Investigating How Product Page Design Affects Clothing Fit Appraisal Online

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List of Abbreviations

ANOVA: Analysis of Variances
Apps: Mobile Applications
AR: Augmented Reality
B2B: Business-to-Business
B2C: Business-to-Consumer
BSAS: Body Shape Assessment Scale
C2C: Consumer-to-Consumer
CGI: Computer Generated Image
CMB: Common Method Bias
EBM: Engel, Blackwell and Miniard Model
E-commerce: Electronic commerce
EDI: Electronic interchange
EFA: Exploratory Factor Analysis
EKB: The Engel, Kollat and Blackwell Model
eWoM: electronic word of mouth
FFIT: Female Figure Identification Technique
IDT: Innovation Diffusion Theory
IIT: Image Interactive Technology
KMO: Kaiser-Meyer-Olkin
M-commerce: Mobile Commerce
PAD: Pleasure, Arousal, Dominance
PCA: Principle Component Analysis
RTW: ready-to-wear
S-Commerce: Social Commerce
SCT: Social Cognitive Theory
SMBCs: Social Media Brand Communities
SNSs: social networking sites
S-O-R: Stimulus-Organism-Response
SPSS: Statistical Package for the Social Sciences
TAM: Technology Acceptance Model
TBYB: Try-Before-You-Buy
TPB: Theory of Planned Behaviour
TRA: Theory of Reasoned Action
UTAUT: Unified Theory of Acceptance and Use of Technology
VFRs: Virtual Fitting Rooms
Vlogs: Video Blogs
VTO: Virtual Try-On
Abstract

According to scholarly research, fit is the most salient evaluative criterion during the garment appraisal process (Abraham-Murali and Littrell, 1995; Gupta, 2020; Makhanya and Mabuza, 2020). Nevertheless, garment returns are pervasive in the online fashion channel with garment fit being the primary reason for returns (He, Xu and Wu, 2020). This finding extrapolates that when shopping online, consumers are not provided with sufficient information about the fit of a garment and so, it is paramount that the provision of fit information on retailers’ websites improves. Accordingly, this thesis aims to examine how different types of apparel fit information, on a fashion retailer’s product page, affect females’ perceived product fit diagnosticity, concerns with fit online and in turn, purchase intentions.

The present study adopts a sequential-multi phase mixed-methods approach in order to investigate how different fit stimuli (verbal vs. visual) on a retailer’s product page affect consumers’ online garment fit appraisal process. Phase 1 of the research identifies the most/least popular styles of dresses commonly purchased by 343 UK females, aged 18-34, in order to ascertain appropriate product stimuli. Phase 2 explores the body shapes and physical garment fit appraisals of 30 UK females, aged 18-34, through body scanning sessions and semi-structured interviews. Finally, underpinned by the Stimulus-Organism-Response (S-O-R) framework, phase 3 undertakes a between-subjects factorial web-experiment to investigate how different combinations of visual (body shape: hourglass vs. diverse) and verbal (user-generated fit reviews: absence vs. presence) fit information, present on a product page, affect 400 female subjects’ cognitive and behavioural responses.

The results extrapolated that whilst visual fit information, in the form of diverse body shapes (vs. hourglass), enhanced consumers’ cognitive garment fit evaluations, it did not increase purchase intentions. Alternatively, verbal fit information in the form of fit reviews (vs. absence) increased product fit diagnosticity, but had no significant effect on concerns with fit online or purchase intentions. This research has filled a gap in academic literature and provided a thorough understanding of how the inclusion of body shape stimuli and user-generated fit reviews affects consumers’ fit appraisals online. In particular, the findings infer that visual garment fit information is more effective during the consumer’s online garment fit appraisals. Although this study is limited to UK females aged 18-34, the findings have provided novel evidence for the role of body shape on the online garment fit appraisal, which has not yet been examined by prior research. Indeed, whilst various efforts have been made by scholars to identify female body shapes, these approaches remain largely academic and have failed to be applied and tested in a commercial context (Gill, 2015). Finally, the role of garment fit reviews on consumers’ online fit appraisals has not yet been established.
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Publications

Peer-Reviewed Published Papers:

Published Book Chapters:

Published CAD Illustrations:

Conference Papers:
Chapter 1. Introduction

1.1. Foreword
The Internet has completely revolutionised the way in which consumers search and shop for clothing. Mintel (2019a) forecast that the value of the UK online retailing market will reach £129.7 billion by 2024. In particular, in 2019, Internet sales of clothing and footwear in the UK increased by 7.6% on the previous year (Statista, 2020a), suggesting that the online channel is growing and gaining its share of the broader UK retail market. In terms of product categories, clothing accounts for the largest selling product online, with 57% of UK online consumers acknowledging that they have purchased clothing online in the past year (Mintel, 2019a). Despite this statistic, the inability to appraise garment criteria such as fit accurately online has meant that offline retailing still anchors the fashion market (Bell, Gallino and Moreno, 2018). Indeed, unlike homogenous products, it is extremely problematic to communicate clothing information online due the experiential nature of the product category. Accordingly, garment returns are inundating the fashion industry, with the majority of returns originating from the online channel (Gallino and Moreno, 2018). Scholarly research has acknowledged that the primary reasons for protracting online returns are due to inaccurate garment fit, rather than product defects (Minnema et al., 2018; Li, Li and Taylor, 2019; He, Xu and Wu, 2020) and so, the way in which online retailers can ameliorate garment fit provision online is paramount.

Currently, fashion retailers attempt to guide consumers with their clothing fit decisions by offering several online verbal (product descriptions, size and height of the model and sizing charts) and visual (model images, alternative images, catwalk videos and rotation facilities) fit provisions on their product pages. More recently, online fashion retailers have invested in digital solutions such as, augmented reality (AR), sizing and fit recommendation technologies and image interactive technologies (IIT) to help better communicate clothing fit online. Yet, despite these efforts, clothing is the most returned product category in the UK (Statista, 2020b), which suggests that a new approach to online fit communication is necessary. Subsequently, this thesis seeks to investigate how garment fit information, present on a fashion retailer’s product page, affects females’ online garment appraisals. In particular, through the implementation of a between-subjects factorial experiment, this thesis will provide novel insights into how visual (body shape) and verbal (user-generated fit reviews)
fit provisions affect consumers’ cognitive states and behavioural decisions when shopping for dresses online. The beginning of this chapter will provide an overview of the research context and existing research problem. The chapter will proceed to outline the aims, objectives, intended outcomes of the research, and highlight the theoretical gaps in which this thesis aims to fill. The chapter will conclude by providing a brief synopsis of the methodological approach and outline the succeeding chapters of the thesis.

