Figure 5.20 and Figure 5.21 have been taken from one of the top grocers in the UK and one of the major weaknesses which currently consumers face is the whole process of registering on the website before anything can be bought. The image below is of a £3 toothpaste which if a first-time consumer wants to buy, they will be required to go through a registration process. This registration process, often lengthy, makes purchasing on the e-commerce slow, inefficient and not very user-friendly. While quite a few retailers allow consumers to shop as guest, without registering, but this practice

is yet to be seen in the grocery and supermarket industry and therefore this has been chosen.

In another example as seen in Figure 5.21 if a customer wants to see whether an item is available to buy from a store even then a customer is required to either sign in or register. This compulsory registration is one of the major weaknesses which online websites have currently.

- **Social media posts with emoji**

The world of social media is ever evolving and one of the latest trends used by marketing firms is the use of emojis in their advertisement campaigns. Emojis are essentially emoticons or graphical illustrations which are used to summarise words. Since the introduction of emojis they have become a must add to any advertisement campaign or tweets or updates. The image below shows an example of a social media promotion which has used emojis to add more meanings and interaction within the message. This increases the effectiveness of the message.

- **Social media posts without emojis**

Moving on from the image and discussion of the social media posts with emojis, the illustration in Figure 5.22 is of an item promoted by a fashion retailer who has chosen not to use an emoji. The message is simple, and it includes the item number, in case if a potential client wants to purchase the item. There are implications with these types of promotional messages because people find it difficult to find these items or have no idea about what to do with the item number. The products should be campaigned in such a way that they are not only pass a clear message but are also effective and turn leads to clients.

From the same diagram it can also be seen how the public has responded with the use of emoji's which also show how many emoji's are being used by the general public and their comfortability with it.

- **Social media post with too much information**

While social media posts are one of the most effective and efficient ways through which information could be dispersed amongst the general public, but it may not always be so easy to spread this information. In Figure 5.23, it can be seen that the fashion brand has put in a picture with multiple household items. From the description of the post it can be see that there are multiple items for sale with multiple item numbers. These item numbers are prone to causing confusion and it can also be said that there is too much information. There are various weaknesses which could have been updated before the post.

- **Social media posts with emoji and quick link to the product**

The discussions above highlight how important it has become to stay up to date on the recent trends such as emoji's while posting social media content. From illustration in Figure 5.24, it can be seen that a brand is promoting a short sleeve shirt but it has three fire emoticons which are meant to mean that the item is hot and it is a must buy. A person who is familiar or not familiar with the meaning or emoticons will still be able to get the message. Furthermore, to make the navigation easier it can be seen that the social media post also includes the shortened link to the item so that interested consumers could directly go and buy the item. This approach shows how emoticons on the social media could help improve the impact of the message.

5.6 Analysis of Results

Once the data was collected according to the methodology specified, it was put through SPSS for analysis. There were multiple types of data analysis techniques used in analysing the data. Eventually, the Chapter concludes with discussion of findings and conclusion.

5.6.1 Sample profile

5.6.1.1 Gender and Age

Figure 5.25 outlines demographs of the sample which took part in this experiment. Majority of the respondents were up to 24 years of age which was 81% of the respondents. The second largest respondent age group of 25 – 34 was 17% of the respondents, and there were hardly any respondents of 35 – 54 age group and the percentage of the respective age group was 2%. This may be due to the face that this age group was not easily accessible or available to take part in the survey. This also highlights a gap in this study and scope for another study where only respondents aged 35+ would take part.

5.6.1.2 Educational Level

It was important to understand the educational level of respondents, as education has a direct link with the way in which respondents use the internet. It has been confirmed in various studies that a higher educational level leads to a better understanding of the internet. A higher level of understanding in the sample is important as it will provide a richer viewpoint with regards to multimodality and the perceived weaknesses of interface paradigms adopted in e-commerce platforms. Most of the respondents were holders of either a college diploma, undergraduate, and post-graduate degree holders. The percentage of this respondent group was 77%.

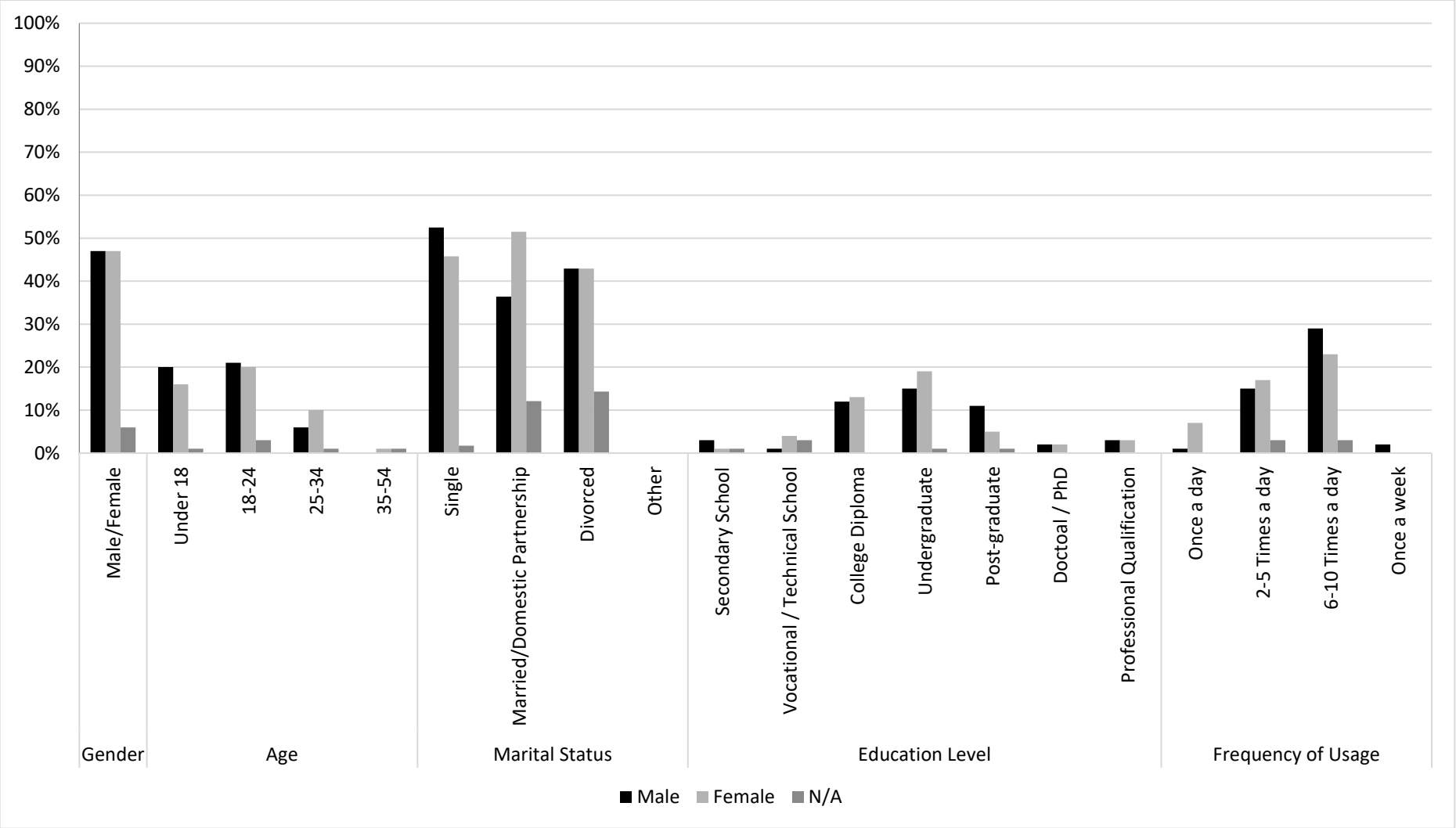


Figure 5.25: Sample Profile

The data collection showed most of the female respondents either had a college diploma or undergraduate degree, at 13% and 19% respective with only 5% of the females holding a post-graduate degree. Comparing these with males, only 12% and 15% were college and undergraduate degree holders. However, more males had a post-graduate degree at 11%. The numbers relate to the confidence in the results and those who responded were educated to a minimum of a college diploma level.

5.6.1.3 Frequency of Usage

Frequent internet users are generally more aware about the strengths and shortcomings of the paradigms investigated. Frequency of internet usage per day showed that 90% of the respondents accessed the internet from 2 – 5 times a day to 6 – 10 times a day. Within these two groups, 35% of the respondents accessed internet between 2 – 5 times day and 55% use internet from 6 – 10 times a day. These results showed, most the respondents were regular internet users and accessed the internet multiple times a day. However, 8% of the respondents accessed the internet just once a day and only 2% of the respondents accessed the internet only once a week.

5.6.2 Most Frequently Used Device

This question was asked to know which devices are most frequently used by respondents to access the internet. While this question was about which device was mostly used to access the internet, by accessing the internet it was meant and assumed that respondents would have done all or most of the activities which they are able to carry out using a mobile phone such as online shopping, social media, and etc.

Results in Figure 5.26 depict that majority of the respondents, or 45% of the respondents use mobile or smart phones to access the internet followed by laptop which is the second most used method to access the internet with 26% of the

respondents using this method to access the internet. When it came to desktop computers, 20% of the respondents indicated that desktop was the most frequently used device. Last device used by respondents was the tablet with only 9% of the respondents using a tablet to access the internet.

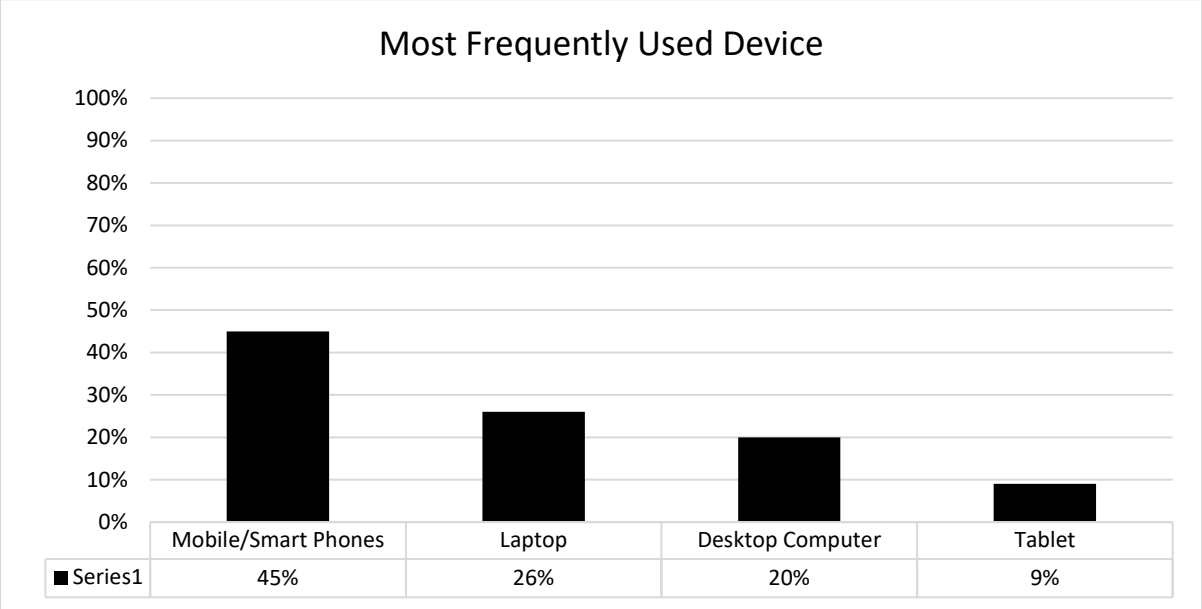


Figure 5.26: Most frequently used device

This shows that popularity of tablets as a preferred method to access the internet is decreasing with time. When tablets were introduced, it was used by consumers to access the internet. However, as time passed and mobile phones became more capable of carrying out complex tasks, the popularity of the tablet was decreased. In addition to the capabilities of smartphones improving, the decline of tablets can also be because of the screen size of smartphones increasing for e.g. 5.5" iPhone and 5.7" Samsung phones, compared with tablets which are just 3" – 4" larger. Another reason leading to the decline of tablets is the cost factor and an inconvenience of carrying an additional device. Based on these factors, the reason to have a tablet are declining.

Laptop and desktop computers however remain the second and third most used devices after laptops with 26% and 20% respectively. This could be because mobiles

phone are used when consumers or respondents are travelling or commuting, or do not have access to laptops or desktops. Once access to desktop and laptops is there, these devices are the preferred options. Consumers or respondents may also have selected laptops as their second most preferred or used device after smartphone is because as time goes on laptops have become lighter and more portable. Examples can be of 3 in 1 laptop's, which are not only laptops but also tablets and phablets, which are hybrid between a laptop and a tablet.

5.6.3 Role of Social Media and Cancellation of Transactions

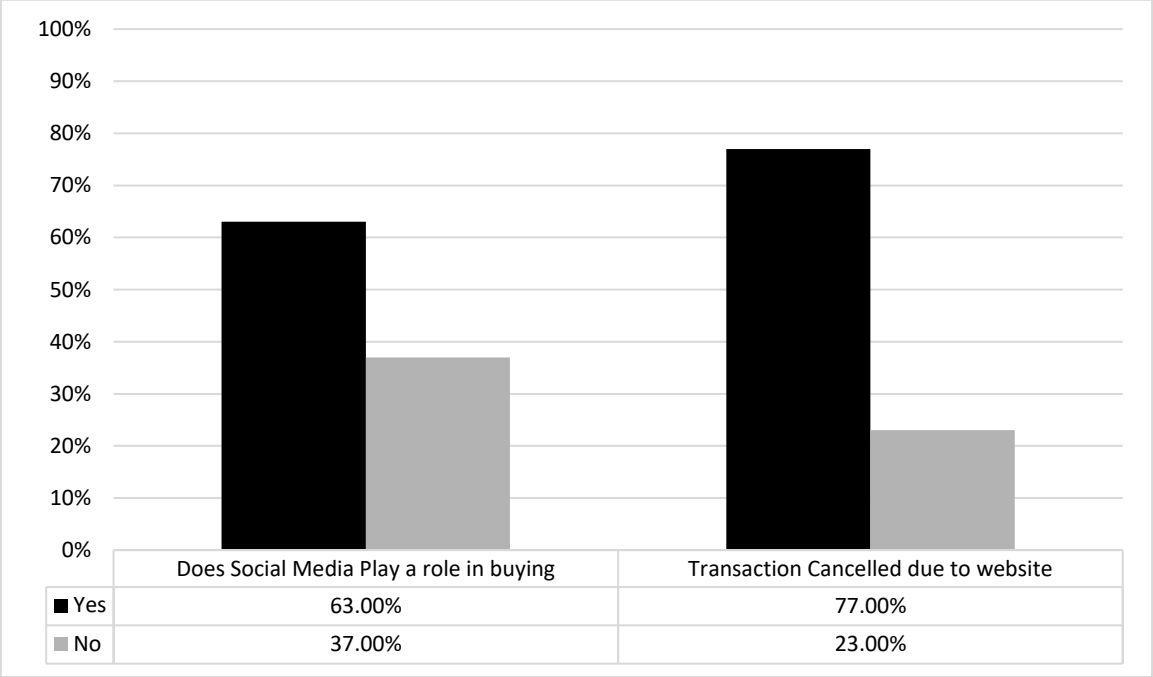


Figure 5.27: Role of social media and Transaction cancellations

As this is an era of social media and billions of people around the world use social media on daily basis, the influence which social media has on purchase decision cannot be ignored. According to studies and as seen in Figure 5.27, social media plays an important role in influencing purchase decision. However, there are many occasions when transactions get cancelled due to problems with website. When respondents were asked about this question, it can be seen in Figure 5.27, almost

80% of the respondents have had a problem with transactions and it got cancelled. This effected the effectiveness and left the consumer with a negative perception of the brand.