1.2. Research Context and Overview
According to scholarly research, garment fit is the most salient evaluative criterion during the garment appraisal process (Abrahman-Murali and Littrell, 1995; Gupta, 2020; Makhanya and Mabuza, 2020). Yet, currently, online fashion product pages do not provide consumers with sufficient information about the fit of a garment, and research has found that consumers are turning to social media platforms to obtain it themselves from user-generated content (Kerviler, Audrezet and Suprin, 2017). This finding suggests that fast fashion retailers do not consider fit to be their value proposition. However, with online returns costing UK retailers £1.5billion a year (Drapers, 2019), it is vital to understand how the provision of fit information on retailers’ websites affects consumers’ decision-making. As well as user-generated (UG) information, the inclusion of more ‘realistic’ models has been advocated as a better way to present apparel fit information online in order to aid consumers’ decision-making (Yu and Damhorst, 2015). However, an examination of the simultaneous presence of these two variables is absent in existing online consumer behaviour literature.

Subsequently, this research adopts the Stimulus-Organism-Response (S-O-R) framework to test how different types of fit information provided on a product page, affect UK females’ internal and behavioural responses. Online retailing literature is replete with studies that have used the S-O-R paradigm to demonstrate how product presentations can influence consumers’ buying behaviour (Park, Lennon and Stoel, 2005; Kim and Lennon, 2008; Kim, 2019; Deng and Gu, 2020). Yet, to date there is a paucity of research that has utilised the model to test the impact of different verbal and visual fit stimuli on consumers’ garment fit appraisals. Hence, this study aims to fill this gap by extending the S-O-R framework by testing the impact of different verbal and visual fit information (stimuli) on a consumer’s perceived product fit diagnosticity and concerns with clothing fit online (cognition) and in turn, purchase intentions (behavioural response). Perceived product diagnosticity is defined as the perceived credibility of information in assisting consumers’ product evaluations.
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(Narwal and Nayak, 2020). Particularly, it is the extent to which a website can communicate relevant and thorough product information to help consumers appraise product criteria accurately (Jiang and Benbasat, 2004; Pavlou and Fygenson, 2006; Pavlou, Liang and Xue, 2007; Mudambi and Schuff, 2010; Yoo, 2020). Whereas, concerns with garment fit online is defined as, ‘the subjectively determined expectations and amount of risk perceived by a shopper in relation to the fit and size of a garment in contemplating a particular purchase’ Kim and Damhorst (2010, p.242). Thus, these constructs will be measured within this study to understand how consumers appraise garment fit online.

1.3. Gap in Existing Research

Online product information design has been widely studied, yet to date, there has been limited enquiry into how garment fit provisions present on a retailer’s product information page, influence consumers’ decision-making. Indeed, given that the intangibility of products can fail to turn online browsers into consumers (Wang et al., 2019), the ways in which garment information is presented online is fundamental in helping consumers with their decision-making (Boardman and McCormick, 2019). However, McCormick and Livett (2012) claim that fashion product presentation on a retailer’s product page is a distinctively under-researched area. Whilst this finding is outdated, to date, prior studies that have explored online fashion product presentation have neglected the significance of this strategy and have often associated it with aesthetic website design (Yang, Kim and Zimmermann, 2020), inferring that McCormick and Livett’s (2012) claim is still applicable today. Moreover, existing research that has investigated the impact of visual and verbal information on consumers’ online decision-making has reported mixed findings. However, the role of these two information sources on the consumer’s garment appraisal remains under-researched. Consequently, this study responds to Wang et al.’s., (2019) research call by examining the effects of visual and verbal information on a retailer’s product information page, on a consumer’s online garment appraisal. In doing so, the findings of this research will extend existing literature and offer new insights into how fit provision can be enhanced online.

Although scholars have made various efforts to identify and discern female body shapes, these approaches remain largely academic and have failed to be applied and tested in a commercial context (Gill, 2015). Thus, there is a noticeable paucity of empirical research
that has explored the role of body shape in the online clothing appraisal process (Sattar, Pons-Moll and Fritz, 2019). Whilst several scholars have suggested that the inclusion of more ‘realistic’ models may be a better way to present garment fit online (Yu and Damhorst, 2015; Boardman and McCormick, 2019; Mulgrew et al., 2020), this proposition has never been tested in existing literature, especially through an investigation of body shape online. Indeed, despite there being little research concerning human fashion models on retailers’ websites (Plotkin and Saurel, 2019), the majority of studies have focused on the size of the model, rather than the body shape of the model. Thus, this study aims to overcome this limitation by testing how body shape provision on a retailer’s product page affects consumers’ decision-making.

Moreover, user-generated reviews provide a new method of disseminating product information, whereby consumers can gather product information created by fellow shoppers alongside retailer generated fashion content (Cheung and Vazquez, 2014; Diwanji and Cortese, 2020). Thus, it is clear that user-generated reviews have entirely revolutionised how consumers formulate decisions, in particular, how consumers search for and evaluate product information online. Nevertheless, research that investigates the presence of user-generated reviews on fashion e-commerce websites is limited (Wang, Lin and Spencer, 2019), with the majority of studies either investigating reviews on a social networking site (SNS) (e.g., Instagram/ Facebook) or on a single e-commerce site, such as Amazon (Mudambi and Schuff, 2010; Benlian, Titah and Hess, 2012; Ahmad and Laroche, 2015; Hazari, Bergiel and Sethna, 2017; Gang and Taeho, 2019; Hong and Pittman, 2020) or Expedia (Kim, 2020).

Additionally, prior research that has considered product reviews have focused predominantly on quantitative aspects of reviews, such as volume and valance rather than their informational content (Jang, Chung and Rao, 2019; Srivastava and Kalro 2019). Despite, McKinney and Shin (2016) establishing that clothing fit is the most discussed criteria in a clothing product review, the role of user-generated reviews on consumers’ online fit appraisals, i.e., concerns with fit online and product fit diagnosticity, has not yet been established within the literature. Whilst, Wang, Ramachandran and Sheng (2016) recognised that fit information, in particular, fit valance and fit reference, found in reviews can reduce return rates, the authors noticeably overlook how fit reviews affect a consumer’s decision-making.
making process. Therefore, this thesis aims to overcome the limitations mentioned above by investigating how qualitative fit information disseminated through user-generated reviews affects a consumer’s online garment appraisal process.

1.4. Research Aim
This research aims to investigate how different types of apparel fit information (Visual: hourglass vs. diverse body shapes and Verbal: absence vs. presence of user-generated reviews), on a product page, affect a female’s perceived product fit diagnosticity, concerns with clothing fit online and in turn, purchase intentions. The study aims to provide theoretical and managerial insights into how online fashion retailers can enhance fit provision online and ultimately reduce product returns due to inadequate fit.

1.5. Research Objectives
The research objectives of the present study are:

1) To critically review existing literature concerning online fashion retailing and the consumer’s online decision-making process, garment fit evaluation, body shape and online fashion product presentation, to evaluate issues in these domains and establish a theoretical gap.
2) To identify suitable stimuli (dresses) for phase 2 (garment try-on) and phase 3 (online shopping experiment) of the research through a quantitative online dress survey.
3) To develop website stimuli (visual and verbal fit information) for phase 3 (online shopping experiment) through a mixed-methods enquiry.
   1. Visual fit information: Body scan 30 UK female participants using a Size Stream body scanner and discern the key body shape typologies for this demographic through the use of an objective body shape categorisation method (Lee et al., 2007).
   2. Verbal fit information: Critically understand the learned fit preferences of 30 UK females through face-to-face post-purchase evaluations.
4) To hypothesise that different combinations of visual (body shape: hourglass vs. diverse) and verbal (user-generated reviews: presence vs. absence) fit stimuli will affect consumers’ internal states which will lead to different behavioural responses.
5) To test the theorised S-O-R model in a between-subjects factorial web-experiment and to provide future recommendations on how fashion product information pages can

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ameliorate the design of fit provision online in order to help assist the consumer’s decision-making.

1.6. Research Outcomes
The intended research outcomes for the present research are:

1) A multifarious literature review of the criterion affecting online fashion retailing and the consumer’s online decision-making process, garment fit evaluation, body shape and online fashion product presentation, existing theoretical frameworks and the identification of essential issues and gaps prevalent in these domains.
2) The identification of the most and least popular styles of dresses commonly purchased by UK females, aged 18-34.
3) An extensive understanding of the key body shape typologies prevalent amongst UK females aged 18-34.
4) An in-depth understanding of how UK females, aged 18-34, evaluate garment fit through qualitative interviews during a physical garment try-on.
5) An empirical understanding of how different types of visual and verbal fit information present on a product page affect consumers’ internal processes and behavioural responses.
6) An evident appreciation of how online fashion retailers can best facilitate apparel fit provision online based on the findings, as well as the identification of potential avenues for future research.

1.7. Research Background
1.7.1. Online Fashion Retailing and Decision-Making
Online fashion sales in the UK are predicted to reach £27.8billion by 2024 (Statista, 2020c). Despite this prediction, online channels limit the full evaluation of garment criteria (Reid, Ross and Vignali, 2016). The inability to accurately appraise garment criteria, such as fit, has galvanised offline showrooming behaviour, whereby consumers order multiple garments online, try them on in the comfort of their own home and return the sizes that do not fit correctly (Gallino and Moreno, 2018). Consumers are motivated to take part in offline showrooming in order to mitigate purchase uncertainty by physically examining the product on delivery (Sit, Hoang and Inversini, 2018). Indeed, the evolution of multiple shopping channels has made consumers’ information search more accessible, yet the inability to try-
on products within the online channel presents a considerable barrier for this platform. With physical stores still being the preferred channel to purchase fashion products (Mintel, 2020), further research into how online retailers can improve the provision of fit information on their websites must be undertaken.

The advancement of web 2.0 tools has completely revolutionised how consumers search for product information (Turban et al., 2018). Indeed, with web 2.0, the power shifts from retailer-curated information, to user-generated content (Huang and Benyoucef, 2013). Thus, it is no surprise that user-generated content is considered a hugely influential information source when shopping online (Luan et al., 2016; Hazari et al., 2017). Prior research has demonstrated that consumers turn to social media channels in order to better appraise the fit of apparel. For instance, Kerviler et al., (2017) found that Instagram plays a vital role in facilitating consumers fit decisions. The authors disclosed that participants would turn to Instagram to see garments on non-idealised body shapes, which, in turn, enabled better online garment fit provision. Nash (2019) further substantiates this finding. Collectively, these findings present alarming challenges for the future success of Business-to-Consumer (B2C) websites. Noticeably, scholarly research that has previously investigated user-generated content, such as reviews, have either used a social networking setting (i.e. Instagram and Facebook) or investigated a single e-commerce site, such as Amazon (Mudambi and Schuff, 2010; Benlian et al., 2012; Baek, Ahn and Choi, 2013; Cui, Lui and Guo, 2014; Amblee, Ullah and Kim, 2017; Gang and Taeho, 2019; Wang et al., 2019). Hence, there is a scarcity of research that has examined the influence of reviews in a fashion e-commerce setting, and so the present research will overcome this limitation.

1.7.2. The Garment Fit Appraisal Process and Body Shape
Clothing fit is verified to be the most salient factor that a consumer considers before making a purchase decision (Bye and LaBat, 2005; Apeagyei, 2008; Hugo and Aardt, 2012; Shin and Chang, 2018; Makhanya and Mabuza, 2020). Yet, the fashion industry is plagued with clothing fit issues including, non-standardised sizing, vanity sizing and the prevalent negligence of body shape (Reid et al., 2020). Indeed, Gupta (2020) claimed that the lack of body shape understanding, coupled with the overrepresentation of ideal body shapes, are the pertinent factors that are galvanising poor fit. Academics have found that identically sized garments can look exceedingly different on different body shapes (Pisut and Connell, 2007;
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Apeagyei, 2010). Yet, to date, sizing and body shape remain distinct concepts (Gill, 2015) with the majority of research focusing on the former.

Although various methods exist for the classification of female body shapes (see: Simmons, Istook and Devarajan, 2004; Connell et al., 2006; Lee et al., 2007), these methods remain purely academic and have not yet been applied in a commercial context. However, the identification of diverse body shapes is posited to be a critical solution for the apparel industry (Vuruskan and Ender, 2011). Consequently, this study aims to overcome this limitation by incorporating body shape provision online in an attempt to mitigate information asymmetries. Extant literature has also demonstrated that females purchase specific garments in order to achieve their desired body shape (Tiggeman and Lacey, 2009; Grogan et al., 2013; Ridgway, Parsons and Sohn, 2017; Zhang et al., 2017), leading to a plausible reason to hypothesise that body shape and subjective fit preferences are vital moderators in the online garment appraisal process.

1.7.2.1. The Hourglass Body Shape
Within the fashion industry, there is a noticeable dominance of the hourglass body shape, which is defined as ‘… the appearance of being proportional at the bust and hips with a defined waistline’ (Lee et al., 2007, p.379). Sizing systems for RTW garments use a core body shape to which a set of sizes are proportionally graded up or down in an attempt to fit the majority of the population (Apeagyei, 2008; Petrova and Ashdown, 2008; Zakaria, 2017; Gupta, 2020; Zakaria and Ruznan, 2020). The core body shape that retailers often start with during the garment fit stage is an hourglass figure (Pisut and Connell, 2007; Apeagyei, 2008; Petrova and Ashdown, 2008; Gribbin, 2014; Makhanya et al., 2014; Brownbridge et al., 2016; Rieke et al., 2016), which in reality represents a very small percentage of the population (Gribbin, 2014).

Additionally, the hourglass body shape is also often used as a promotional tactic by fashion retailers to create an ‘aspirational’ desire for a clothing product. In terms of industry practice, fast-fashion retailer, Pretty Little Thing, have dedicated a section of their website to dresses that enable females to attain ‘the perfect hourglass shape’ (Pretty Little Thing, 2020). Similarly, from a research perspective, Shin and Baytar (2014) unveiled that from 592 online fashion models 60% (N=354) of them had an hourglass or X body shape. Whilst this finding
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should be interpreted with caution, further research has demonstrated that females select clothing in order to achieve this particular body shape. For instance, Grogan *et al.*, (2013) during a physical garment try-on, found that UK female informants, aged 18-45, preferred to purchase garments that permitted them to achieve an hourglass body shape, which was also corroborated by this study. Therefore, given the unending discussion within the literature regarding the need for greater representation of different body shapes in the fashion industry (Mulgrew *et al.*, 2020), the visual fit stimulus explored within this research project is body shape, in particular, Hourglass vs. Diverse body shapes.