5.6.4 Role of Social Media in Decision Making by Age Group

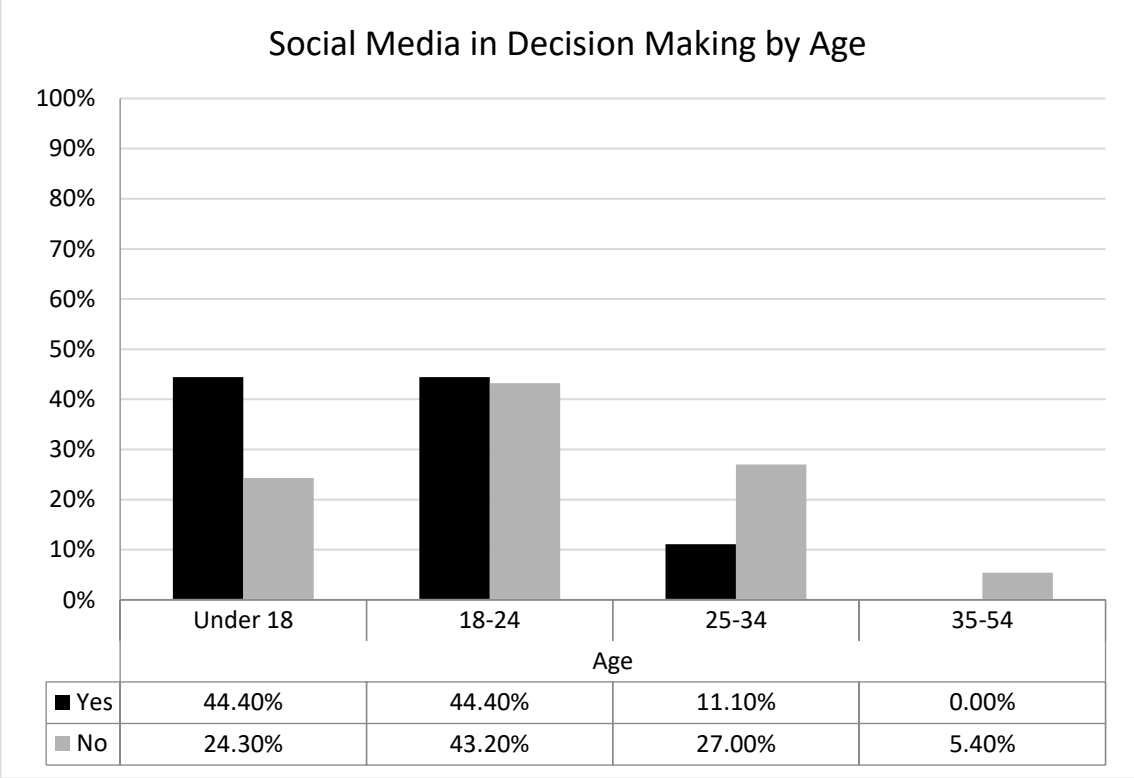


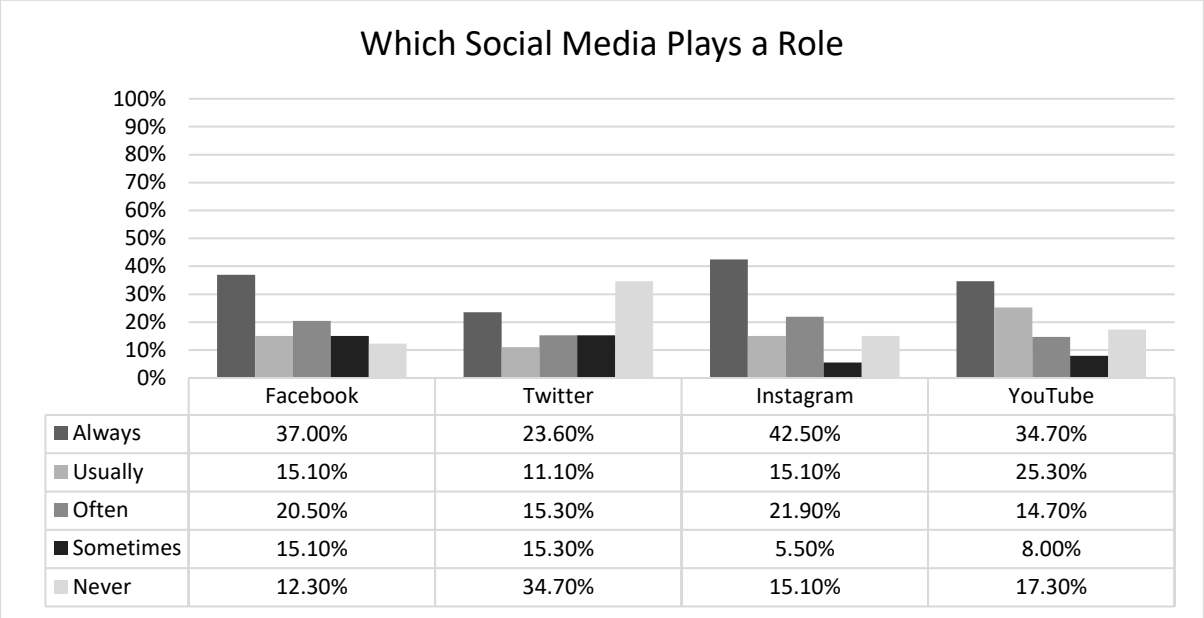
Figure 5.28: Role of Social Media in decision making by age

Since the introduction of marketing on social media, it has become significantly influential and plays major role in decision making for consumers. From previous discussions it could be seen that social media influences the consumer decision-making. However, when the effect of social media was analysed according to age, the results can be seen in Figure 5.28 the results were different. The largest group of respondents who were affected by social media marketing belonged to age groups 18 – 24. This highlights two different elements. Firstly, younger people are more active on social media therefore they get more influenced on this platform and

secondly because these age groups are more technology friendly as a result, such consumers are easier to target by organisations.

From the results illustrated in Figure 5.28, it can also be concluded that social media influences decision-making, and this could be through peer pressures where social media users see their friends and family using a certain product and are tempted to buy it.

5.6.5 Influential Social Media Platform



	Facebook	Twitter	Instagram	YouTube
Always	37.00%	23.60%	42.50%	34.70%
Usually	15.10%	11.10%	15.10%	25.30%
Often	20.50%	15.30%	21.90%	14.70%
Sometimes	15.10%	15.30%	5.50%	8.00%
Never	12.30%	34.70%	15.10%	17.30%

Figure 5.29: Influential Social Media Platform

Having learned from previous discussions and survey that social media influences and does play a role in decision making, it was also important to enquire which social media platforms are more influential as not all social media platforms are equally influential. When assessing influence of the social media different age groups reacted differently to different social media channels. The four most influential social media platforms, Facebook, Twitter, Instagram and YouTube were chosen for this question. Results are illustrated in Figure 5.29.

Most of the e-branding these days is carried out on social media platforms. Therefore, it was important to explore which were the most influential social media platforms, as it could be used as a recommendation for future development. Instagram, Facebook and YouTube were the most influential platforms, and this therefore outlines that these interfaces should either be developed. If not, then the e-commerce interfaces must be developed in accordance with these findings to be in par with social media effectiveness.

5.6.6 Are E-Commerce Easy to Navigate?

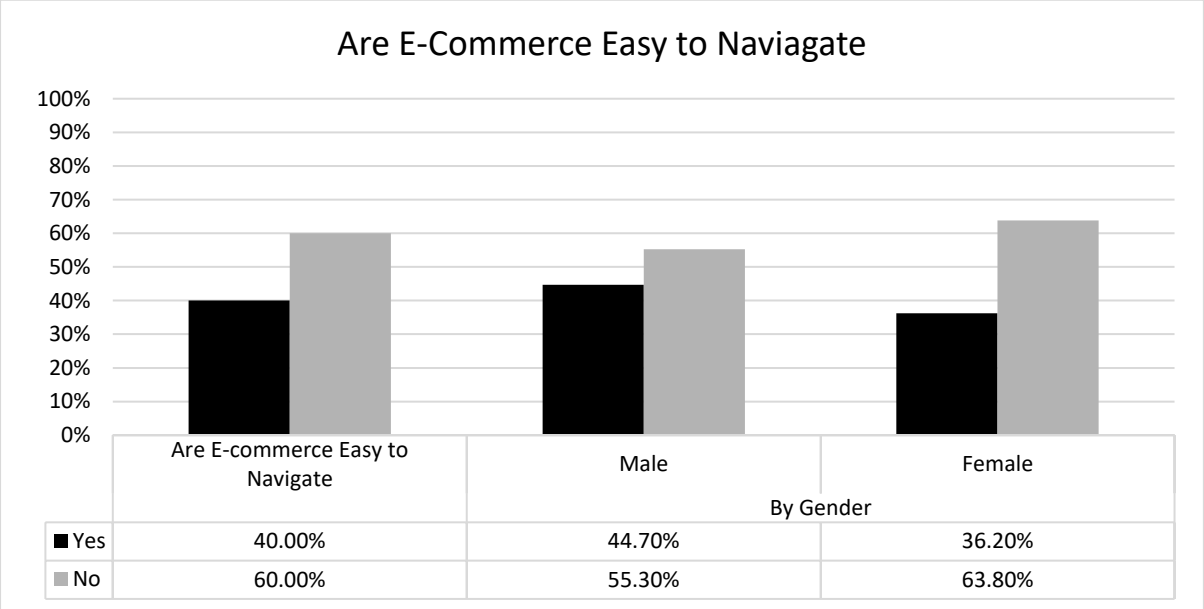


Figure 5.30: Are websites easy to navigate?

E-commerce website navigations was also an aspect which was assessed in the survey and experiment, mainly because of the fact that navigation is directly linked to the user-satisfaction, effectiveness and the efficiency. For the purposes of this study easy website navigation has been deemed as an efficiency attribute. If a user can navigate the website in an efficient and quick manner, their overall satisfaction will be high. However, on the other hand if a user is unable to navigate a website in an easy manner, it will affect user-satisfaction in a negative manner.

From the responses illustrated in Figure 5.30, majority of users found the e-commerce websites 'not easy to navigate'. This was surprising, given the fact that most of the respondents described themselves as advanced users of the internet. Divided between the gender, females found navigating websites more difficult as compared to their counterparts. This highlights the gap and points towards a weakness in which e-commerce websites could be further developed.

5.6.7 E-Commerce Creates an Urge to Buy

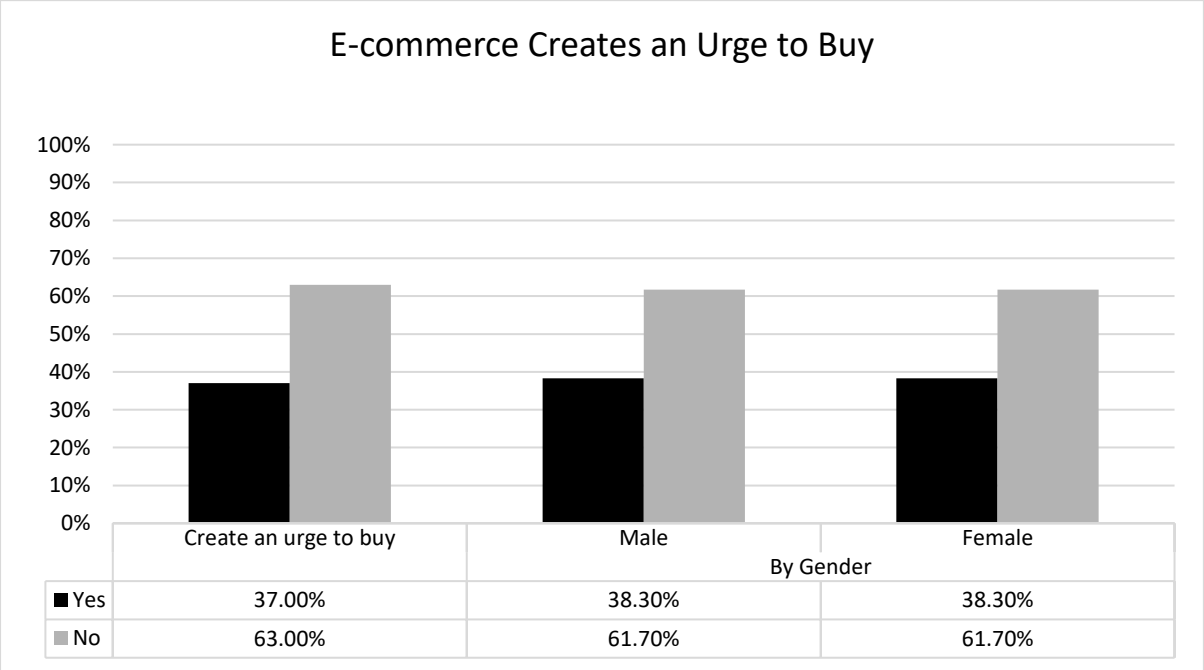
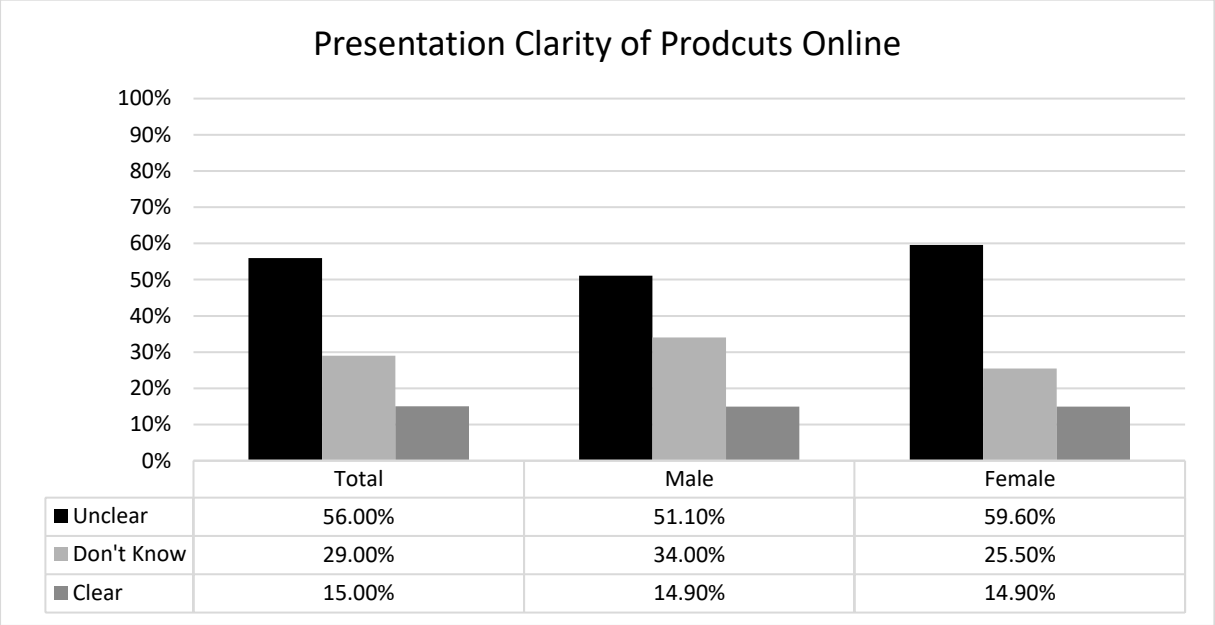


Figure 5.31: Does the e-commerce create an urge to buy?

For the e-commerce to be successful presentation can only be effective if it creates and urge to buy, as consumers are limited to seeing products in this environment. When respondents were questioned about the 'stimulant' of urge to buy it was found out that the current interfaces and presentation do not create an urge to buy. The responses were equal in both genders, as it can be seen in Figure 5.31. This also demonstrates that while organisations and companies are doing their best to create

presentations and websites which create an urge to buy, their attempts are not materialising.

5.6.8 Clarity of Presentation



	Total	Male	Female
Unclear	56.00%	51.10%	59.60%
Don't Know	29.00%	34.00%	25.50%
Clear	15.00%	14.90%	14.90%

Figure 5.32: How clear is the presentation on e-commerce?

When consumers buy online, they are already missing out on the real-life exposure to the product. Therefore, when such an essential element is missing consumers expect the clarity of the presentation on e-commerce to be near perfect. If products or the websites are not clearly presented, visitors and prospective buyers will not be able to make the most of it. Furthermore, the impact will also be less and not what organisations hope for. This also affects overall e-branding impact on the consumers.

When respondents were showed the updated illustrations of websites, the responses were positive, and respondents confirmed that the newer presentations are not only clearer but also create an urge to buy. The results of the respondents are illustrated in Figure 5.32 and also divided by gender.

5.6.9 Interactivity of E-Commerce Websites

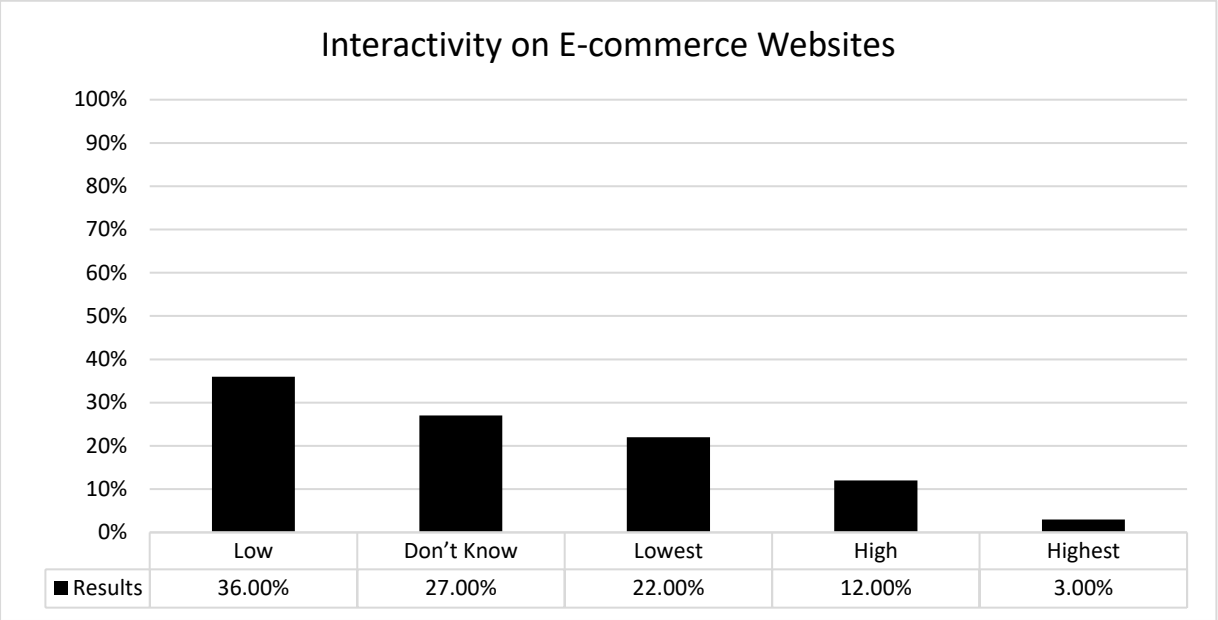


Figure 5.33: Level of interactivity on e-commerce

Before respondents were shown simulation and updated interfaces, it was important to know how do current e-commerce websites rate with regards to interactivity. This question would provide with vital information and would also validate the study in a way, which if current websites are interactive then the interactivity part of this study would not contribute much. However, if the current e-commerce websites are not interactive then the updated interfaces would provide a new benchmark or guidelines for how interactivity on the e-commerce should be like.

From the data collected, the respondents rated the interactivity of the current e-commerce websites low, as seen in Figure 5.33. This shows that whilst the use of e-commerce is on the rise, and the users are adopting this method of shopping, the interactivity largely remains one sided. A significant respondent sample of 36% rated interactivity low and 22% rated interactivity as lowest, which meant that there was a gap with regards to interactivity which needs to be filled.