1.7.3. Information Provision on Retailers’ Online Product Pages

Yang *et al.*, (2020) state that online fashion product presentation includes the provision of model images used to display the product, as well as the tools and information cues that are designed to help consumers evaluate product attributes. Currently, retailers’ product information pages limit consumers’ clothing fit appraisals to, (1) verbal fit information such as garment sizes and fit descriptions (Bleier, Harmeling and Palmatier, 2019), or (2) visual fit information, such as images of clothing worn by professional models which do not represent the body shapes of the average person (Sattar *et al.*, 2019). Alternatively, retailers have attempted to reduce online product asymmetries by incorporating sizing and fit visualisation technologies onto their product pages. These technologies recommend clothing sizes to consumers based on their styling preferences and perceived body shape (Miell, Gill and Vazquez, 2018). However, within the literature, scholars have questioned the suitability of such interfaces. For instance, Januszkiewicz *et al.*, (2017) highlighted how amongst nine virtual fit platforms, there was little agreement as to which anthropometric measurements were necessitated in order to calculate fit recommendations. Additionally, Plotkina and Saurel (2019) found that having pictures of human models with similar features to that of a consumer (e.g., body size) were more useful than virtual try-on applications. Hence, this infers that currently, online fit technologies cannot close the online experimental gap (Bell *et al.*, 2018). Consequently, this study investigates how to enhance online fit provision in order to ameliorate consumers’ garment fit appraisal process.

1.8. Methodology

The present study undertakes a sequential-multi phase mixed-methods approach in order to investigate how different fit stimuli (verbal vs. visual) on a fashion retailer’s product information page affect consumers’ online garment fit appraisal process. The main online
shopping web-experiment (phase 3) will adopt a deductive, quantitative research approach. However, in order to inform the design of the fit stimuli for each of the four website conditions, phase 2 (garment try-on) will adopt a mixed-methods approach through inductive face-to-face interviews, 3D body scanning and objective body shape categorisation. Accordingly, this research adopts a pragmatic research perspective, as the contribution of both qualitative and quantitative research are valuable in investigating the research aims and objectives thoroughly.

1.8.1. Phase 1: Online Dress Survey
During a period of just over one month (October 10th -November 13th, 2018), an online dress survey was distributed via social media platforms in order to ascertain the most and least popular styles of dresses commonly purchased, to a convenience sample of 343 UK females, aged 18-34 (Research Objective 2). The quantitative data was analysed using descriptive statistics.

1.8.2. Phase 2: Garment Try-On
30 UK females, aged 18-34, were recruited using a combination of convenience and snowballing sampling strategies. During a period of nearly 5 months (January 08th -May 31st, 2019), females were body scanned and objectively categorised into a body shape, using the FFIT method outlined by Lee et al., (2007) (Research Objective 3a). Participants were further asked to try-on each style of dress and were photographed in each dress. To gain a deeper understanding of individuals’ garment fit appraisals, participants verbalised their fit experiences with each dress, whilst wearing each style, through semi-structured interviews (Research Objective 3b). The interviews were analysed adhering to the stages of thematic analysis outlined by Braun and Clarke (2006).

1.8.3. Phase 3: Online Shopping Experiment
During a period of two weeks (September 20th -October 04th, 2019), a convenience sample of 400 UK female respondents, aged 18-34, were recruited by Qualtrics to partake in a factorial web-experiment. A post-experimental survey measured subjects’ cognitive and behavioural responses to different combinations of fit information on a retailer’s product page (Research Objective 5). The responses from the survey were analysed using 2-way ANOVA’s and bivariate correlations.
1.9. Summary and Structure of the Thesis
This chapter introduces the research context by providing a brief review of existing literature that has helped to form the aim, objectives and outcomes of the present study. In particular, this research responds to the problem outlined by Hernández, Mattila and Berglin (2019) who suggested that alternative methods of clothing fit selection (besides physically trying-on the garment) is warranted. Thus, underpinned by the S-O-R framework, the researcher will investigate how the inclusion of body shape stimuli and user-generated fit reviews affects consumers’ fit decisions online. The chapter also delineates the different methodological stages that will be employed to achieve specific research objectives. A summary of the thesis structure is below:

Chapter 1. Introduction
Chapter 2. Literature Review of Online Fashion Retailing and Online Consumer Decision-Making
Chapter 3. Literature Review of The Garment Fit Appraisal Process and Body Shape
Chapter 4. Literature Review of Information Provisions on Fashion Retailers’ Online Product Pages
Chapter 5. Research Framework
Chapter 6. Research Methodology
Chapter 7. Findings and Discussion of Phase 1 and 2 of the Research
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)
Chapter 9. Discussions, Conclusions and Future Research.

2.1. Introduction

Online retailing has evolved dramatically since the introduction of corporate B2C e-commerce in 1994, with clothing and footwear seeing the most substantial increase in total online spending in the UK (ONS, 2020a). Indeed, the Internet not only provides consumers with a more convenient shopping platform (Saarijärvi, Sutinen and Harris, 2017), but it also enables consumers to appraise product information from several different sources. For instance, the recent introduction of web 2.0 tools has revolutionised how consumers seek out and appraise product information. However, the majority of clothing purchases are made in-store (Boardman and McCormick, 2019), inferring that the need to evaluate garment criteria physically is pertinent during consumers’ shopping journey. According to scholarly research, the most prevalent reason for online garment returns is the issue of garment fit (Minnema et al., 2018; Li et al., 2019; Kaushik et al., 2020; He et al., 2020) rather than product defects. This finding extrapolates that currently, consumers are experiencing a discrepancy between online and offline fit appraisals. With online returns costing fashion retailers £1.5billion a year (Drapers, 2019), the provision of fit information on retailers’ websites must improve in order to reduce this problem.

Part I of this chapter will provide a brief overview of the evolution of online retailing, multi-channel retailing, omnichannel retailing, webrooming and showrooming behaviour. Additionally, a critical discussion of the development of web 2.0 tools and the divergent definitions of social commerce are outlined. The chapter will proceed to establish how web 2.0 features, such as reviews, social networking sites, blogs and vlogs have transformed how consumers seek and gather product information online. After disseminating the critical findings from prior online retailing literature, the first part of the chapter will conclude with research gaps, which this present research aims to fulfil. Part II of the chapter will review extant literature concerning online consumer decision-making and analyse its importance to the aims of this research.
Part I. Online Fashion Retailing

2.2. Definition of Electronic-Commerce

The Internet began as an electronic data interchange (EDI) system that permitted users to exchange and share information, messages and data with others (Kaplan and Haenlein, 2010; Turban et al., 2018). EDI later expanded into electronic commerce (e-commerce), which permitted the buying and selling of goods using the Internet (Chaffey, Hemphill and Edmundson-Bird, 2019). E-commerce transactions can be undertaken in several ways, including:

1) Business-to-business (B2B) whereby transactions occur between organisations.
2) Business-to-consumers (B2C) whereby transactions happen between retailers and consumers.
3) Consumer-to-consumer (C2C) when consumers sell or buy from other consumers (Turban et al., 2018).