An interesting result was don't know, which 27% of the respondents selected. This could be because of various reasons. First reason could be the fact that this was a neutral answer and therefore respondents would have found it much easier to select this answer and move on with the study. However, on the other hand it could also be that consumers are not aware of what interactivity is on the e-commerce, and the current user is used to the one-way information flow rather than a communication where there is a constant exchange of dialogue is taking place. Interactivity on the e-commerce at present is in the form of chat systems where at times these chat systems are unavailable. Therefore, a constantly present interactive channel is missing, highlighting a gap in the current paradigms which could be filled with the use of AI, which has the ability to be always present.

5.6.10 Satisfaction with Quality and Richness of Information

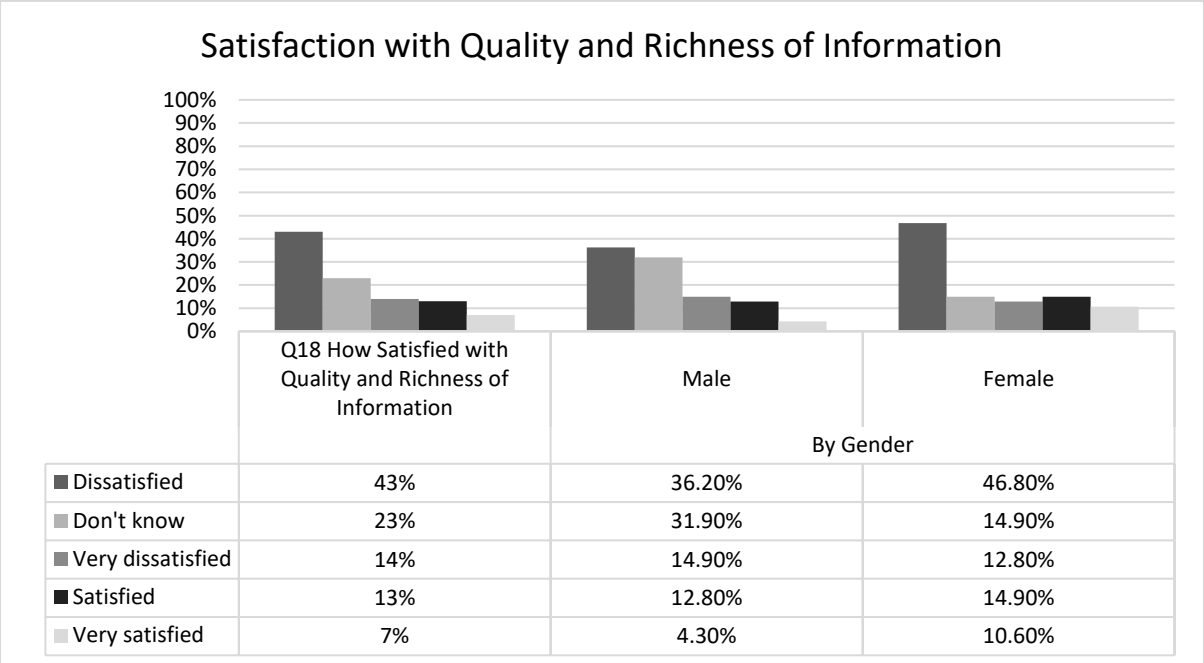


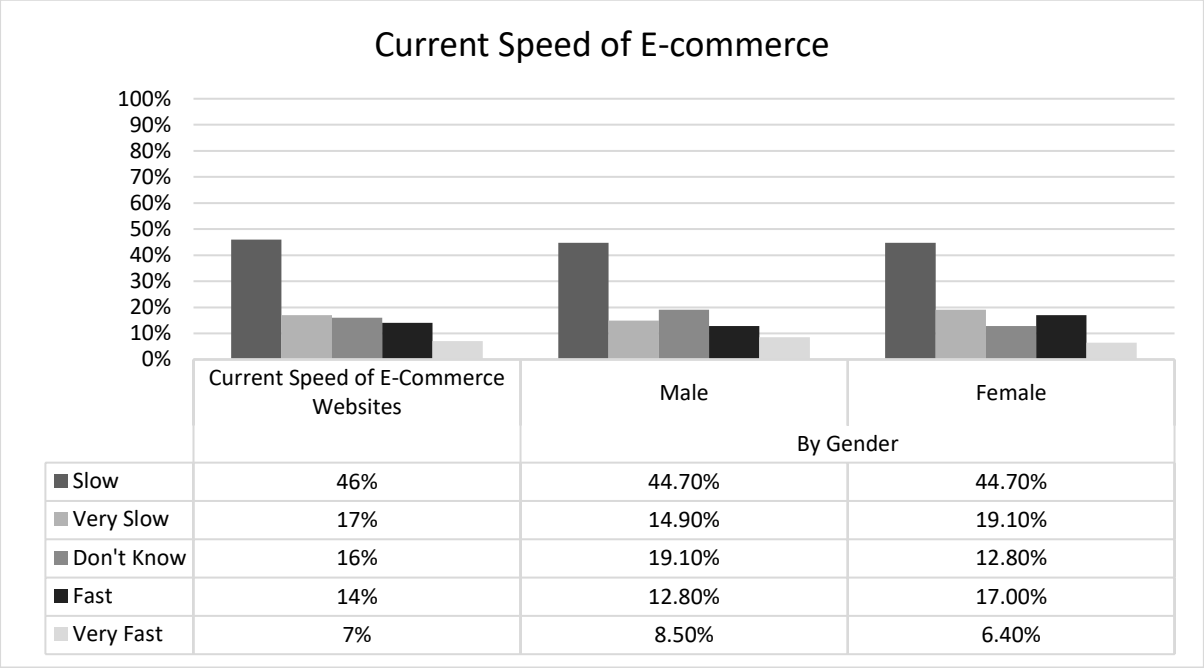
Figure 5.34: Satisfaction with quality of richness

Quality and richness of information are vital, not only for consumers but also from an organisational point of view. Organisations should aim to have content, which is not

only rich but also qualitative, making it easier for the consumers to understand. This finding confirms the results by Rosen and Purinton (2004), in which website content was identified as one of the major reasons for repeat visits. One of the constructs which were formed in the conceptual framework was the relation between information richness and effectiveness. On e-commerce platforms where information is rich in context, it would lead to more effective message being delivered or passed on to the consumers eventually leading on to better and more informed purchase decisions.

Question was asked to see if consumers were satisfied with the current information quality and richness on e-commerce and almost half of the respondents (43%), selected dissatisfied as their answer. This showed that whilst information on the websites was present, it was not qualitative or was not presented in a way which would lead to effectiveness. The results as shown in Figure 5.34, was disseminated further according to gender and it was noticed that the rate of dissatisfaction was higher amongst female consumers as compared to male consumers.

5.6.11 Current Speed of E-Commerce



	Current Speed of E-Commerce Websites	Male	Female
Slow	46%	44.70%	44.70%
Very Slow	17%	14.90%	19.10%
Don't Know	16%	19.10%	12.80%
Fast	14%	12.80%	17.00%
Very Fast	7%	8.50%	6.40%

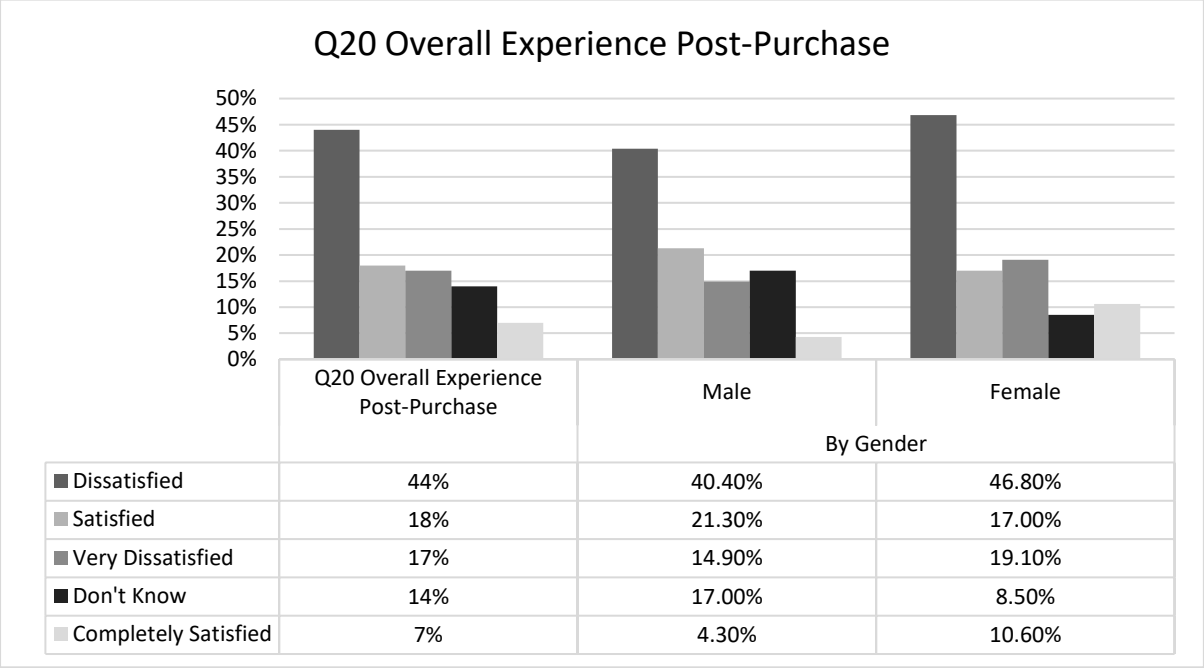
Figure 5.35: Current speed of e-commerce

Speed of navigation for an e-commerce transaction appears to have a direct link with the overall efficiency. Speedy navigation allows for more transactions to be completed and therefore faster browsing is facilitated. Respondents were asked of their opinions regarding the current speed of e-commerce websites.

From the results in Figure 5.35, it can be seen that consumers rated current e-commerce speed as slow and 46% of the respondents agreed to this. There could be many reasons as to why the websites function slowly. For example, additional add-ons and data collection techniques which delay the downloading of websites.

5.6.12 Overall Experience After Buying

Respondents were asked about their overall experience of buying on the current e-commerce websites and a large percentage or almost half of the respondents selected 'dissatisfied' as their answer.



	Q20 Overall Experience Post-Purchase	Male	Female
Dissatisfied	44%	40.40%	46.80%
Satisfied	18%	21.30%	17.00%
Very Dissatisfied	17%	14.90%	19.10%
Don't Know	14%	17.00%	8.50%
Completely Satisfied	7%	4.30%	10.60%

Figure 5.36: Overall experience post purchase

Figure 5.36 clearly demonstrates that whilst e-commerce has improved since it was first started but it is still not leaving respondents with a desired overall experience. Only a small number (18%) of people were satisfied and 7% completely satisfied from the overall experience of using the e-commerce.

When this was cross tabulated across genders to see how genders differentiated between each other. It was found that majority of the women were dissatisfied (47%) and 19% were very dissatisfied with the overall experience compared with 40% dissatisfied and 15% very dissatisfied respondents in the male gender. One of the reasons for this difference could be the difference in the adoption or diffusion rate of technology amongst genders.

5.6.13 Post Simulation Questions

Once respondents were showed the updated interfaces and illustrations of how the e-commerce websites could look and function like, post-simulation questions were asked. The descriptive results of the questions show a strong approval rate of the new interfaces as the improved interfaces were designed keeping in mind the feedback received from the first survey and the literature review carried out.

Some of the significant findings through this were the trust on a brand would be increased if the brand had VSA based multimodal avatar. This means that consumers were willing to allow VSA to assist online. Other significant finding is the belief of the consumers that VSA will increase efficiency on the e-commerce.

Figure 5.37 outlines post simulation questions and the answers to the questions. The questions and data of the answers are included in Appendix C and D.

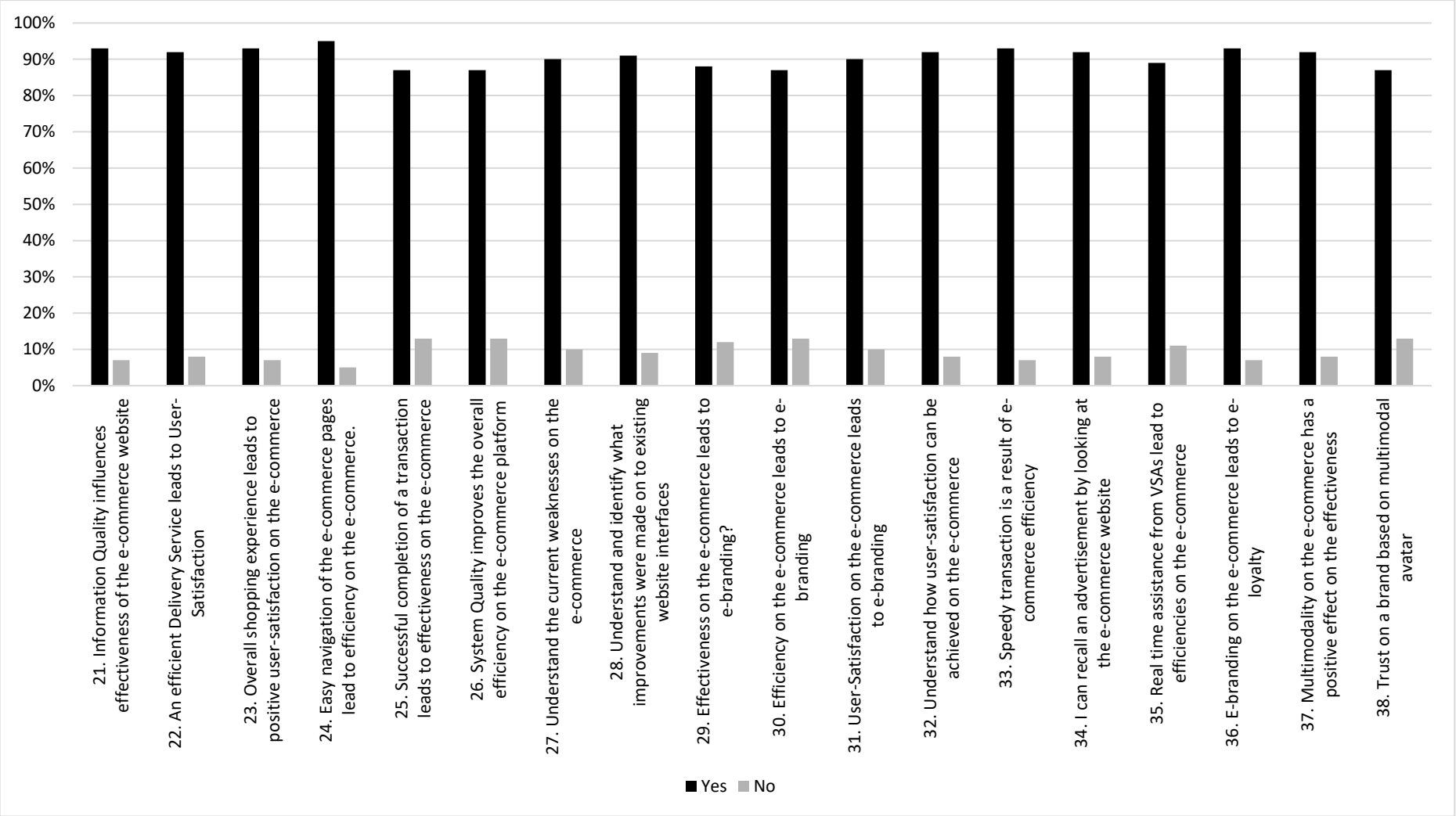


Figure 5.37: Post simulation questions

Post-simulation questions were mostly yes or no questions, also known as nominal question types. Majority of the respondents were satisfied with the new interfaces. The results acquired from these questions will be used for statistical testing which would then approve or disapprove the posed conceptual framework.

5.7 Theoretical Framework Validation

5.7.1 Hypothesis 1 – Effectiveness on the E-Commerce

A chi-square test of association was used to test the hypothesis 1, effectiveness on the e-commerce leads to e-branding.

It was concluded that successful completion of a transaction leads to effectiveness on the e-commerce, $\chi^2(1) = 24.778$, $p<.05$. Also, multimodality on the e-commerce has a positive effect on the effectiveness, $\chi^2(1) = 9.908$, $p<.05$. However, based on the observations considered in this study, product presentation could not be linked to effectiveness on the e-commerce, $\chi^2(1) = .694$, $p>.05$.

Lastly, information quality was concluded to have effect on the effectiveness of the e-commerce website, $\chi^2(1) = 14.525$, $p<.05$. Overall, it is concluded that effectiveness on the e-commerce leads to e-branding.

H1: Effectiveness on the e-commerce leads to e-branding	**χ^2 - value**	**df**	**p-value**	**Result**
H1a: Successful completion of a transaction leads to effectiveness on the e-commerce	24.778	1	.000	Accept
H1b: Multimodality on the e-commerce has a positive effect on the effectiveness	9.908	1	.002	Accept
H1c: Product presentation leads to effectiveness on the e-commerce	.694	1	.405	Reject
H1d: Information Quality has an effect on effectiveness of the e-commerce website	14.525	1	.000	Accept

Table 5.7: Hypothesis 1 - effectiveness on the e-commerce

5.7.2 Hypothesis 2 – Efficiency on the E-Commerce

A chi-square test of association was used to test the hypothesis 2, efficiency on the e-commerce leads to e-branding.

It was concluded that speedy transaction is a result of e-commerce efficiency, $\chi^2(1) = 18.839$, $p<.05$. Also, easy navigation of the e-commerce pages' lead to efficiency on the e-commerce, $\chi^2(1) = 10.280$, $p<.05$. Real time assistance from VSAs will lead to efficiencies on the e-commerce, $\chi^2(1) = 5.965$, $p<.05$.