As the present study investigates how online garment fit provision affects the consumer’s online garment appraisal process, the remainder of this chapter will only discuss B2C e-commerce. The era of corporate B2C e-commerce started with the launch of Amazon in 1994 when Jeff Bezo first sold a book online (Kaplan and Haenlein, 2010; Bell et al., 2018; Jones and Livingstone, 2018). Traditional B2C websites are characterised as having a one-click buying feature and a specification-orientated virtual catalogue to help enhance shopping efficiency (Ko, 2018). Thus, the primary aim of traditional e-commerce websites was to provide a one-directional provision of information to consumers through web 1.0 tools (Belk, 2014). However, the Internet has evolved considerably from the online retailing 1.0 boom and bust in early 2000 (Bell et al., 2018), and is now a normalised channel for purchasing clothing (Cullinane et al., 2019). E-commerce is exceptionally beneficial for fashion retailers as it allows consumers to find the lowest prices, offers a broader product selection and provides consumers with a more convenient shopping channel (Saarijärvi et al., 2017).

2.3. The UK Fashion Retailing Market

The UK clothing and footwear market has been evolving progressively over the past seven years, with 2020 expecting to set the market value at £59.7billion (Statista, 2020d).
Chapter 2. Literature Review of Online Fashion Retailing and Online Consumer Decision-Making

However, COVID-19 has had a substantial impact on the UK clothing retail market. While sales of all non-food stores plummeted dramatically, clothing stores saw the strongest decline (ONS, 2020b). For example, in April 2020, the volume of clothing sales decreased dramatically by 50.2% when compared to March, which had already fallen by 34.9% on the previous month (ONS, 2020b), due to the closure of physical stores. Yet, despite this sharp decline, the clothing and footwear market experienced the largest proportion of online trading at 41% (ONS, 2020b). Thus, it is apparent that since the COVID-19 pandemic, online fashion retailing has become even more integral to the British economy. Indeed, with social distancing becoming the new norm, more consumers are beginning to switch their purchasing habits from the physical store to the online store (Jakhar et al., 2020). Therefore, the ways in which fashion retailers communicate and present clothing online requires immediate attention.

2.3.1. Issues within The UK Women’s Market

In light of the issue of COVID-19, the UK women’s market value is expected to be worth £28.7 billion in 2024 (Mintel, 2020). Despite this prediction, online product returns are pervasive within the UK womenswear market, with inaccurate fit being the primary reason for garment returns (He et al., 2020; Li et al., 2019). Consumers are currently unable to accurately appraise garment fit online, forcing them to intentionally buy multiple garment sizes and return the ones that do not fit correctly (Cullinane et al., 2019), a phenomenon more recently referred to as ‘bracketing’ (Statista, 2018a). Indeed, a report from Statista (2018a) found that 44.5% of UK and US females reported having bought two to three clothing items online intending to return them. This statistic is further sustained in a recent study by Lynch and Barnes (2020) who found that a number of UK female participants, aged 18-24, acknowledged that they would often over-order multiple sizes of the same garment with the intention to return the ones that do not fit. Not only is this frustrating for the consumer, but the restocking and reselling of the returned merchandise is exceptionally time-consuming and reduces financial profitability for the retailer (Song and Kim, 2012).

Moreover, although some returns can go back into inventory, given the trend-driven nature of fast fashion, the majority of returned clothing articles end up in landfill (Robertson, Hamilton and Jap, 2020), leading to severe environmental implications. Although prior research has established the importance of return strategies as a product purchase risk
reliever (Greatorex and Mitchell, 1994), the ease and low cost that is associated with returning items purchased online, has resulted in a rise in ‘serial returners’ (BBC, 2019a). The online channel accounts for 30% of clothing returns compared to the 9.96% of clothes that are purchased in-store (Bertram and Chi, 2018), suggesting that returns are considerably more problematic for retailers who exist purely in the online realm. Thus, it is apparent that the intangibility of garments online is a critical issue that retailers need to address.

Lastly, a further noted issue in the UK womenswear market is the inability to appraise garment fit on different body types, which has resulted in a strong demand for more representative clothing models (Mintel, 2019b). Indeed, whilst retailers such as ASOS and Pretty Little Thing have attempted to implement a function on their websites that allows consumers to see different sized models wearing the same garment, neither has appeared to sustain the initiative inferring that it is still an untapped opportunity for online retailers (Mintel, 2019b). Thus, this research aims to offer novel managerial and academic insights into how garment fit provision can be enhanced on a retailer’s product information page and subsequently reduce online garment returns in the future.

2.4. Evolution of Fashion Distribution Channels

Before the development of e-commerce, consumers would often shop for clothing either through fashion catalogues (Cullinane et al., 2019) or at physical brick-and-mortar stores. However, the development of the Internet has allowed retailers to reach and sell goods through many different channels. As such, the UK clothing retail sector can broadly be divided up into the following categories, (1) brick-and-mortar only, (2) pure-play or (3) multi-channel retailers who have both an offline and online presence (Cullinane et al., 2019). The proceeding section will review these categories in further detail.

2.4.1. Brick-and-Mortar

Brick-and-mortar retailers undertake business exclusively in a physical store environment (Turban et al., 2018). Thus, when shopping at brick-and-mortar stores, consumers can try-on garments to see how the item fits on their body (Perry, Kent and Bonetti, 2019; Gao and Su, 2020) and seek face-to-face advice from sales assistants and other shoppers (Bug and Helwig, 2020). Brick-and-mortar stores are no longer perceived as being mere transactional points but have become a place for interaction, socialising and product evaluation through the creation of an experiential setting (Alexander and Cano, 2019). Reid and Ross (2015)
established that both UK male and females, aged 16-34, preferred to shop for apparel in-store due to the inability to appraise critical garment variables online, such as fit. Lynch and Branes (2020), who unearthed that UK female participants used the physical store to mitigate risk due to issues concerning garment size and fit evaluation, further support this finding. Hence, the aforementioned suggests that physical product evaluation drives purchase decisions in brick-and-mortar stores (Dzyabura, Jagabathula and Muller, 2019). With the majority of apparel purchases being made in-store (Bell et al., 2018; Boardman and McCormick, 2019), it is apparent that the need to gain instant gratification by evaluating a product physically remains a pertinent driver of consumers’ purchasing decisions.

2.4.2. Pure-Play Retailers

Pure-play retailers undertake business exclusively in the online realm. In the 1990s, the first retailers to use the Internet as a selling tool were pure-play retailers, Amazon and eBay (Jones and Livingstone, 2018). Interestingly, a recent report from Mintel (2019a) found that Amazon and eBay are still the most popular online retailers in the UK for general products, demonstrating the potential success of a pure-play retailing strategy. However, it is interesting to note, that Amazon and eBay do not solely focus on selling apparel and so, it may be problematic for clothing retailers to pursue a pure-play only strategy given the need to experience product attributes first-hand. Nevertheless, pure-play retailers are advantageous in their ability to provide in-depth product information (Jang and Burns, 2004), offer a more comprehensive selection of products (Ashman and Vazquez, 2012) and overcome temporal and spatial barriers when shopping online (Perry et al., 2019).

However, the inability to provide face-to-face interactions (Park and Yoo, 2020) and physical garment appraisals (Naegelein, Spann and Molitor, 2019) are fundamental barriers for online-only retailers. The presentation of a garment on a screen reduces the ability to physically assess product attributes, such as fit (Reid et al., 2016; Gao and Su, 2020), which has resulted in the rate of returns being much higher from online channels, compared to physical stores (Gallino and Moreno, 2018). Indeed, fashion consumers can only realise their valuation of the garment after they touch and try-on the product (He et al., 2020) and so when shopping online, consumers’ capability to diagnose information becomes more pertinent (Jiang and Benbasat, 2004). Therefore, for pure-play fashion retailers to succeed, they must...
focus on the adequate provision of product information online (Kim and Lennon, 2010) in an attempt to close the experimental gap.

2.4.3. Multi-Channel Retailing

Given the burgeoning advancements of technology, coupled with the aforementioned limitations of pursuing a one channel strategy, retailers are motivated to operate via a multiple channel strategy (Boardman and McCormick, 2018; Boardman, Parker-Strak and Henninger, 2020). A multi-channel retailer aims to provide consumers with the autonomy to choose which marketing channel (e.g., online or offline) is the best for them (Turban et al., 2018). Multi-channel retailing blossomed in the 1990’s due to the emergence of new channels such as online and mobile being added to the existing channels (Abrudan, Dabija and Grant, 2020). The exponential growth in multi-channel retailing has resulted in consumers increasingly leveraging both online and offline channels in a complementary manner to achieve an ideal shopping experience (Aw, 2020). When multi-channel retailing was first introduced, it was feared that offering a new channel would result in existing channels becoming obsolete, also referred to as channel cannibalisation (Boardman and McCormick, 2018). However, academics now acknowledge that by offering a pallet of channel options, retailers can counterbalance the weakness inherent in each channel alternative (Bell et al., 2018).

Flavian, Gurrea and Orus (2016) suggest that the use of both online and offline channels can reduce product information asymmetries and enhance consumers’ decision-making confidence. McCormick et al., (2014) theorise that a successful multi-channel strategy allows consumers to search for product information in one channel, purchase the same product through a second channel and subsequent delivery or pick-up of the product through a third channel. This theory extrapolates that with multi-channel retailing consistency must be achieved not only in one channel but also across all channels (McCormick et al., 2014; Perry et al., 2019). As a result of multi-channel retailing, consumers are engaging in cross-channel shopping behaviours, such as webrooming and showrooming (Aw, 2019), which will be discussed in the proceeding section.

2.4.3.1. Showrooming

Showrooming is a type of behaviour whereby customers search for product information in brick-and-mortar stores, but finalise their purchases online (Schneider and Zielke, 2020; Aw,
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2020). When undertaking this behaviour, consumers use a combination of virtual and physical channels to gather information about the product and exert effort to obtain adequate product knowledge (Flavian et al., 2016). Thus, prior research has conceptualised showrooiming as ‘free-riding behaviour’, which allows consumers to switch and shop through different channels for their benefit (Fernández, Sanszo-Pérez and Vázquez-Casielles, 2020). Showrooming has become a prevalent issue for retailers due to the advancement of technology and the usage of mobile devices (Perry et al., 2019). Scholars have identified that consumers are often motivated to partake in showrooming behaviour to compare the prices of products to other retailers and find the best alternative using their computers or mobile devices (Verhoef, Kannan and Inman, 2015). Hence, literature suggests that showroomers are disloyal consumers who capitalise on the ability to appraise a product in-store physically but then buy a similar product online for cheaper (Sit et al., 2018). Consequently, showrooming behaviour can be damaging to retailers’ physical stores (Fernández et al., 2020).

2.4.3.2. Offline Showrooming

In an attempt to circumvent product uncertainty, several online retailers have introduced ‘offline showrooms’ (Gao and Su, 2017), also known as ‘try-before-you-buy-schemes’ (TBYB), whereby the consumer can try-on a garment that they have seen online in their own home before finalising the purchase (Gallino and Moreno, 2018; Cullinane et al., 2019 Li et al., 2019). A recent survey from Statista (2019) found that clothing was the primary retail category that UK consumers would use TBYB services. ASOS have recently introduced TBYB, which enables consumers to keep clothing items for up to 30days by selecting the pay later option (Li et al., 2019). Whilst TBYB schemes can make shopping online more appealing (Mintel, 2019d), they have also faced criticism for merely exacerbating the return issue (Butler, 2019; Li et al., 2019). Indeed, the phenomenon of home try-on behaviour is rising at a meteoric rate which is not only proving to be extremely costly for retailers (Sahoo, Dellarocas and Srinivasan, 2018; Bell et al., 2018), but also environmentally damaging due to the increase of carbon emissions due to product returns. Consequently, the aforementioned suggests that TBYB schemes are feeding consumers’ expectation of inadequate clothing fit rather than helping to solve it.

Investigating How Product Page Design Affects Clothing Fit Appraisal Online
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2.4.3.3. Webrooming

Webrooming is a type of shopping behaviour whereby consumers visit online stores first and then finalise their purchases at brick-and-mortar stores (Flavian et al., 2016; Aw, 2020). Thus, it is the opposite of showrooming. Literature also refers to webrooming as research-online-purchase-offline (Beck and Crie, 2018) and a risk-reducing strategy (Jing, 2018). Indeed, Flavian et al., (2016) and Santos and Gonçalves (2019) established that consumers undertake webrooming to gather useful information (e.g. information attainment and price comparisons), mitigate product uncertainty and reduce perceived risk. Given that virtual channels limit the full appraisal of garment criteria (Reid et al., 2016), it is no surprise that Arora and Sahney (2017) theorised that consumers are likely to undertake webrooming behaviour for high involvement products, such as clothing.

Webrooming poses significant concerns for pure-play retailers because if consumers are unable to appraise product attributes online accurately, then they will turn to the physical store to reduce purchasing risk (Aw, 2019). For instance, Reid et al. (2016) found that participants avoided purchasing clothing online because they were unable to appraise the fit of a garment accurately. Similarly, Rahman (2018) discovered that participants would use the Internet to gather product information but would not purchase online due to risk. The aforementioned suggests that whilst consumers use the Internet to seek out useful product information, the consumer cannot fully appraise specific garment criteria online. In particular, garment fit information is especially challenging to communicate online, and as a result, consumers are faced with vast uncertainty when making fit decisions online (Gang, Tao and Tayi, 2020).