Lastly, system quality improves the overall efficiency on the e-commerce platform, $\chi^2(1) = 8.565$, $p<.05$. Overall, we conclude that efficiency on the e-commerce leads to e-branding.

H2: Efficiency on the e-commerce leads to e-branding	**χ^2 - value**	**df**	**p-value**	**Result**
H2a: Speedy transaction is a result of e-commerce efficiency	18.839	1	.000	Accept
H2b: Easy navigation of the e-commerce pages lead to efficiency on the e-commerce	10.280	1	.001	Accept
H2c: Real time assistance from VSAs will lead to efficiencies on the e-commerce	5.965	1	.015	Accept
H2d: System Quality improves the overall efficiency on the e-commerce platform	8.565	1	.003	Accept

Table 5.8: Hypothesis 2 - efficiency of the e-commerce

5.7.3 Hypothesis 3 – User-Satisfaction on the E-Commerce

A chi-square test of association was used to test the hypothesis 3, user-satisfaction on the e-commerce leads to e-branding.

It was concluded that overall shopping experience leads to positive user-satisfaction on the e-commerce, $\chi^2(1) = 12.968$, $p<.05$. However, ease of use on the e-commerce does not lead to user-satisfaction, $\chi^2(1) = .040$, $p<.05$ based on the data considered

in the study. The results also showed that an efficient delivery service leads to user-satisfaction, $\chi^2(1) = 4.615$, $p<.05$.

Overall, it can be concluded that user-satisfaction on the e-commerce leads to e-branding.

H3: User-Satisfaction on the e-commerce leads to e-branding	**χ^2 - value**	**df**	**p-value**	**Result**
H3a: Overall shopping experience leads to positive user-satisfaction on the e-commerce	12.968	1	.000	Accept
H3b: Ease of use on the e-commerce leads to user-satisfaction	.040	1	.842	Reject
H3c: An efficient Delivery Service leads to User-Satisfaction	4.615	1	.032	Accept

Table 5.9: Hypothesis 3 - User-satisfaction on the e-commerce

5.7.4 Hypothesis 4 – E-Branding on the E-Commerce

A chi-square goodness-of-fit test was used to test the hypothesis 4, e-branding on the ecommerce leads to e-loyalty.

It was concluded that effective efficient satisfactory experience leads to loyalty, $\chi^2(1) = 70.560$, $p<.05$.

	χ^2 - value	**df**	**p-value**	**Result**
H4: E-branding on the e-commerce leads to e-loyalty	70.560	1	.000	Accept

Table 5.10: Hypothesis 4 - e-branding on the e-commerce

5.8 Discussion

Responses received pre-simulation were similar to those received in the first survey. This adds extra confirmation to these findings. The pre-simulation survey also showed that the perception of the respondents was not very positive. Respondents perceived that lack of progress is being made in terms of improving interactivity on e-commerce platforms. Interfaces on the e-commerce are not updating with the demand of

consumers, which is making users feel frustrated, using the existing practices. Information overload is another parameter which reduces and effects the consumer experience with e-commerce platforms.

According to Liu-Thompkins (2003), people generally assume interactivity to be a desirable attribute but a study on interactivity has produced mixed results. Earlier studies on interactivity produced positive results on consumers (Cho and Leckenby, 1999; Yoo and Stout, 2001), whereas other studies (Bezjian-Avery et al., 1998; Coyle and Thorson, 2001; Sundar et al., 1998) found interactivity had negative effects on consumers. However, when these studies were analysed closely, it was discovered that the difference in results was due to the lack of conceptualisation and operationalisation of interactivity.

Since interactivity on internet has changed and the interaction between businesses and consumers is much more different and two-way now. It is important that businesses build a system where interactivity is at the heart of their operations. Without a strong interaction between the consumer and organisation on the e-commerce interface the business relationship may be a short one. The proposed framework in this thesis facilitates e-branding to aid e-loyalty and an e-commerce interface that is effective, efficient and user-satisfaction.

5.8.1 Effectiveness

Effectiveness, efficiency and user-satisfaction are the three main determinants, which are hypothesised to have significant links to e-branding. For the purposes of this study effectiveness was thought to have been achieved from successful transaction completion, multimodal impact and information quality. A fourth construct, product presentation, did not show significant statistical connection with effectiveness. There

could be various reasons for such, one of the reasons could be the multimodal impact, if an interface has a high multimodal or multimodality present within in, it would automatically translate to the fact that product presentation will be much better than a normal product presentation. The products shown to respondents in the survey were normal two-dimensional product presentations in which some of the products could be zoomed and a 360 view was available. It could also be concluded that in an environment where interactivity was more prevalent, the product presentation did not mean much.

Information quality showed significant connection with effectiveness on the e-commerce. Information quality was a construct taken from Ahn et al., (2004), respondents were made aware of what information quality in this study means. The measurement items which were selected to assess information quality included complete information, accurate information, timely information, reliable information, appropriate information, better purchase choice, and comparison shopping. Information quality has become important these days, given the fact that there are hundreds of websites selling the same products. Consumers are sometimes overloaded with information and it could lead to a situation called information overload where there is so much information that it becomes difficult to make a purchase decision. Example can be of hotel comparison websites, where hundreds of hotels appear in search results and the consumer is faced with a paradox of choices. Websites which do not overload consumers with information and provide just the right amount of information or quality information ultimately lead to effectiveness.

Successful transaction completion was another variable which was also hypothesised to lead to effectiveness on the e-commerce. It was believed that if consumers were able to complete a successful transaction without the transaction being cancelled or

interrupted, it would lead to effectiveness. A successful transaction could not be completed before consumers were persuaded to buy the product first which was reliant on multimodal impact from the website. One of the variables and constructs were regarding multimodal impact and how it leads to effectiveness on the e-commerce. Through statistical testing it was proved that multimodal impact on consumers through the interfaces lead to effectiveness. It essentially means if the e-commerce websites are interactive and included multimodal avatars or information presented through multimodality, it will lead to effectiveness.

5.8.2 Efficiency

After finding out how effectiveness could be achieved on the e-commerce interfaces, the second construct to be tested was efficiency as effectiveness alone is not enough to brand on the internet. When consumers use e-commerce interfaces they are essentially interacting with the website and this interaction includes the use of website. Therefore, a website has to be efficient in-order for the whole equation to work successfully. Efficiency for the purposes of this study was hypothesised to be achieved through speedy transactions, easy website navigations, help from VSAs and system quality.

Results which were achieved after the exposure to survey two, showed all four hypotheses were accepted. In the previous hypothesis effectiveness was achieved when a transaction was completed or through a successful transaction. However, not only it is important to complete a transaction, but it is also important that a transaction goes through speedily. This could be linked back to the fact that most of the respondents of the internet are getting familiar with using the e-commerce and are becoming competent in using it. This can also be matched with the fact that when

consumers shop on high-street or in stores, efficient checkout is desired and therefore contactless payments were created so to improve checkout times (achieving efficiency). Same could be said in case of the internet, where consumers want transactions to not only go through smoothly but also efficiently.

5.8.3 User-Satisfaction

After effectiveness and efficiency were proved to have significant links with e-branding, the third construct was regarding user-satisfaction. It was hypothesised that user-satisfaction could be achieved if consumers have a positive overall experience, interface was easy to use, and whether the delivery service was efficient. Results showed ease of use was not of a significance when it came to user-satisfaction. This could be because ease of use is more closely related to efficiency as compared to user-satisfaction. However, overall positive experience and efficiency delivery service showed strong statistical significance.

This result shows that even if organisations are able to provide consumers with effectiveness and efficiency; user-satisfaction will not be achieved unless the products or services are delivered in an efficient manner. Once the product or service has been delivered to the consumers, at this stage a consumer would be able to rate the overall experience as positive or negative. If an overall experience is rated as positive including the delivery experience, it would lead to user-satisfaction.

5.9 Conclusion

Based on findings and discussions from this Chapter it can be concluded that there are multiple areas where current e-commerce websites are lacking. From weaknesses found in the first survey, improved at this stage of the investigation and those

improvements have led to a positive user-satisfaction. Post-simulation discussion also confirmed that consumers were aware of current changes on the e-commerce and were getting more familiar with the new and updated interfaces. Except for a small fraction of people who were not aware of some basic definitions.

Some of the findings in particular were the layout of the checkout, which could possibly be standardised as all checkout systems same required fields, such as payment information, promo code field, billing and delivery address information. If the checkout pages followed a similar structure they would lead to an even better and more understandable presentation and effectiveness and ultimately user-satisfaction.

Furthermore, this could also be expanded to website presentation. However, this may not be practical as websites and organisations want their layout to be attractive. Moreover, in doing so websites could lose the user-friendliness element. An alternate to this could be providing a separate tab which would allow the websites to appear in a simpler layout. A simpler layout should not only be for websites but given the findings, interfaces be should updated to enhance checkout systems. A standardised checkout system will restore consumer trust on the checkout systems, and it will be difficult to crack. Very similar to bank notes, where they have various types of identification methods to avoid being duplicated. The introduction of standard checkout systems will also help minimise fraud risks.

Standard checkout systems will also benefit people with learning difficulties and disabilities. Findings confirm that whilst e-commerce interfaces are serving purpose, the interfaces are not developed according to consumer demands. The recommended updates would not only make the interfaces better but will also leave consumers with an overall positive experience of purchasing from a particular e-commerce store.

Chapter 6: A Customer Perspective to E-Commerce Interface Design

6.1 Introduction

Main findings of the study are clearly summarised in this Chapter. This Chapter also includes details of the guidelines which are derived as a result of this study and through the validation of the framework. Derived guidelines are not only for this study but benefit a range of users such as people from the field of academia, business and management, e-commerce developers and wider audience who want to understand how interactivity on the e-commerce aids e-loyalty. This study fills in a very specific gap which has not been covered previously in other studies. Results from this study clearly show significant links between e-branding and e-loyalty.

6.2 Validated Framework

Based on results from the statistical analysis, 13 out of the 15 total hypotheses were accepted therefore validating the conceptual framework. The validated framework is illustrated in Figure 6.38. The validated framework excludes the two variables of which the test of association was weak and therefore were rejected.

The framework illustrates all the attributes which are included in effectiveness, efficiency and user-satisfaction. In the absence of these variables or attributes the framework would not have been validated but also the framework would have looked very generic. Based on the hypotheses testing and from the results in this Chapter, final framework has been created as follows.

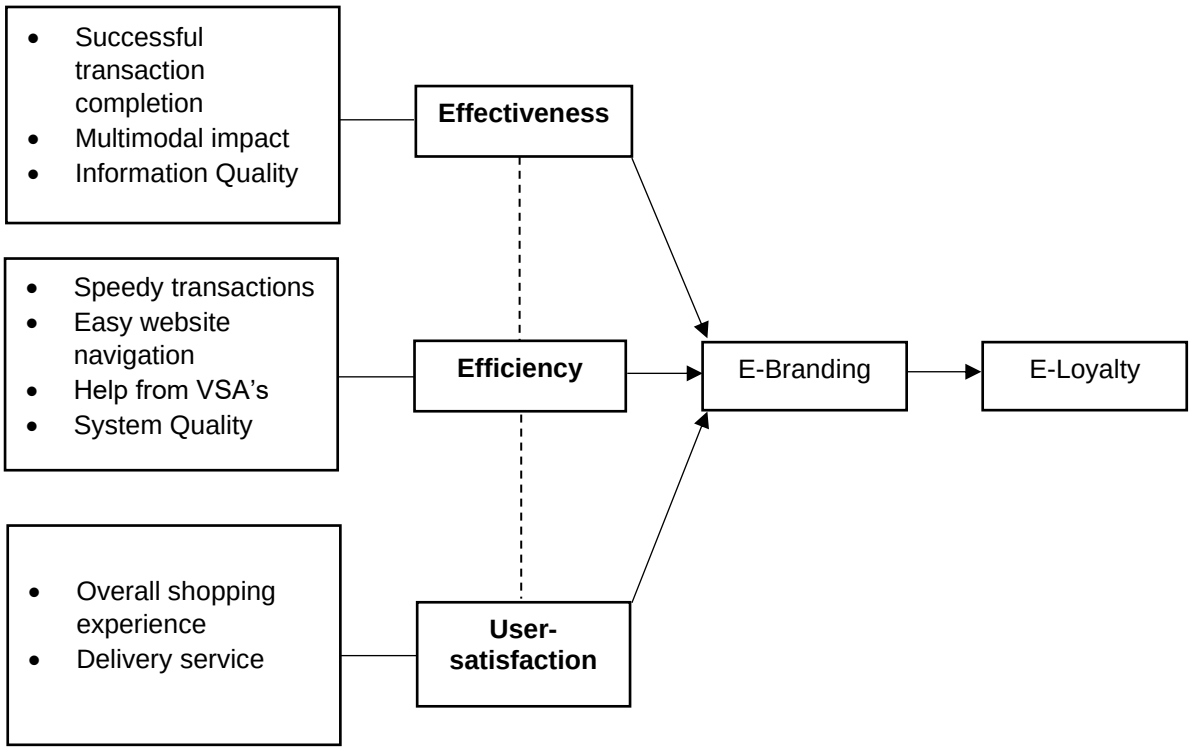


Figure 6.38: Validated Final Framework

6.3 Empirical Review of the Thesis

Whilst e-branding and e-loyalty are both well researched areas, but these two topics have not been studied in a same study previously. Moreover, links between these two elements have never been tested to confirm, that whether e-branding aids e-loyalty or not. This study has therefore addressed this specific question. In testing these three elements it was first important to explore how e-branding on the e-commerce is achieved. Three topics of, effectiveness, efficiency and e-commerce were selected to see their relationship with e-branding as these three were believed to lead to e-branding.

Effectiveness, efficiency and user-satisfaction were the three main constructs which have been tested for their relationship with e-branding. Because effectiveness, efficiency and user-satisfaction are broad terms, their meanings were narrowed down,

and specific attributes were chosen for each of the three elements. These tangible and intangible attributes were outlined in Table 1.1.

From the results of both surveys, it was found out that there are weaknesses in the current e-commerce paradigms and consumers expect more from the e-commerce websites as shopping online does not provide a similar experience to shopping in-store. For example, when consumers purchase online, interaction element with customer assistants is missing. However, results show that as long as consumers are able to get answers to their questions, it does not matter whether those questions are answered by VSA's or human's. The study was carried out from a perspective of consumer rather than organisations, as the change in e-commerce is mainly consumer led rather than organisation.

The study also confirmed the relationship between each of the three attributes with e-branding as positive, meaning there is a clear and strong relationship, and these attributes could be used to carry out e-branding on the e-commerce. Towards the end of second and final survey, the framework (Figure 3.4) was approved through hypothesis testing and the refined framework was proposed above in Figure 6.38. Refined framework excluded elements which did not have significant statistical significance. The guidelines and the refined framework produced in Figure 6.38 can be used by any e-commerce platform to enhance its interface. Not only e-commerce organisations can enhance their interfaces, but through empirically proposed guidelines businesses would be able to retain customers too.

To summarise, the study carried out clearly supports the concept of enhanced interactivity on the e-commerce through various multimodal metaphors and multimodality, including improvements to the efficiency of e-commerce interfaces such

as layout of a website. These allow brands to portray a positive image of it. These updates and enhancements ultimately aid e-loyalty, as consumers are likely to shop again based on their positive experience with an online e-commerce store.

6.4 Review of Surveys

This section of the Chapter summarises the findings from the first survey. The first survey played a pivotal role in the formation of an argument for this study. Whilst through observation it was clear that current e-commerce interfaces were not the best and lacked in various areas. However, this assumption was not supported through any statistical data. This Chapter therefore helped in supporting that assumption through numbers.

6.4.1 Survey 1 - Review

The first survey included the usual demographic questions in the beginning, which helped to understand the basic sample profile. As the aim of the first survey was to understand the weaknesses and gaps in the current e-commerce paradigms, topic related questions followed after the basic sample profile questions. It was discovered that 75% of the respondents shopped online (refer to 4.5.3). This therefore showed that a large number of respondents were familiar with e-commerce. Therefore, positioning respondents to be able to comment on the weaknesses of it. Regarding the efficiency of the e-commerce websites, responses were divided, as some found the e-commerce website easy in navigating, whereas others found it difficult. One of the ways through which efficiency and user-satisfaction could be achieved was using VSA's, which would be able to answer any queries instantly. Results were mixed, but generally it was found that people want real-time information (refer to 4.5.3).

The results further demonstrated that social media plays an influential role in purchase decision-making process. Findings showed that Facebook and Instagram played a significant role in decision-making process followed by YouTube, this is due to the fact that consumers are able to see products on social media platforms, but then are able to see it in multimodality mode on mediums such as YouTube before making a final purchase decision. This information seeking style could be result of lack of real-life experience which consumers have when buying online.

Moving further in the survey, respondents were questioned about the factors to shop online (refer to 4.5.4); and time saving, convenience and price were the top three factors. These factors therefore were taken out and also used in the conceptual framework. For example, when consumers shop online, the expectation is that online shopping will save time and therefore website navigation needs to be efficient. Furthermore, convenience was related to how quick and efficient was the overall delivery service and this was linked to user-satisfaction aspect of the framework. Interestingly, when questioned about factors which held back consumers from shopping online, delivery times and fraud related to card activity stood out in the top as shown in Figure 4.11.

Towards the end of survey, respondents were questioned about their knowledge of multimodal and e-branding and from section 4.5.5 it can be seen respondents were mostly aware what e-branding is. However, large number of respondents were unaware of what multimodals are. Therefore, this highlighted the need to raise more awareness about multimodality in consumers. As consumers were not aware of what multimodals are, therefore consumers were also not aware of what multimodal e-branding is.

It was thought that if consumers are able to remember a brand through an interactive multimodal character or any other interactive feature of the website, it would mean that the brand has been successful in e-branding and achieving e-loyalty. Results showed that 81.70% of the respondents would remember a brand if there were an interactive character to help during the purchase process. Figure 4.12 also shows that 61.70% of the consumers who responded to the survey never came across an interactive character on the e-commerce interface. This identifies a gap on the current e-commerce interfaces which is worth looking into.

Last part of the survey was to enquire about VSA on the e-commerce. Including questions regarding current interfaces and which eventually led back to effectiveness, efficiency and user-satisfaction. Findings in section 4.5.6, illustrated in Figure 4.13 show that current interfaces are very simple and plain and do not include much details, and most of all interactivity lacks severely. Therefore, room for improvement on the current e-commerce interface is significant. Respondents also confirmed the use of FAQs, which meant more time was spent in navigation rather than shopping. This could be reduced through the availability of VSAs on the e-commerce interface.

In Figure 4.14 results are mixed. However, the results do highlight the fact that current presentations could be improved. Improvements can also be made to improve lack of user-satisfaction due to transaction cancellations checkout times. The findings from the survey highlight areas and gaps in the current e-commerce interfaces which must be improved to provide a better overall experience on the e-commerce or a website. The survey therefore reiterated some findings from the literature review. This Chapter also led to the creation of hypotheses. This survey also answered RQ1 in Section 1.3 and RO1 in Section 1.5. The second survey develops on to the findings from the first survey.

6.4.2 Survey 2 – Review

Survey two was a major survey of the study which validated the framework and tested hypotheses proposed in Sections 3.2 and 3.3. The validation process was divided into three steps, first step being the pre-illustration survey after which the respondents were shown updated illustrations of the website; and then finally respondents were requested to complete a post-illustration survey which gathered their ideas about the updated e-commerce interfaces.

The objective of this survey was to improve on existing paradigms using multimodality as mentioned in Section 1.5. Websites were selected and enhanced to include findings from the first survey and the conceptual framework. This ensured that it matched the desired e-commerce interface. As the survey was styled in a structured way, it meant that the first section of the survey was understanding sample profile. Second section of the questionnaire was related to the study. Analysis carried out in this survey was at times cross-tabulated according to gender and age group giving a better insight of results.

Prior to illustration of the enhanced interfaces, and as seen in section 5.6.6 through to section 5.6.12, it can be seen that generally respondents have their reservations of the current e-commerce websites. The reason to ask this question was to check if things had changed since the last survey was carried out. however, situation hadn't changed since the last survey and results are same or similar. Website navigation, presentation, clarity of presentation and their interactivity were both rated as very low and as a result, consumers were left with an overall dissatisfaction.

At this stage, consumers were shown how updated interfaces would look, considering the feedback from the first survey. The website interfaces were updated and enhanced

so to not only to achieve e-branding but aid e-loyalty. The method used was electronic prototyping approach, which is not only faster but also cheaper to build as it would have been extremely complex to create new interfaces from the scratch. This approach was adopted from Sauers et al., (2009), and has shown consistent results across prototypes and real-life scenarios. Furthermore, existing websites were used for illustrations because of the familiarity which consumers had with existing websites. Where a new website would have been created, respondents would not be aware of it and would find it difficult to find the enhancements.

The results for the post-simulation survey in section 5.6.13, and as illustrated in Figure 5.37 showed that respondents had welcomed the updated and enhanced e-commerce interfaces through strong approval rates. Results also showed that VSA and trust on a brand show a positive relationship and if e-commerce interfaces had VSA it would help bring back customers, based on trust. Efficiency and effectiveness related questions were also asked, and the response was positive and overall it showed satisfaction.

As questions were originated from the proposed theoretical framework proposed in Section 3.2, related hypotheses were also created keeping in mind the theoretical framework. As all the data was collected and processed, the last part of this survey was to validate the framework through statistical testing. For the statistical testing chi-square tests were carried out for each of the hypotheses developed. The framework validation section 5.7 outlines the hypotheses and the results in detail. Out of all the hypotheses created only two hypotheses were rejected. Product presentation was not thought to lead to effectiveness on the e-commerce, was rejected, and this could be because of various reasons as explained in Section 5.8. Ease of use on the

e-commerce does not lead to user-satisfaction was another hypothesis which was rejected.

In effect the proposed conceptual framework was approved based on the approved hypotheses and the refined framework was presented in Section 6.2. The framework supported the idea and concept that e-branding through effectiveness, efficiency and user-satisfaction leads to e-loyalty and there was a strong connection between e-branding and e-loyalty.

6.5 A User Approach to Interface Design

The findings from this study's surveys and illustrations produce a set of guidelines which are empirically driven and applicable to e-commerce interfaces. These guidelines can be used for any multimodal e-commerce interface to not only enhance it but to ensure that it leads to effective, efficient and user-satisfactory experience. These guidelines are aimed to help organisations to achieve loyalty on the e-commerce through building interfaces which are effective, efficient and lead to user-satisfaction. However, like any other guideline these guidelines also have limitations, which are covered in Section 6.6.

The results in this study support the founding question of this study, that e-branding aids to e-loyalty. But the question is also that how do businesses brand on e-commerce, and this study also answers this question. E-branding on the e-commerce could be done through improving the effectiveness, efficiency and user-satisfaction. This could be done using multimodal metaphors, enhancement of websites, ensuring successful transaction completion, easy website navigation, overall system quality, overall shopping experience and the delivery service.

6.5.1 User approach to Effectiveness on the E-Commerce

As mentioned in Section 1.6, Contributions, that previous studies have looked into how effectiveness can lead to e-branding however none of the studies look effectiveness from the perspective of e-branding. This study therefore has diminished that gap and looked at effectiveness from that perspective. Other studies also discuss the importance of effectiveness on e-commerce which are discussed in Section 2.13, notably by Chen (2018) who emphasises on how important it is for a website to be usable to be effective. With the recommended changes on the current websites, the websites will not only be usable but will also ensure that transactions are completed successfully.

Other factors which have been approved through theoretical framework are the importance of product presentation on the e-commerce, which suggest that to get effectiveness on e-commerce it is important to have products presented in a presentable manner. Similar to offline shopping where products are presented in window shops. However, a significant finding and an important ingredient to get effectiveness is information quality. Consumers rely on information available to them online, and where this information is not available, there is a high chance that consumers will purchase from competitors; and therefore, failing the aim of e-branding.

Lastly, when these ingredients are present to gain effectiveness on the e-commerce, the results showed that effectiveness has strong relationship with e-branding.

6.5.2 User approach to Efficiency on the E-Commerce

Buying online is different to the traditional method and has its own benefits and drawbacks. One of the reasons why people shop online is because it provides convenience. When convenience is discussed in the online context, it could mean a

wide range of things. However, for the purposes of this study, efficiency was related to speedy transactions, easy website navigation, help from VSAs and system quality.

It was noted that in the updated interfaces consumers were highly satisfied because there were options to check-out faster than normal options. This not only saved time but also provided a higher convenience when shopping online. Online retailers must therefore ensure that speedy checkout options are provided, as it was observed that some retailers required consumers to sign-in and provide information which is not an efficient method of buying online.

Other aspects which showed strong connections with efficiency were, help from VSAs. Respondents liked the fact that questions will be answered in real-time as compared to chat systems where there is a lengthy wait and sometimes information given is incorrect or inaccurate. Help from VSAs will ensure the information provided is consistent and real-time therefore helping to gain efficiency. Furthermore, the overall system quality, taken from Ahn et al., (2004), was tested in terms of e-commerce interfaces rather than perceived ease of use from technology acceptance model.

Lastly, when these ingredients are present to gain efficiency on the e-commerce, the results showed that efficiency has strong relationship with e-branding.

6.5.3 User approach to Satisfaction on the E-Commerce

User-satisfaction is a broad term and when it came to buying online, this term became broader. Therefore, to make this easily understandable it was summarised into two aspects. Overall shopping experience which meant the journey of a consumer from entering the website to existing the website after a successful purchase or information search. Where consumers made a purchase, this included delivery service or the option of delivery services which were available to a consumer.

Results from statistical testing confirmed a strong positive relationship between overall shopping experience and user-satisfaction. Furthermore, when it came to delivery, consumers shop online because it provides them the ability to get their orders delivered, giving them convenience and where consumers had the options to select multiple delivery methods, it led to a strong connection with user-satisfaction.

Lastly, when these ingredients are present to gain user-satisfaction on the e-commerce, the results showed that user-satisfaction has strong relationship with e-branding.

6.5.4 E-Loyalty through E-Branding

Loyalty is expected by brands which have carried out a branding process. E-commerce retailers who do not have e-branding strategy do not aim to get loyalty from consumers. The aim of the study was to propose a theoretical framework which not only identifies how e-branding could be carried out successfully, but also confirms that if an organisation is successful in e-branding on the e-commerce, it will be able to attain loyalty from consumers.

From the statistical testing and survey, it was observed that consumers who were able to have an experience which was seamless and smooth on e-commerce, this included effectiveness and efficiency and user-satisfaction, those consumers are likely to return for a repeat purchase. If consumers return for repeat purchase, the positive experience on the e-commerce website will help them remember the brand. This, therefore, achieves the aim of e-loyalty.

From last and major test of the study, it was proven that e-branding and e-loyalty has a strong relationship. This confirms the hypotheses positive, that if an e-commerce

retailer is able to e-brand based on the guidelines above, it will aid in achieving e-loyalty.

6.6 Critical Evaluation and Future Studies

This section of the study focuses on possible limitations of the thesis and how experiments could have been designed better.

6.6.1 Character based VSAs

This study focused mainly on VSAs, which relied on interactivity based on text or chat system. The VSA could have been better developed using other multimodality metaphors such as interactive characters. This would have allowed to analyse and assess the impact of an interactive VSA character. This also paves way for future studies which should use interactive VSA characters in the same context and assess their impact on consumers.

6.6.2 Respondent Sample

The sample used for both surveys were opportunistic and same sample was not used for both surveys. Whilst the basic results relating to online behaviour were similar, but it would have been better if same sample respondents answered both surveys. However, this did not have much impact on the results, because whilst the surveys were inter-related but were also independent. Future studies could make use of one sample and could also be completed in one extensive simulation survey rather than two staged process. Future studies could also target a larger sample size as compared to this study.

Respondents in this study were mainly in the age groups of below 60. As technology penetrates and become part of daily lives, future study in this area must focus on

people on old age people. This recommendation for future study is also supported by Schreuers et al., (2017), who conclude that although the senior populations' engagement with digital technology has shown a steady increase, older adults vary greatly in their Internet competency or digital literacy. Therefore, it would be beneficial to explore this arena too.

6.6.3 Different Sub-Components in Framework

Framework devised in Section 6.2 used the relevant and applicable concepts of effectiveness, efficiency and user-satisfaction. Nonetheless, these were not comprehensive and future studies could incorporate a wider range of sub-components to test their relation in the same setting. This would lead to an improvised version of the framework being developed or proposed to further enhance the e-branding and e-loyalty on the e-commerce interfaces.

For example, effectiveness in terms of financial performance has not been assessed in this study but it could be assessed from this perspective (financial) in future studies. Furthermore, efficiency in this study was related to website navigation and not resource allocations, but this could be a part of future studies. These future study recommendations also support the findings by Yang et al., (2016), who concluded that efficiency and effectiveness are different to each other because efficiency is related to resource allocation whereas effectiveness is tied more closely to economic and financial performance. Future study can be based on behaviour rather than attitude.

6.7 Conclusion

According to Cao and Yang (2016); Chiou et al., (2011); Kim et al., (2007) the internet is moving towards into a new era of e-commerce and communication. Research

motivation for this study has been outlined in Section 1.2, which was to explore how e-branding is carried out on the internet, what methods are successful, and whether e-branding aids e-loyalty. This question led on to develop the foundation of this study. This led to the formation of research questions, aims and objectives of the study. In this study all research questions were answered, objectives were achieved and therefore achieving overall aim of the thesis as outlined in Section 1.4.

Current practices on the e-commerce were explored including weaknesses and how these weaknesses could be turned into opportunities using or adopting the recommended framework. From the refined framework in Section 6.2 it has been concluded that e-loyalty online can be achieved through e-branding. However, to achieve e-branding on the e-commerce organisations or e-tailers would have to use the formula of achieving effectiveness, efficiency and user-satisfaction online. To achieve these online, it must be ensured that e-commerce interfaces are well developed; only then, the tangible and intangible attributes mentioned in Table 1.1: Outline of Tangible and Intangible attributes' will be achieved.

Findings in this study confirm that social media influences consumer perception. Furthermore, consumers also appreciated and welcomed the use of VSA on the e-commerce interfaces, which would help answer on-the-spot queries leading to further efficiencies in addition to website navigation and speedy transactions. These findings in addition to the guidelines proposed through the framework make significant contribution in the existing literature of e-commerce, multimodality and e-branding. However, as this study focused specific domains, future studies must aim to include wider range of attributes mentioned in Section 6.6 to develop a more comprehensive and extensive framework making an even more significant contribution in the area of multimodal branding on the e-commerce interfaces.

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Appendices

Appendix A: Stage 1 Questionnaire

Interactive Multimodal Branding in E-Commerce

Do you shop online? Have you noticed interactions on the e-commerce platforms? Do you get your online queries answered promptly? Have you ever thought about interactive characters on the ecommerce Platforms?

Please complete this survey to help find out the answers to these questions. Any incomplete questionnaire will be discarded. All the answers collected will only be for this specific research only.

The questionnaire is an anonymous type and no data will be distributed to any third parties and will be treated in accordance with the Data Protection Act (1988). Furthermore, the research is carried out in accordance with the 'Research Ethics Code of Practice' published by the University of West London (2014) and can be accessed at http://www.uwl.ac.uk/sites/default/files/Departments/Research/Web/PDF/research_ethics_code_of_practice_20May2015_with_appx.pdf (Accessed 08 Nov 2015).

If you would like a copy of the completed research please opt for it at the end of the questionnaire, once completed a copy will be sent via e-mail to you.

Once again. Thank you for your valuable time, help and sharing your perspectives about the topic.

*** Required**

Demographs

This section captures demographic information of the respondent.

1. **What is your gender**

   - ☐ Male
   - ☐ Female
   - ☐ Prefer not to answer

2. **What is your age group?**

   - ☐ Under 18
   - ☐ 18 – 24
   - ☐ 25 – 34
   - ☐ 35 – 54
   - ☐ 55+

3. **What is your marital status?**

   - ☐ Single, never married
   - ☐ Married or domestic partnership
   - ☐ Divorced
   - ☐ Other: _____

4. **What is the highest level of education or qualification you have achieved or attained?**

   - ☐ Primary School
   - ☐ Secondary School
   - ☐ Vocational/Technical School (2 years)
   - ☐ Some College
   - ☐ Bachelor's degree
   - ☐ Masters/Post-graduate degree

- ☐ Doctoral / PhD
- ☐ Professional degree
- ☐ Other: _____

5. **Which of the following closely matches your job title?**
   - ☐ Top level executive
   - ☐ Senior Vice-President
   - ☐ Vice-President
   - ☐ Director
   - ☐ Manager
   - ☐ Professional
   - ☐ Administrative / Support personnel
   - ☐ Homemaker
   - ☐ Unemployed
   - ☐ Retired
6. **How long have you been using the internet for?**
   - ☐ 1 - 3 years
   - ☐ 3 - 5 years
   - ☐ 5 - 8 years
   - ☐ 8 years or more
7. **How would you describe your proficiency on the internet?**
   - ☐ Basic (Fundamental awareness)
   - ☐ Novice (Limited experience)
   - ☐ Intermediate (Practical application)
   - ☐ Advanced (Applied Theory)
   - ☐ Expert (Recognized authority)

8. **How frequently do you use the internet?**

- ☐ Never
- ☐ Once a day
- ☐ 2 - 5 times a day
- ☐ 6 - 10 times a day
- ☐ Once a week
- ☐ Once every fortnight
- ☐ Once a month

9. **On average how much time do you spend on the internet weekly?**

- ☐ 0 - 5 hours
- ☐ 6 - 10 hours
- ☐ 11 - 15 hours
- ☐ 16 - 20 hours
- ☐ More than 20 hours

Buying Online

This section will acquire information regarding online buying behaviour

10. **What device do you use most frequently to access the internet?**

- ☐ Desktop Computer
- ☐ Laptop
- ☐ Mobile/Smart Phones
- ☐ Tablet
- ☐ Games Console
- ☐ TV
- ☐ Other:

11. **Do you use the internet to collect information prior to purchasing?**

- ☐ Yes
- ☐ No

12. Do you use the internet for shopping?

- ☐ Yes
- ☐ No

13. When was the last time you bought an item on the internet?

- ☐ 1 - 2 days ago
- ☐ 3 - 4 days ago
- ☐ 5 - 7 days ago
- ☐ Within the fortnight
- ☐ Within the month
- ☐ Don't remember

14. What category of goods did the last bought item belong to?

- ☐ Consumer electronics
- ☐ Books
- ☐ Clothing and apparel
- ☐ Household goods
- ☐ Food and groceries
- ☐ Other goods

15. Did social media play a role in the purchase decision?

- ☐ Yes
- ☐ No

16. If Yes, please select or write which social media platform played a role in the purchase decision making.

	Always (100%)	Usually (75%)	Often (50%)	Sometimes (25%)	Never (0%)
Facebook					
Twitter					
Instagram					
YouTube					
LinkedIn					
Google+					
Pinterest					
Tumblr					
Other					

17. What were the most important factors to shop online?

	Always (100%)	Usually (75%)	Often (50%)	Sometimes (25%)	Never (0%)
Brand, including e- Brands					
Price					
Convenience					
Time-saving					
Many choices					
Easy to see items by popularity					
Recommendations from friends & family					

18. Have you ever used e-marketplaces such as eBay, Amazon or etc to buy online?

☐ Yes

☐ No

19. Are the current e-commerce websites easy to navigate?

☐ Yes

☐ No

20. How clear is the presentation of products on the e-commerce websites?

	1	2	3	
Clear				Unclear

21. In a few words or a sentence describe what does interactivity mean?

_____

_____

_____

22. On a scale of 5, how would you rate the interactivity of current e-commerce websites?

	1	2	3	4	5	
Lowest						Highest

Effectiveness, Efficiency and User-Satisfaction

This section will acquire the information in regards to how fast, reliable and secure are the practices on the e-commerce platforms. Moreover, this section will provide results on user-satisfaction after the use of these platforms.