Therefore, as webrooming can result in a loss of customers and sales for online retailers (Aw, 2020), how retailers present garment information online is fundamental for helping consumers in their decision-making (Boardman and McCormick, 2019). Flavian et al., (2016) posits that the number of webroomers surpasses the number of showroomers, inferring that webrooming is a more pertinent issue for online fashion retailers. Consequently, in an attempt to understand how to reduce webrooming behaviour, this study investigates how different types of apparel fit information affect a female’s garment appraisal process and which sources of fit information are advantageous when evaluating fit online.
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2.5. Omnichannel Retailing

To prevent negative cross-channel behaviour, both scholars and industry professionals suggest that retailers should develop an omnichannel strategy, which seamlessly integrates all channels and information provisions offered by a retailer (Boardman and McCormick, 2018). Hence, omnichannel is perceived to be the ultimate stage of multi-channel retailing (McCormick et al., 2014; Patten, Ozuem and Howell, 2020), which caters to consumer heterogeneity in preferences for whether the purchasing process should be carried out online, offline or through a combination (Bell et al., 2018). Thus, it is apparent that with omnichannel retailing, both consumers and retailers use interrelated shopping channels (e.g., mobile, s-commerce, e-commerce and physical stores) to gather information and purchase products (Park and Yoo, 2020; Gang et al., 2020).

Based on a thorough literature review, Abrudan et al., (2020) conclude that the primary characteristics of omnichannel retailing are (1) the integration of all channels and touchpoints and, (2) the seamless experience the customer has with the brand. Prior literature ascertains that omnichannel retailing is advantageous in its ability to convert consumers into loyal showroomers, whereby they inspect a product at the physical store and then buy from the same retailer’s online store (Gang et al., 2020; Schneider and Ziekle, 2020). Similarly, Reid and Ross (2015) found that consumers preferred to shop at omnichannel retailers as it allowed them to appraise all product criteria fully. However, Cullinane et al. (2019) acknowledge that because of omnichannel retailing, the magnitude of product returns has increased, particularly in the apparel sector. Thus, this extrapolates that discrepancies between the online and offline product provision are still prevalent, and so, employing an omnichannel strategy alone will not overcome the issue of product returns for the fashion industry.

2.6. Mobile and Tablet Commerce

Due to the increasing penetration of smartphones employing 3G, 4G and even 5G data networks, mobile commerce (m-commerce) has significantly ameliorated the convenience of shopping for products online (Cullinane et al., 2019; Diwanji and Cortese, 2020). M-commerce refers to the conducting of e-commerce activities by using applications (apps) on mobile devices and wireless networks (Turban et al., 2018). Boardman and McCormick (2018) established that m-commerce was considered the most useful channel as it enabled
UK females to buy items anytime and anywhere. Hence, mobile devices symbolically place products and retailers in the hand of the consumer and in doing so, temporal and spatial boundaries are overcome (Perry et al., 2019).

When shopping through m-commerce, consumers can purchase products directly from retailers’ apps rather than a web browser. Magrath and McCormick (2013) developed a framework of the design elements commonly found in fashion retailing apps, which included: (1) multi-media viewing, (2) information content and (3) promotions and consumer-driven interactions. The authors established that the latter design element included Augmented Reality (AR). AR is a consumer-facing technology, which permits real and computer-generated information to be amalgamated into the user’s view of the physical world so that they appear to be one environment (Olsson et al., 2013, p.288; Boardman, Henninger and Zhu, 2019). AR features are built-in to mobile apps to aid the customer with their product information search. For example, ASOS have recently incorporated a ‘search by image’ feature within their mobile app, which allows consumers to take a photo of a product using their mobile device and use the photo to search for a similar product within the mobile application (McLean and Wilson, 2019). Consequently, the development of AR has been argued to contribute to the escalating prevalence of consumers’ showrooiming behaviour (Gang et al., 2020). Thus, it is apparent that m-commerce plays a pivotal role in the omnichannel retailing strategy.

2.7. Shopping as a Social Experience

According to Barnes and Lea-Greenwood (2010), the brick-and-mortar store has many physical variables, which come together to create a distinctive image with the predominant aim to inspire purchases. However, this definition infers that physical stores exist purely for transactional purposes. Nevertheless, Turban et al. (2018) emphasised the primacy of social interaction as a motivator for shopping, which Patten et al., (2020) further corroborate. Thus, this extrapolates that shopping is inherently a social experience whereby consumers seek advice and feedback from other shoppers before finalising a purchase (Chen, Lu and Wang, 2017). Baker (1986) identified that social factors, such as sales assistants and other shoppers, were salient elements of the physical store. Indeed, in a more recent study, Mosquera et al., (2018) found that females were likely to use in-store fitting room technology to ask for advice from retail assistants, without leaving the fitting room. However, unlike physical
stores whereby consumers can interact with other shoppers, gain style inspiration and seek advice from sales advisors, social needs are largely unmet in the online realm (Dennis et al., 2010).

Alternatively, the introduction of web 2.0 tools has enabled customers to emulate the in-store experience online. For instance, web 2.0 tools have allowed consumers to gather and disseminate personal consumption experiences on not only social networking sites, such as Facebook but also e-commerce product pages (Wang et al., 2019), which can help consumers to make better-informed purchase decisions. The practice of using web 2.0 technologies to support the acquisition of products online is called social commerce, and a discussion of s-commerce will proceed in the following section. As digital environments have limited ability to provide face-to-face interactions (Park and Yoo, 2020) and physical garment appraisals, the integration of reviews from consumers who have already experienced garment criteria such as fit, is suggested to be paramount.

2.8. Social Commerce

The intersection of web 2.0 tools and traditional e-commerce has given rise to a new phenomenon, namely social commerce (s-commerce) (Busalim and Hussin, 2016; Wang et al., 2019; Nash, 2019; Tang and Zhang, 2020). Whereas traditional e-commerce uses web 1.0 tools to maximise purchasing efficiency, s-commerce aims to deliver a more social experience online through web 2.0 tools (Chen et al., 2017). Web 2.0, a term devised initially by Tim O’Reilly in 2005 (Constantinides, Romero and Bora, 2008), refers to a range of web tools that facilitate interaction amongst online users through network participation, collaboration, reviews and ratings (Turban et al., 2018). Thus, web 2.0 tools enable consumers to share their consumption experiences with other online users through user-generated content (Filieri, 2015; Hazari et al., 2017) and so, web 2.0 and s-commerce are often interchangeably termed within the literature. Although a stable definition is lacking, the understanding of s-commerce is that it is as a subset of traditional e-commerce which employs social media to facilitate buying and selling activities of products and services (Liang and Turban, 2011; Busalim and Hussin, 2016; Leong et al., 2020). Specifically, Busalim and Hussin (2016) identified four core characteristics of s-commerce:
1) **Interactivity**: users can cooperate and share feedback.
2) **Collaboration**: consumers can co-create value through the exchange of information.
3) **Community**: shoppers can seek and gather information from like-minded people.
4) **Social aspects**: processes are heavily built on the usage of web 2.0 tools.