23. Do current product presentation styles create an urge to buy online?

☐ Yes

☐ No

24. How quick or slow is the current average checkout timings?

☐ Very quick (1 - 5 minutes)

☐ Quick (5 - 10 minutes)

☐ Don't Know

- ☐ Slow (10 - 15 minutes)
- ☐ Very slow (15 - 20 minutes)

25. Have you ever faced a situation where the transaction was cancelled because of an issue on the e-commerce website?

- ☐ Yes
- ☐ No

26. How satisfied are you with the current quality and richness of information?

	1	2	3	4	5	
Very dissatisfied						Very satisfied

27. How would you rate the current speed of the e-commerce websites?

	1	2	3	4	5	
Very slow						Very fast

28. At the end of a successful transaction/purchase, are you satisfied with the overall buying experience?

	1	2	3	4	5	
Very dissatisfied						Very satisfied

29. What factors do you think of before buying online?

- ☐ Delivery times
- ☐ Risk of credit card frauds
- ☐ Risk of identity thefts

- ☐ Difficulty in returning products/items
- ☐ Getting the wrong item
- ☐ Lack of trust on the vendor
- ☐ Complex process as compared to traditional shopping
- ☐ Absence of the touch sensation
- ☐ Previous negative experiences
- ☐ Other:

30. **What worries do you have after buying online? Please explain in a few keywords or sentences:**

_____

_____

_____

E-Branding

This section of the questionnaire will acquire information about e-branding aspects.

31. Do you know what e-branding is?
    - ☐ Yes
    - ☐ No
32. Do you know what multimodals are?
    - ☐ Yes
    - ☐ No
33. If not, where did you look for the meaning of Multimodals.
    - ☐ Desktop Computer
    - ☐ Mobile/Smart Phone - Online search
    - ☐ Mobile/Smart Phone - Dictionary/App

- ☐ From a friend/peer
- ☐ Other:

34. Have you ever come across multimodal e-branding?
    - ☐ Yes
    - ☐ No
35. Have you ever come across interactive characters on e-commerce websites?
    - ☐ Yes
    - ☐ No
36. If an e-commerce website had interactive characters, would you re-purchase from them again?
    - ☐ Yes
    - ☐ No
37. Would an interactive character help you remember an online website/brand?
    - ☐ Yes
    - ☐ No

E-Branding

This section of the questionnaire will acquire information about e-branding aspects.

38. Is it easy to find information about products or services on an e-commerce website?
    - ☐ Yes
    - ☐ No
39. Do you refer to the Frequently Asked Question (FAQ) section on an e-commerce website?
    - ☐ Yes
    - ☐ No

40. Have you ever come across Virtual Online Shopping Assistants?

- ☐ Yes
- ☐ No

41. Speaking of Online Shopping Assistants, what comes in your mind?

_____

_____

_____

42. Would you like an Online Shopping Assistant to assist you during the shopping process? From product selection to payments and customer services.

- ☐ Yes
- ☐ No

43. Would it matter to you if your online queries were responded by a computer rather than a real person?

- ☐ Yes
- ☐ No

End of Questionnaire. Thank you for your Participation

Thank you for your participation in the questionnaire.

Appendix B: Stage 1 Data

		Count
What is your gender?	Female	29
	Male	29
	Prefer not to answer	2
What is your age group?	18-24	28
	25-34	16
	35-54	13
	55+	3
What is your marital status?	complicated	1
	Divorced	4
	Married or domestic partnership	15
	prefer not to say	1
	Single, never married	38
	widowed	1
What is the highest level of education or qualification you have achieved or attained?	Bachelor's degree	27
	Doctoral / PhD	1
	Foundation Degree	1
	Masters/Post-graduate degree	11
	Professional degree	4
	Secondary School	5
	Some College	10
	Vocational/Technical School (2 years)	1
Which of the following closely matches your job title?	Administrative / Support personnel	12
	Director	3
	Homemaker	3

	Manager	10
	Professional	11
	Retired	2
	Top level executive	1
	Unemployed	17
	Vice-President	1
How long have you been using the internet for?	1 - 3 years	1
	3 - 5 years	10
	5 - 8 years	14
	8 years or more	35
How would you describe your proficiency on the internet?	Advanced (Applied Theory)	17
	Basic (Fundamental awareness)	3
	Expert (Recognized authority)	10
	Intermediate (Practical application)	23
	Novice (Limited experience)	7
How frequently do you use the internet?	2 - 5 times a day	17
	6 - 10 times a day	39
	Once a day	4
On average how much time do you spend on the internet weekly?	0 - 5 hours	6
	11 - 15 hours	9
	16 - 20 hours	7
	6 - 10 hours	18
	More than 20 hours	20
What device do you use most frequently to access the internet?	Desktop Computer	7
	Laptop	13
	Mobile/Smart Phones	38
	Tablet	2
Do you use the internet to collect information prior to purchasing?	No	9
	Yes	51
Do you use the internet for shopping?	No	5
	Yes	55
When was the last time you bought an item on the internet?	1 - 2 days ago	13
	3 - 4 days ago	12
	5 - 7 days ago	9

	Don't remember	9
	Within the fortnight	5
	Within the month	12
What category of goods did the last bought item belong to?	Books	6
	Clothing and apparel	26
	Consumer electronics	7
	Food and groceries	5
	Household goods	4
	Other goods	12
Did social media play a role in the purchase decision?	No	27
	Yes	33
If Yes, please select or write which social media platform played a role in the purchase decision making. [Facebook]		6
	Always (100%)	11
	Never (0%)	9
	Often (50%)	8
	Sometimes (25%)	12
	Usually (75%)	14
If Yes, please select or write which social media platform played a role in the purchase decision making. [Twitter]		8
	Always (100%)	6
	Never (0%)	24
	Often (50%)	7
	Sometimes (25%)	7
	Usually (75%)	8
If Yes, please select or write which social media platform played a role in the purchase decision making. [Instagram]		7
	Always (100%)	8
	Never (0%)	14
	Often (50%)	7
	Sometimes (25%)	11
	Usually (75%)	13
If Yes, please select or write which social media platform played a role in the purchase decision making. [Youtube]		8
	Always (100%)	11
	Never (0%)	16
	Often (50%)	8
	Sometimes (25%)	10
	Usually (75%)	7
If Yes, please select or write which social media platform played a role in the purchase decision making. [Linkedin]		8
	Always (100%)	2
	Never (0%)	26
	Often (50%)	9
	Sometimes (25%)	8

	Usually (75%)	7
If Yes, please select or write which social media platform played a role in the purchase decision making. [Google+]		7
	Always (100%)	8
	Never (0%)	25
	Often (50%)	5
	Sometimes (25%)	9
	Usually (75%)	6
If Yes, please select or write which social media platform played a role in the purchase decision making. [Pinterest]		8
	Never (0%)	27
	Often (50%)	9
	Sometimes (25%)	9
	Usually (75%)	7
If Yes, please select or write which social media platform played a role in the purchase decision making. [Tumblr]		8
	Always (100%)	2
	Never (0%)	31
	Often (50%)	6
	Sometimes (25%)	8
	Usually (75%)	5
If Yes, please select or write which social media platform played a role in the purchase decision making. [Other]		6
	Always (100%)	6
	Never (0%)	25
	Often (50%)	10
	Sometimes (25%)	6
	Usually (75%)	7
What were the most important factors to shop online? [Brand, including e-Brands]		5
	Always (100%)	13
	Never (0%)	1
	Often (50%)	10
	Sometimes (25%)	16
	Usually (75%)	15
What were the most important factors to shop online? [Price]		3
	Always (100%)	29
	Never (0%)	1
	Often (50%)	6
	Sometimes (25%)	4
	Usually (75%)	17
What were the most important factors to shop online? [Convenience]		2
	Always (100%)	31
	Often (50%)	9
	Sometimes (25%)	3

	Usually (75%)	15
What were the most important factors to shop online? [Time saving]		2
	Always (100%)	32
	Often (50%)	9
	Sometimes (25%)	5
	Usually (75%)	12
What were the most important factors to shop online? [Many choices]		4
	Always (100%)	27
	Never (0%)	2
	Often (50%)	9
	Sometimes (25%)	7
	Usually (75%)	11
What were the most important factors to shop online? [Easy to see items by popularity]		5
	Always (100%)	22
	Never (0%)	3
	Often (50%)	9
	Sometimes (25%)	10
	Usually (75%)	11
What were the most important factors to shop online? [Recommendation from friends]		5
	Always (100%)	14
	Never (0%)	5
	Often (50%)	9
	Sometimes (25%)	16
	Usually (75%)	11
Have you ever used e-marketplaces such as eBay, Amazon or etc to buy online?	No	14
	Yes	46
Are the current e-commerce websites easy to navigate?	No	12
	Yes	48
How clear is the presentation of products on the e-commerce websites?	1	28
	2	21
	3	11
On a scale of 5, how would you rate the interactivity of current e-commerce websites?	1	6
	2	6
	3	22
	4	20
	5	6
Does current product presentation styles create an urge to buy online?	No	19
	Yes	41
How quick or slow is the current average checkout timings?	Don't Know	12
	Quick (5 - 10 minutes)	18

	Slow (10 - 15 minutes)	8
	Very quick (1 - 5 minutes)	19
	Very slow (15 - 20 minutes)	3
Have you ever faced a situation where the transaction was cancelled because of an issue on the e-commerce website?	No	36
	Yes	24
How satisfied are you with the current quality and richness of information?	1	4
	2	10
	3	20
	4	20
	5	6
How would you rate the current speed of the e-commerce websites?	1	4
	2	9
	3	18
	4	21
	5	8
At the end of a successful transaction/purchase, are you satisfied with the overall buying experience?	1	3
	2	11
	3	13
	4	26
	5	7
Do you know what e-branding is?	No	23
	Yes	37
Do you know what multimodals are?	No	44
	Yes	16
If not, where did you look for the meaning of Multimodals.		21
	Desktop Computer	8
	From a friend/peer	1
	Google	1
	Mobile/Smart Phone - Dictionary/App	6
	Mobile/Smart Phone - Online search	23
Have you ever come across multimodal e-branding?	No	39
	Yes	21
	No	37

Have you ever come across interactive characters on e-commerce websites?	Yes	23
If an e-commerce website had interactive characters, would you re-purchase from them again?	No	18
	Yes	42
Would an interactive character help you remember an online website/brand?	No	11
	Yes	49
Is it easy to find information about products or services on an e-commerce website?	No	14
	Yes	46
Do you refer to the Frequently Asked Question (FAQ) section on an e-commerce website?	No	24
	Yes	36
Have you ever come across Virtual Online Shopping Assistants?	No	40
	Yes	20
Would you like an Online Shopping Assistant to assist you during the shopping process? From product selection to payments and customer services.	No	25
	Yes	35
Would it matter to you if your online queries were responded by a computer rather than a real person?	No	31
	Yes	29

Table 11 Appendix B Survey 1 Data Summary

Appendix C: Stage 2 Questionnaire

Interactive Multimodal Branding in E-Commerce

Do you shop online? Have you noticed interactions on the e-commerce platforms? Do you get your online queries answered promptly? Have you ever thought about interactive characters on the ecommerce Platforms?

Please complete this survey, which includes simulation, to help find out the answers to these questions. Any incomplete questionnaire will be discarded. All the answers collected will only be for this specific research only.

The questionnaire is an anonymous type and no data will be distributed to any third parties and will be treated in accordance with the Data Protection Act (1988). Furthermore, the research is carried out in accordance with the 'Research Ethics Code of Practice' published by the University of West London (2014) and can be accessed at http://www.uwl.ac.uk/sites/default/files/Departments/Research/Web/PDF/research_ethics_code_of_practice_20May2015_with_appx.pdf (Accessed 08 Nov 2015).

If you would like a copy of the completed research please opt for it at the end of the questionnaire, once completed a copy will be sent via e-mail to you.

Once again. Thank you for your valuable time, help and sharing your perspectives about the topic.

*** Required**

Demographs

This section captures demographic information of the respondent.

1. **What is your gender**

   - ☐ Male
   - ☐ Female
   - ☐ Prefer not to answer

2. **What is your age group?**

   - ☐ Under 18
   - ☐ 18 – 24
   - ☐ 25 – 34
   - ☐ 35 – 54
   - ☐ 55+

3. **What is your marital status?**

   - ☐ Single, never married
   - ☐ Married or domestic partnership
   - ☐ Divorced
   - ☐ Other: _____

4. **What is the highest level of education or qualification you have achieved or attained?**

   - ☐ Primary School
   - ☐ Secondary School
   - ☐ Vocational/Technical School (2 years)
   - ☐ Some College
   - ☐ Bachelor's degree
   - ☐ Masters/Post-graduate degree

- ☐ Doctoral / PhD
- ☐ Professional degree
- ☐ Other: _____

5. **Which of the following closely matches your job title?**
   - ☐ Top level executive
   - ☐ Senior Vice-President
   - ☐ Vice-President
   - ☐ Director
   - ☐ Manager
   - ☐ Professional
   - ☐ Administrative / Support personnel
   - ☐ Homemaker
   - ☐ Unemployed
   - ☐ Retired
6. **How long have you been using the internet for?**
   - ☐ 1 - 3 years
   - ☐ 3 - 5 years
   - ☐ 5 - 8 years
   - ☐ 8 years or more
7. **How would you describe your proficiency on the internet?**
   - ☐ Basic (Fundamental awareness)
   - ☐ Novice (Limited experience)
   - ☐ Intermediate (Practical application)
   - ☐ Advanced (Applied Theory)
   - ☐ Expert (Recognized authority)

8. **How frequently do you use the internet?**

- ☐ Never
- ☐ Once a day
- ☐ 2 - 5 times a day
- ☐ 6 - 10 times a day
- ☐ Once a week
- ☐ Once every fortnight
- ☐ Once a month

9. **On average how much time do you spend on the internet weekly?**

- ☐ 0 - 5 hours
- ☐ 6 - 10 hours
- ☐ 11 - 15 hours
- ☐ 16 - 20 hours
- ☐ More than 20 hours

10. **What device do you use most frequently to access the internet?**

- ☐ Desktop Computer
- ☐ Laptop
- ☐ Mobile/Smart Phones
- ☐ Tablet
- ☐ Games Console
- ☐ TV
- ☐ Other:

11. **Does social media play a role in the purchase decision?**

- ☐ Yes
- ☐ No

12. Ease of use on the e-commerce leads to user-satisfaction

- ☐ Yes
- ☐ No

Effectiveness, Efficiency, and User-Satisfaction

Pre-Simulation Survey

13. Product presentation leads to effectiveness on the e-commerce

- ☐ Yes
- ☐ No

14. Do current product presentation styles create an urge to buy online?

- ☐ Yes
- ☐ No

15. How clear is the presentation of products on the e-commerce websites?

	1	2	3	
Clear				Unclear

16. On a scale of 5, how would you rate the interactivity of current e-commerce websites?

	1	2	3	4	5	
Lowest						Highest

17. How quick or slow is the current average checkout timings?

- ☐ Very quick (1 - 5 minutes)
- ☐ Quick (5 - 10 minutes)
- ☐ Don't Know

- ☐ Slow (10 - 15 minutes)
- ☐ Very slow (15 - 20 minutes)

18. Have you ever faced a situation where the transaction was cancelled because of an issue on the e-commerce website?

- ☐ Yes
- ☐ No

19. How satisfied are you with the current quality and richness of information?

	1	2	3	4	5	
Very dissatisfied						Very satisfied

20. How would you rate the current speed of the e-commerce websites?

	1	2	3	4	5	
Very slow						Very fast

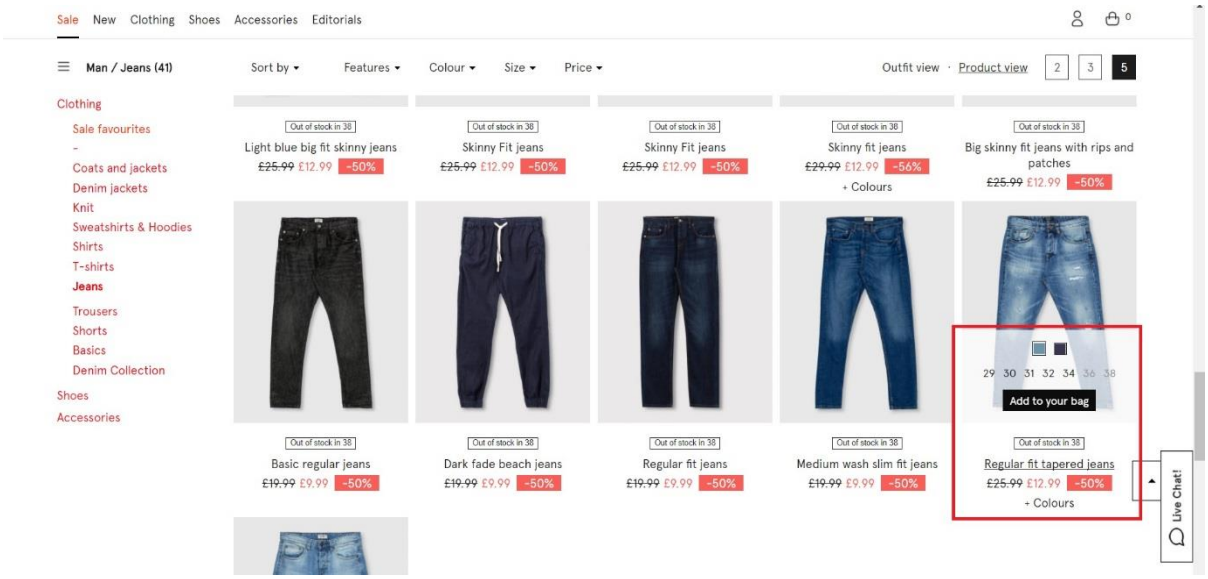
21. Information Quality influences effectiveness of the e-commerce website

- ☐ Yes
- ☐ No

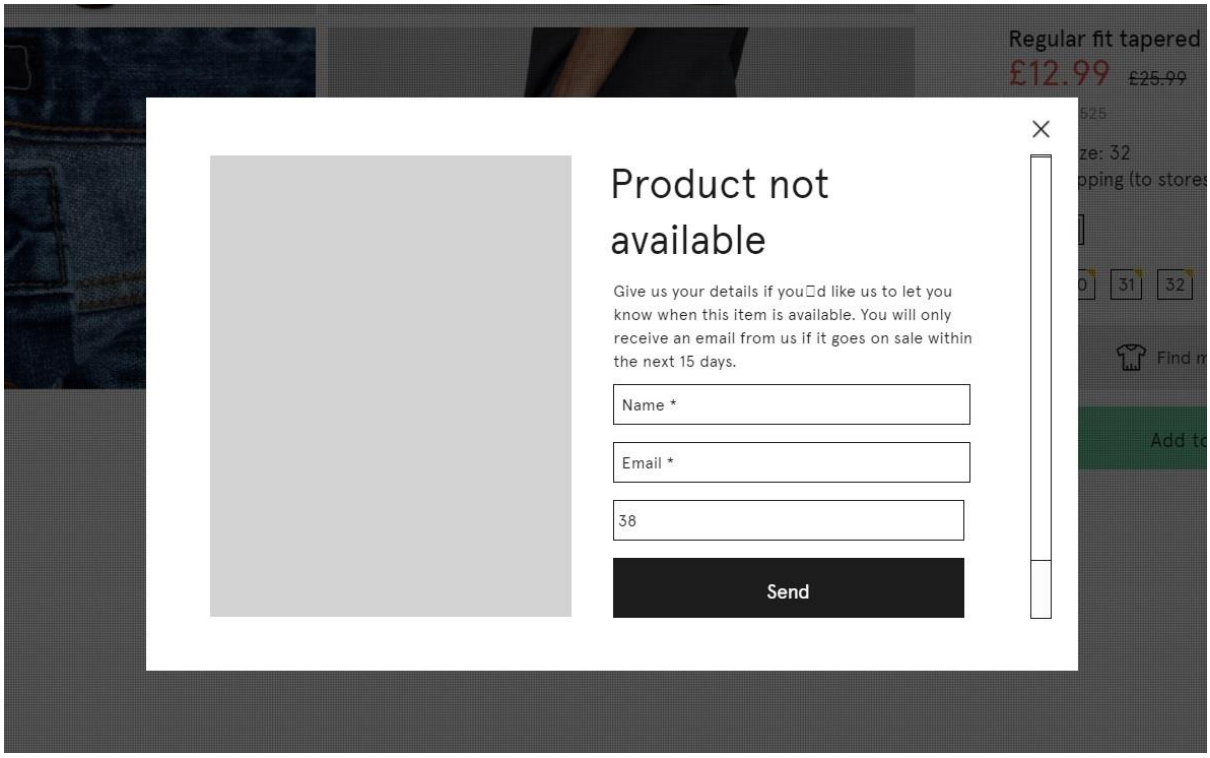
Simulation

Please go through the following images before proceeding on to the next section

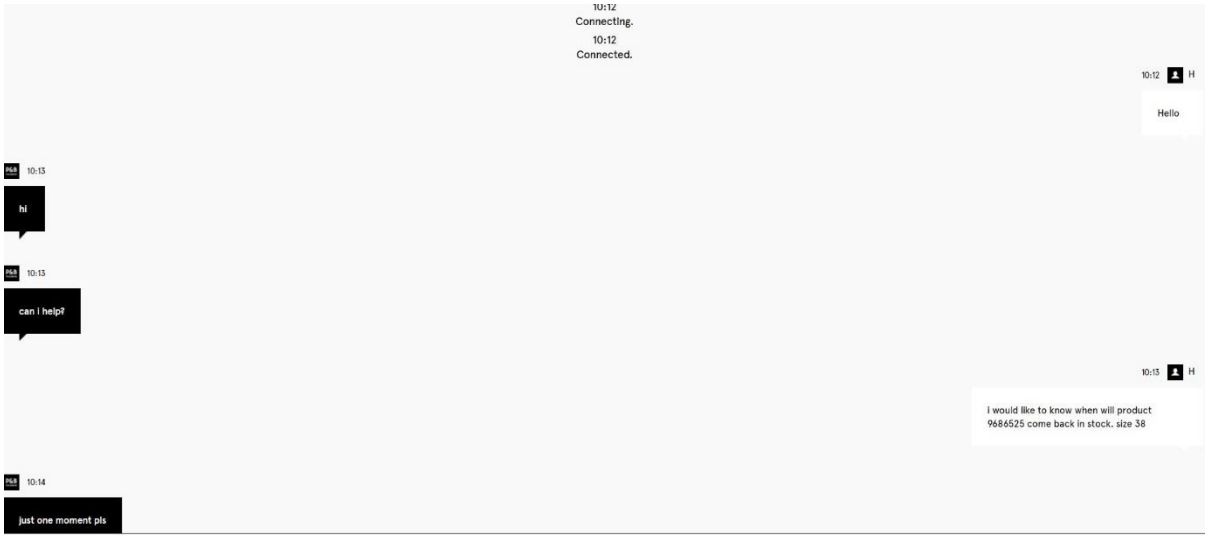
Please note presentational effectiveness



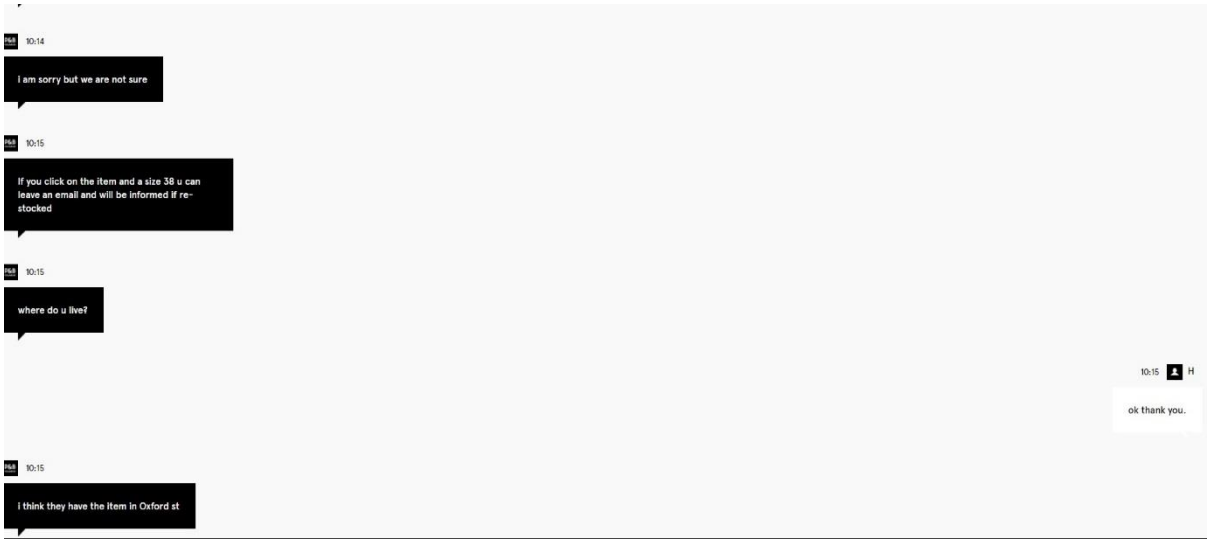
Message in case of item out of stock



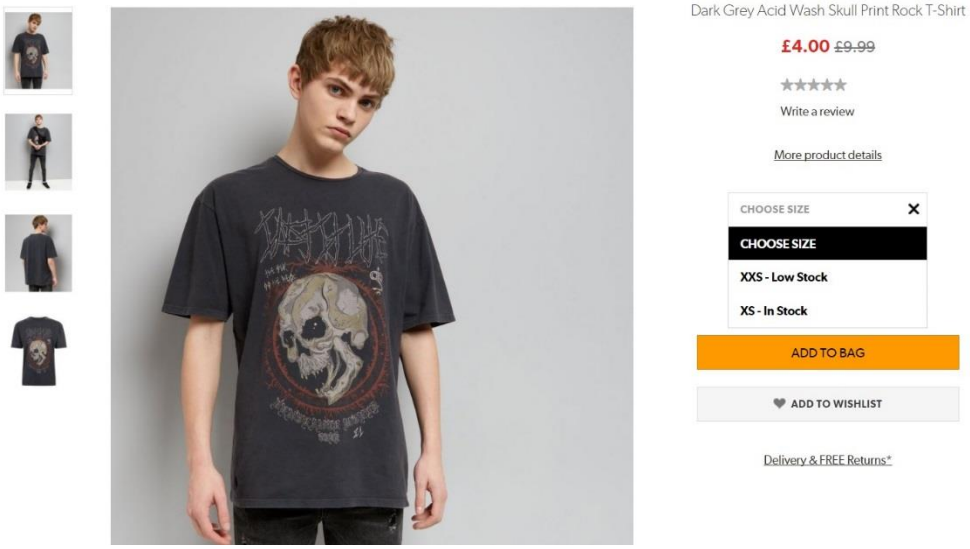
Live chat window with a customer representative 1



Live chat window with a customer representative 2

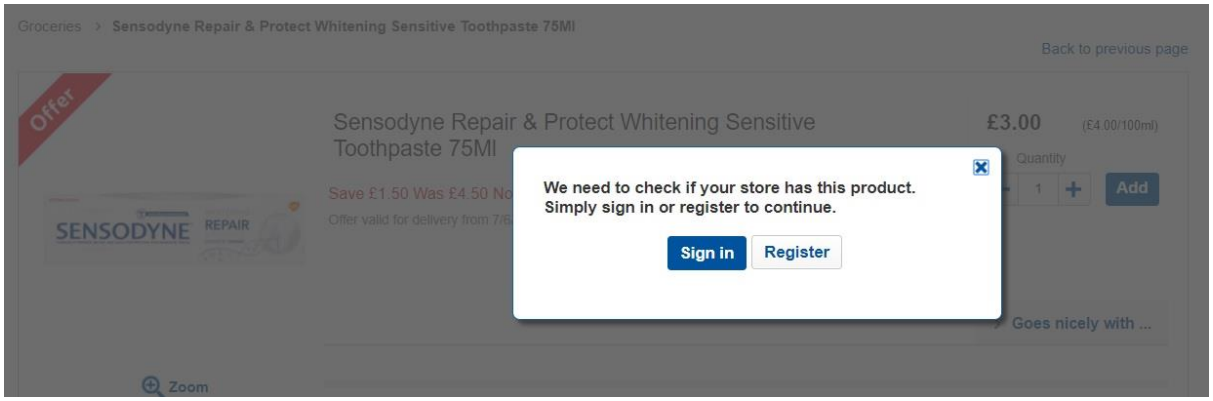


Information on sizes of stock



Check out - user satisfaction 1 - Allows you to add an item in basket

Check out - user satisfaction 2 - but to buy it, Sign In or registering is required.



Social media post without Emojis

Social Media - without Emoji and a lot of information

Social Media - with Emoji and quick link

Post Simulation Questionnaire

This section of the questionnaire will collect information post-simulation

22. An efficient Delivery Service leads to User-Satisfaction

    ☐ Yes

    ☐ No

23. Overall shopping experience leads to positive user-satisfaction on the e-commerce

    ☐ Yes

    ☐ No

24. Easy navigation of the e-commerce pages lead to efficiency on the e-commerce.

    ☐ Yes

    ☐ No

25. Successful completion of a transaction leads to effectiveness on the e-commerce

    ☐ Yes

    ☐ No

As a result of the simulation I am able to

This section will acquire information from the respondents post-simulation

26. System Quality improves the overall efficiency on the e-commerce platform

    ☐ Yes

    ☐ No

27. Understand the current weaknesses on the e-commerce

    ☐ Yes

    ☐ No

28. Understand and identify what improvements were made on to existing website interfaces

    - ☐ Yes
    - ☐ No

29. Effectiveness on the e-commerce leads to e-branding?

    - ☐ Yes
    - ☐ No

30. Efficiency on the e-commerce leads to e-branding

    - ☐ Yes
    - ☐ No

31. User-Satisfaction on the e-commerce leads to e-branding

    - ☐ Yes
    - ☐ No

32. Understand how user-satisfaction can be achieved on the e-commerce

    - ☐ Yes
    - ☐ No

33. Speedy transaction is a result of e-commerce efficiency

    - ☐ Yes
    - ☐ No

34. I can recall an advertisement by looking at the e-commerce website

    - ☐ Yes
    - ☐ No

35. Real time assistance from VSAs lead to efficiencies on the e-commerce

    - ☐ Yes

☐ No

36. E-branding on the e-commerce leads to e-loyalty

☐ Yes

☐ No

37. Multimodality on the e-commerce has a positive effect on the effectiveness

☐ Yes

☐ No

38. Trust on a brand based on multimodal avatar

☐ Yes

☐ No

End of Questionnaire. Thank you for your Participation

Thank you for your participation in the questionnaire.

Appendix D: Stage 2 Data

		Count
Q1. Gender	Male	47
	Female	47
	Prefer not to answer	6
Q2. Age Group	Under 18	37
	18-24	44
	25-34	17
	35-54	2
	55+	0
Q3. Marital Status	Single, never married	59
	Married or domestic partnership	33
	Divorced	7
	Other	1
Q4. Level of Education	Primary School	0
	Secondary School	5
	Vocational / Technical School	8
	College Diploma	25
	Undergraduate	35
	Post-graduate	17
	Doctoral / PhD	4
	Professional Qualification	6
	Other	0
Q5. Job Title	Top-level executive	1
	Senior-level executive	0
	CEO Level	0
	Director	4
	Manager	17
	Professional	18
	Administrative inc Retail	20
	Homemaker	13
	Unemployed	25
	Retired	2
Q6. Internet Using Since	1-3 years	1
	3-5 years	14
	5-8 years	33
	8 years or more	52

Q7. Proficiency on Internet	Basic (Fundamental awareness)	8
	Novice (Limited experience)	13
	Intermediate (Practical application)	42
	Advanced (Applied Theory)	37
	Expert (Recognized authority)	0
Q8. Frequency of Usage	Never	0
	Once a day	8
	2 - 5 times a day	35
	6 - 10 times a day	55
	Once a week	2
	Once every fortnight	0
	Once a month	0
Q9. Average Weekly Time on Internet	0 - 5 hours	7
	6 - 10 hours	20
	11 - 15 hours	18
	16 - 20 hours	16
	More than 20 hours	39
Q10. Device Used Most Frequently to Access Internet	Desktop Computer	20
	Laptop	26
	Mobile/Smart Phones	45
	Tablet	9
	Games Console	0
	TV	0
	Other	0
Q11. Does Social Media Play a Role In Purchase Decision	Yes	63
	No	37
Q12. New E-Commerce Website interface Easy to Navigate	Yes	59
	No	41
Q13. Improved Presentation Created an Urge to Buy	Yes	61
	No	39
Q14. How Clear is the Presentation of Products Online	Clear	15
	Don't know	29
	Unclear	56
Q15. How Interactive are E-commerce Websites	Lowest	22
	Low	36
	Don't know	27
	High	12
	Highest	3

Q16. How Quick or Slow are Current Average Checkout Times	Very quick (1 - 5 minutes)	10
	Quick (5 - 10 minutes)	16
	Don't Know	20
	Slow (10 - 15 minutes)	45
	Very slow (15 - 20 minutes)	9
Q17. Transaction Cancelled Due to Website Issue	Yes	77
	No	23
Q18. How Satisfied with Quality and Richness of Information	Very dissatisfied	14
	Dissatisfied	43
	Don't know	23
	Satisfied	13
	Very satisfied	7
Q19. Rate the Current Speed of E-Commerce Websites	Very slow	17
	Slow	46
	Don't know	16
	Fast	14
	Very fast	7
Q20. After Buying are you Satisfied with Overall Experience	Very dissatisfied	17
	Dissatisfied	44
	Don't know	14
	Satisfied	18
	Completely satisfied	7
Q21. Enhanced Information Quality Improved Website Effectiveness	Yes	93
	No	7
Q22. Fast Delivery Service increases user satisfaction	Yes	92
	No	8
Q23. Overall Shopping Experience Affects User Satisfaction	Yes	93
	No	7
Q24. Easy Navigation to Information enhances efficiencies	Yes	95
	No	5
Q25. Error Free Transactions Improved Effectiveness	Yes	87
	No	13
Q26. System Quality Enhances E-Commerce Efficiency	Yes	87
	No	13
Q27. Understand and Identify Improvements made in Simulation	Yes	90
	No	10
Q28. Clearly Distinguish between Social Media Platforms	Yes	91
	No	9
	Yes	88

Q29. Effectiveness on the e-commerce leads to e-branding	No	12
Q30. Able to Remember Efficient E-Commerce website (e-branding)	Yes	87
	No	13
Q31. Able to Remember E-Commerce on Satisfaction levels	Yes	90
	No	10
Q32. Appreciate Role of Reviews in Purchase Decision Making	Yes	92
	No	8
Q33. Improved Platform Lead to Checkout Efficiencies	Yes	93
	No	7
Q34. Understand Role of Emoji on Social Media and Advertisements	Yes	92
	No	8
Q35. Help of AI Increased Efficiency on E-Commerce	Yes	89
	No	11
Q36 Effective Efficient Satisfactory experience leads to loyalty and repeat purchase	Yes	92
	No	8
Q37. Multimodality on the e-commerce has a positive effect on the effectiveness	Yes	87
	No	13

Table 12 Appendix D Survey 2 Data Summary

Appendix E: Stage 2 Crosstabs

Q2 Age Group * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q2 Age Group	Under 18	Count	20	16	1	37
		% within Q1.Gender	42.6%	34.0%	16.7%	37.0%
		% of Total	20.0%	16.0%	1.0%	37.0%
	18-24	Count	21	20	3	44
		% within Q1.Gender	44.7%	42.6%	50.0%	44.0%
		% of Total	21.0%	20.0%	3.0%	44.0%
	25-34	Count	6	10	1	17
		% within Q1.Gender	12.8%	21.3%	16.7%	17.0%
		% of Total	6.0%	10.0%	1.0%	17.0%
	35-54	Count	0	1	1	2
		% within Q1.Gender	0.0%	2.1%	16.7%	2.0%
		% of Total	0.0%	1.0%	1.0%	2.0%
Total		Count	47	47	6	100
		% within Q1.Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q4 Level of Education * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q4 Level of Education	Secondary School	Count	3	1	1	5
		% within Q1 Gender	6.4%	2.1%	16.7%	5.0%
		% of Total	3.0%	1.0%	1.0%	5.0%
	Vocational / Technical School	Count	1	4	3	8
		% within Q1 Gender	2.1%	8.5%	50.0%	8.0%
		% of Total	1.0%	4.0%	3.0%	8.0%
	College Diploma	Count	12	13	0	25
		% within Q1 Gender	25.5%	27.7%	0.0%	25.0%
		% of Total	12.0%	13.0%	0.0%	25.0%
	Undergraduate	Count	15	19	1	35
		% within Q1 Gender	31.9%	40.4%	16.7%	35.0%
		% of Total	15.0%	19.0%	1.0%	35.0%
	Post-graduate	Count	11	5	1	17
		% within Q1 Gender	23.4%	10.6%	16.7%	17.0%
		% of Total	11.0%	5.0%	1.0%	17.0%
	Doctoral / PhD	Count	2	2	0	4
		% within Q1 Gender	4.3%	4.3%	0.0%	4.0%
		% of Total	2.0%	2.0%	0.0%	4.0%
	Professional Qualification	Count	3	3	0	6
		% within Q1 Gender	6.4%	6.4%	0.0%	6.0%
		% of Total	3.0%	3.0%	0.0%	6.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q8 Frequency of Usage * Q1.Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q8 Frequency of Usage	Once a day	Count	1	7	0	8
		% within Q1 Gender	2.1%	14.9%	0.0%	8.0%
		% of Total	1.0%	7.0%	0.0%	8.0%
	2 - 5 times a day	Count	15	17	3	35
		% within Q1 Gender	31.9%	36.2%	50.0%	35.0%
		% of Total	15.0%	17.0%	3.0%	35.0%
	6 - 10 times a day	Count	29	23	3	55
		% within Q1 Gender	61.7%	48.9%	50.0%	55.0%
		% of Total	29.0%	23.0%	3.0%	55.0%
	Once a week	Count	2	0	0	2
		% within Q1 Gender	4.3%	0.0%	0.0%	2.0%
		% of Total	2.0%	0.0%	0.0%	2.0%

Q8 Frequency of Usage * Q2 Age Group Crosstabulation

			Q2 Age Group				
			Under 18	18-24	25-34	35-54	Total
Q8 Frequency of Usage	Once a day	Count	0	1	6	1	8
		% within Q2 Age Group	0.0%	2.3%	35.3%	50.0%	8.0%
		% of Total	0.0%	1.0%	6.0%	1.0%	8.0%
	2 - 5 times a day	Count	12	15	7	1	35
		% within Q2 Age Group	32.4%	34.1%	41.2%	50.0%	35.0%
		% of Total	12.0%	15.0%	7.0%	1.0%	35.0%
	6 - 10 times a day	Count	24	27	4	0	55
		% within Q2 Age Group	64.9%	61.4%	23.5%	0.0%	55.0%
		% of Total	24.0%	27.0%	4.0%	0.0%	55.0%
	Once a week	Count	1	1	0	0	2
		% within Q2 Age Group	2.7%	2.3%	0.0%	0.0%	2.0%
		% of Total	1.0%	1.0%	0.0%	0.0%	2.0%

Q10 Device Used Most Frequently to Access Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Desktop Computer	20	20.0	20.0	20.0
	Laptop	26	26.0	26.0	46.0
	Mobile/Smart Phones	45	45.0	45.0	91.0
	Tablet	9	9.0	9.0	100.0
	Total	100	100.0	100.0	

Q10 Device Used Most Frequently to Access Internet * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q10 Device Used Most Frequently to Access Internet	Desktop Computer	Count	7	9	4	20
		% within Q1 Gender	14.9%	19.1%	66.7%	20.0%
		% of Total	7.0%	9.0%	4.0%	20.0%
	Laptop	Count	16	9	1	26
		% within Q1 Gender	34.0%	19.1%	16.7%	26.0%
		% of Total	16.0%	9.0%	1.0%	26.0%
	Mobile/Smart Phones	Count	21	23	1	45
		% within Q1 Gender	44.7%	48.9%	16.7%	45.0%
		% of Total	21.0%	23.0%	1.0%	45.0%
	Tablet	Count	3	6	0	9
		% within Q1 Gender	6.4%	12.8%	0.0%	9.0%
		% of Total	3.0%	6.0%	0.0%	9.0%

Q10 Device Used Most Frequently to Access Internet * Q2 Age Group Crosstabulation

			Q2 Age Group				
			Under 18	18-24	25-34	35-54	Total
Q10 Device Used Most Frequently to Access Internet	Desktop Computer	Count	2	10	6	2	20
		% within Q2 Age Group	5.4%	22.7%	35.3%	100.0%	20.0%
		% of Total	2.0%	10.0%	6.0%	2.0%	20.0%
	Laptop	Count	3	16	7	0	26
		% within Q2 Age Group	8.1%	36.4%	41.2%	0.0%	26.0%
		% of Total	3.0%	16.0%	7.0%	0.0%	26.0%
	Mobile/Smart Phones	Count	29	12	4	0	45
		% within Q2 Age Group	78.4%	27.3%	23.5%	0.0%	45.0%
		% of Total	29.0%	12.0%	4.0%	0.0%	45.0%
	Tablet	Count	3	6	0	0	9
		% within Q2 Age Group	8.1%	13.6%	0.0%	0.0%	9.0%
		% of Total	3.0%	6.0%	0.0%	0.0%	9.0%

Q1 Gender * Q6 Internet Using Since Crosstabulation

			Q6 Internet Using Since				
			1-3 years	3-5 years	5-8 years	8 years or more	Total
Q1 Gender	Male	Count	0	5	15	27	47
		% within Q6 Internet Using Since	0.0%	35.7%	45.5%	51.9%	47.0%
		% of Total	0.0%	5.0%	15.0%	27.0%	47.0%
	Female	Count	1	8	15	23	47
		% within Q6 Internet Using Since	100.0%	57.1%	45.5%	44.2%	47.0%
		% of Total	1.0%	8.0%	15.0%	23.0%	47.0%
	Prefer not to answer	Count	0	1	3	2	6
		% within Q6 Internet Using Since	0.0%	7.1%	9.1%	3.8%	6.0%
		% of Total	0.0%	1.0%	3.0%	2.0%	6.0%

Q7 Proficiency on Internet * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q7 Proficiency on Internet	Basic (Fundamental awareness)	Count	2	6	0	8
		% within Q1 Gender	4.3%	12.8%	0.0%	8.0%
		% of Total	2.0%	6.0%	0.0%	8.0%
	Novice (Limited experience)	Count	3	8	2	13
		% within Q1 Gender	6.4%	17.0%	33.3%	13.0%
		% of Total	3.0%	8.0%	2.0%	13.0%
	Intermediate (Practical application)	Count	18	21	3	42
		% within Q1 Gender	38.3%	44.7%	50.0%	42.0%
		% of Total	18.0%	21.0%	3.0%	42.0%
	Advanced (Applied Theory)	Count	24	12	1	37
		% within Q1 Gender	51.1%	25.5%	16.7%	37.0%
		% of Total	24.0%	12.0%	1.0%	37.0%

Q9 Average Weekly Time on Internet * Q2 Age Group Crosstabulation

			Q2 Age Group				
			Under 18	18-24	25-34	35-54	Total
Q9 Average Weekly Time on Internet	0 - 5 hours	Count	2	1	4	0	7
		% within Q2 Age Group	5.4%	2.3%	23.5%	0.0%	7.0%
		% of Total	2.0%	1.0%	4.0%	0.0%	7.0%
	6 - 10 hours	Count	8	5	6	1	20
		% within Q2 Age Group	21.6%	11.4%	35.3%	50.0%	20.0%
		% of Total	8.0%	5.0%	6.0%	1.0%	20.0%
	11 - 15 hours	Count	5	10	3	0	18
		% within Q2 Age Group	13.5%	22.7%	17.6%	0.0%	18.0%
		% of Total	5.0%	10.0%	3.0%	0.0%	18.0%
	16 - 20 hours	Count	5	10	1	0	16
		% within Q2 Age Group	13.5%	22.7%	5.9%	0.0%	16.0%
		% of Total	5.0%	10.0%	1.0%	0.0%	16.0%
	More than 20 hours	Count	17	18	3	1	39
		% within Q2 Age Group	45.9%	40.9%	17.6%	50.0%	39.0%
		% of Total	17.0%	18.0%	3.0%	1.0%	39.0%

Q11 Does Social Media Play a Role In Purchase Decision * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q11 Does Social Media Play a Role In Purchase Decision	Yes	Count	30	30	3	63
		% within Q1 Gender	63.8%	63.8%	50.0%	63.0%
		% of Total	30.0%	30.0%	3.0%	63.0%
	No	Count	17	17	3	37
		% within Q1 Gender	36.2%	36.2%	50.0%	37.0%
		% of Total	17.0%	17.0%	3.0%	37.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q11 Does Social Media Play a Role In Purchase Decision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	63	63.0	63.0	63.0
	No	37	37.0	37.0	100.0
	Total	100	100.0	100.0	

Q12 Are E-Commerce Websites Easy to Navigate * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q12 Are E-Commerce Websites Easy to Navigate	Yes	Count	21	17	2	40
		% within Q1 Gender	44.7%	36.2%	33.3%	40.0%
		% of Total	21.0%	17.0%	2.0%	40.0%
	No	Count	26	30	4	60
		% within Q1 Gender	55.3%	63.8%	66.7%	60.0%
		% of Total	26.0%	30.0%	4.0%	60.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q13 Does Current Presentation Create an Urge to Buy Online * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q13 Does Current Presentation Create an Urge to Buy Online	Yes	Count	18	18	1	37
		% within Q1 Gender	38.3%	38.3%	16.7%	37.0%
		% of Total	18.0%	18.0%	1.0%	37.0%
	No	Count	29	29	5	63
		% within Q1 Gender	61.7%	61.7%	83.3%	63.0%
		% of Total	29.0%	29.0%	5.0%	63.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q14 How Clear is the Presentation of Products Online * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q14 How Clear is the Presentation of Products Online	Clear	Count	7	7	1	15
		% within Q1 Gender	14.9%	14.9%	16.7%	15.0%
		% of Total	7.0%	7.0%	1.0%	15.0%
	Don't know	Count	16	12	1	29
		% within Q1 Gender	34.0%	25.5%	16.7%	29.0%
		% of Total	16.0%	12.0%	1.0%	29.0%
	Unclear	Count	24	28	4	56
		% within Q1 Gender	51.1%	59.6%	66.7%	56.0%
		% of Total	24.0%	28.0%	4.0%	56.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q17 Transaction Cancelled Due to Website Issue * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q17 Transaction Cancelled Due to Website Issue	Yes	Count	31	42	4	77
		% within Q1 Gender	66.0%	89.4%	66.7%	77.0%
		% of Total	31.0%	42.0%	4.0%	77.0%
	No	Count	16	5	2	23
		% within Q1 Gender	34.0%	10.6%	33.3%	23.0%
		% of Total	16.0%	5.0%	2.0%	23.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q2 Age Group * Q17 Transaction Cancelled Due to Website Issue Crosstabulation

			Q17 Transaction Cancelled Due to Website Issue		
			Yes	No	Total
Q2 Age Group	Under 18	Count	27	10	37
		% within Q17 Transaction Cancelled Due to Website Issue	35.1%	43.5%	37.0%
		% of Total	27.0%	10.0%	37.0%
	18-24	Count	36	8	44
		% within Q17 Transaction Cancelled Due to Website Issue	46.8%	34.8%	44.0%
		% of Total	36.0%	8.0%	44.0%
	25-34	Count	14	3	17
		% within Q17 Transaction Cancelled Due to Website Issue	18.2%	13.0%	17.0%
		% of Total	14.0%	3.0%	17.0%
	35-54	Count	0	2	2
		% within Q17 Transaction Cancelled Due to Website Issue	0.0%	8.7%	2.0%
		% of Total	0.0%	2.0%	2.0%

Q18 How Satisfied with Quality and Richness of Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very dissatisfied	14	14.0	14.0	14.0
	Dissatisfied	43	43.0	43.0	57.0
	Don't know	23	23.0	23.0	80.0
	Satisfied	13	13.0	13.0	93.0
	Very satisfied	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

Q18 How Satisfied with Quality and Richness of Information * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q18 How Satisfied with Quality and Richness of Information	Very dissatisfied	Count	7	6	1	14
		% within Q1 Gender	14.9%	12.8%	16.7%	14.0%
		% of Total	7.0%	6.0%	1.0%	14.0%
	Dissatisfied	Count	17	22	4	43
		% within Q1 Gender	36.2%	46.8%	66.7%	43.0%
		% of Total	17.0%	22.0%	4.0%	43.0%
	Don't know	Count	15	7	1	23
		% within Q1 Gender	31.9%	14.9%	16.7%	23.0%
		% of Total	15.0%	7.0%	1.0%	23.0%
	Satisfied	Count	6	7	0	13
		% within Q1 Gender	12.8%	14.9%	0.0%	13.0%
		% of Total	6.0%	7.0%	0.0%	13.0%
	Very satisfied	Count	2	5	0	7
		% within Q1 Gender	4.3%	10.6%	0.0%	7.0%
		% of Total	2.0%	5.0%	0.0%	7.0%
Total		Count	47	47	6	100
		% within Q1 Gender	100.0%	100.0%	100.0%	100.0%
		% of Total	47.0%	47.0%	6.0%	100.0%

Q19 Rate the Current Speed of E-Commerce Websites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very slow	17	17.0	17.0	17.0
	Slow	46	46.0	46.0	63.0
	Don't know	16	16.0	16.0	79.0
	Fast	14	14.0	14.0	93.0
	Very fast	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

Q19 Rate the Current Speed of E-Commerce Websites * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q19 Rate the Current Speed of E-Commerce Websites	Very slow	Count	7	9	1	17
		% within Q1 Gender	14.9%	19.1%	16.7%	17.0%
		% of Total	7.0%	9.0%	1.0%	17.0%
	Slow	Count	21	21	4	46
		% within Q1 Gender	44.7%	44.7%	66.7%	46.0%
		% of Total	21.0%	21.0%	4.0%	46.0%
	Don't know	Count	9	6	1	16
		% within Q1 Gender	19.1%	12.8%	16.7%	16.0%
		% of Total	9.0%	6.0%	1.0%	16.0%
	Fast	Count	6	8	0	14
		% within Q1 Gender	12.8%	17.0%	0.0%	14.0%
		% of Total	6.0%	8.0%	0.0%	14.0%
	Very fast	Count	4	3	0	7
		% within Q1 Gender	8.5%	6.4%	0.0%	7.0%
		% of Total	4.0%	3.0%	0.0%	7.0%

Q20 After Buying are you Satisfied with Overall Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very dissatisfied	17	17.0	17.0	17.0
	Dissatisfied	44	44.0	44.0	61.0
	Don't know	14	14.0	14.0	75.0
	Satisfied	18	18.0	18.0	93.0
	Completely satisfied	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

Q20 After Buying are you Satisfied with Overall Experience * Q1 Gender Crosstabulation

			Q1 Gender			
			Male	Female	Prefer not to answer	Total
Q20 After Buying are you Satisfied with Overall Experience	Very dissatisfied	Count	7	9	1	17
		% within Q1 Gender	14.9%	19.1%	16.7%	17.0%
		% of Total	7.0%	9.0%	1.0%	17.0%
	Dissatisfied	Count	19	22	3	44
		% within Q1 Gender	40.4%	46.8%	50.0%	44.0%
		% of Total	19.0%	22.0%	3.0%	44.0%
	Don't know	Count	8	4	2	14
		% within Q1 Gender	17.0%	8.5%	33.3%	14.0%
		% of Total	8.0%	4.0%	2.0%	14.0%
	Satisfied	Count	10	8	0	18
		% within Q1 Gender	21.3%	17.0%	0.0%	18.0%
		% of Total	10.0%	8.0%	0.0%	18.0%
	Completely satisfied	Count	3	4	0	7
		% within Q1 Gender	6.4%	8.5%	0.0%	7.0%
		% of Total	3.0%	4.0%	0.0%	7.0%

Appendix F: Statistical Tests

S/N	Hypothesis	Statistical Test Applied	Justification
1	**H1a**	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H1b	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H1c	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H1d	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
2	**H2a**	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H2b	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H2c	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H2d	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
3	**H3a**	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
	H3b	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.

S/N	Hypothesis	Statistical Test Applied	Justification
	H3c	**Chi square test of association**	The questions in consideration is measured on nominal scale (Yes or No). Checking for association between the two questions makes chi square test of association appropriate.
4	**H4**	**Chi square goodness of fit test**	Because we are only considering one single variable (E0-branding on the e-commerce leads to e-loyalty) which is measured on nominal scale with only two (2) options (Yes, No). Chi square goodness of fit test will help to check significant difference in the frequency of the responses hence chi square goodness of fit test.