It is apparent from the aforementioned that s-commerce is perceived to be advantageous as, not only does it allow customers to gain help from other customers in regards to their decision-making (Turban *et al.*, 2018, b), but it also provides consumers with the opportunity to interact with other buyers (Tang and Zhang, 2020). Thus, with web 2.0, the power shifts from commercial business-centric information to user-generated content (Huang and Benyoucef, 2013). Whilst prior research has confirmed that s-commerce has substantially transformed how consumers search for product information, formulate decisions and appraise products online (Mikalef, Giannakos and Pappas, 2017; Nash, 2019), an understanding of how s-commerce provisions affect consumers’ garment fit appraisals online is lacking, inferring further research is necessary.

### 2.8.1. S-Commerce Definitions

As mentioned previously, prior literature has failed to provide a stable definition of s-commerce. Table 2.1 outlines the divergent definitions of s-commerce that have been adopted in extant research.
Table 2.1. S-Commerce Definitions

<table>
<thead>
<tr>
<th>Author</th>
<th>S-commerce Definition</th>
<th>Critical Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constantinides et al.,  (2008)</td>
<td>S-commerce is a mixture of e-commerce and web 2.0.</td>
<td>Applies to both streams of s-commerce research.</td>
</tr>
<tr>
<td>Huang &amp; Benyoucef (2013)</td>
<td>S-commerce is an Internet-based application, which uses social media and web 2.0 to support social interaction and UGC to assist consumers’ decision-making.</td>
<td>Extremely broad and can be applied to both streams and s-commerce research.</td>
</tr>
<tr>
<td>Lin, Li, &amp; Wang (2017)</td>
<td>S-commerce refers to any commercial activities facilitated by or undertaken through web 2.0 tools in consumers’ online shopping processes or business interactions with their consumers</td>
<td>Extremely broad and can be applied to both streams and s-commerce research.</td>
</tr>
<tr>
<td>Ko (2018)</td>
<td>S-commerce refers to any commercial activity completed in a social media environment where the consumer is able to connect with others during their decision-making process.</td>
<td>Adopts a purely social media perspective.</td>
</tr>
<tr>
<td>Turban et al., (2018)</td>
<td>S-commerce, also known as social business, refers to e-commerce transactions delivered via social media.</td>
<td>Adopts a purely social media perspective.</td>
</tr>
<tr>
<td>Chaffey et al., (2019)</td>
<td>S-commerce is a subset of e-commerce for site owners who can incorporate reviews, ratings and other social media links with the aim of understanding customer needs and increasing conversion.</td>
<td>Adopts an e-commerce perspective, yet avoids visual UGC and video reviews.</td>
</tr>
</tbody>
</table>

It is apparent from Table 2.1 that s-commerce has been researched from two primary perspectives, (1) by integrating social media tools into e-commerce platforms or (2) by incorporating e-commerce transactional services onto social media platforms. The proceeding section provides an in-depth discussion of both research streams.

2.8.1.1. Perspective 1: Integrating Social Media into E-commerce Platforms

Research that has investigated s-commerce from this perspective emphasises the importance of incorporating social features, such as user-generated reviews, star ratings and blogs onto e-commerce platforms to help support consumers’ decision-making. Indeed, Karimov, Brengman and Van Hove (2011) found that including social features on traditional websites could increase user trust. Hassanein and Head (2007), who established that higher levels of perceived social presence positively affect perceived usefulness, trust and enjoyment of a website, further corroborate this finding.

2.8.1.2. Product Reviews

Online consumers are no longer satisfied with retailer-curated product information and alternatively, seek out objective product evaluations from online reviews by consumers who have already experienced the product first-hand (Rodrigues, Silva and Duarte, 2017; Aw, 2020). Online customer reviews are a form of electronic word of mouth (eWoM) which users
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seek to obtain more detailed information about the online product (Baek et al., 2013; Busalim and Hussin, 2016). Presently, online product reviews are argued to be the most influential and relevant source of product information (Aw, 2020; Zhu et al., 2020). Indeed, Aw (2020) found that the usefulness of online product reviews was a primary reason for webrooming intention. This finding indicates that product reviews are a vital source of information when appraising products, both online and offline. Hence, it is no surprise that e-commerce websites are beginning to integrate social media features onto their platforms to allow consumers to acquire useful information and assist their purchase decisions (Wang et al., 2019). The pure-play giant, Amazon, adopt this type of s-commerce successfully (demonstrated in Figure 2.1).

Figure 2.1. Example of S-Commerce Tools on Amazon
Source: Amazon (2020a)

However, fashion retailers have yet to fully integrate social media tools onto their e-commerce platforms, which has consequently led to a surge in research that has investigated the impact of s-commerce tools on pure-play giants such as, Amazon, Taobao, eBay or TripAdvisor (Srivastava and Kalro, 2019). Thus, this extrapolates that the presence of social features on fashion websites is distinctly under-researched (Wang et al., 2019).
Nevertheless, Gao and Li (2019) established that social presence positively affected purchase intentions on Taobao. Additionally, Hazari et al. (2017) found that Amazon consumers perceived user-generated reviews to be more trustworthy than manufacture provided information as they deliver a more accurate representation of a product. In a similar vein, Huang and Benyoucef (2015) discovered that participants, when shopping on Amazon, preferred to read customer reviews inferring that user-generated content plays a critical role in facilitating online decision-making. Furthermore, Koo and Park (2017) found that the presence of social cues on Amazon significantly generated pleasurable emotional responses. Thus, the aforementioned demonstrates the importance of product reviews on consumers’ decision-making. Chapter 4 of the thesis provides a further discussion regarding e-commerce product reviews and how they influence the consumer’s online decision-making.

It is apparent from the aforementioned that there is a paucity of research that has explored consumer decision-making from the perspective of adding user-generated content to e-commerce settings (Wang et al., 2019). In particular, the impact of product reviews on a consumer’s fashion garment fit appraisal process is a distinctly under-researched area. However, prior research posits that product reviews can help consumers to match product attributes, such as fit, to their preferences (Hong and Pavlou, 2014). Therefore, this research aims to fill this noticeable paucity by investigating how the presence (vs. the absence) of user-generated fit reviews on a fashion product page influence a consumer’s garment fit appraisal online. In line with Flavian et al., (2016) the present research departs from the importance of the social dimension of reviews and focuses more on the informational aspect of reviews, in particular how garment fit information communicated in a review, affects a consumers’ garment appraisal online.

2.8.2. Perspective 2: Bringing Commercial Transactions to Social Media

With the growing usage of social media platforms such as Facebook and Instagram, consumers are beginning to purchase products directly from these channels (Cullinane et al., 2019). Subsequently, an alternative definition of s-commerce refers to any commercial activity completed in a social media environment where the consumer can connect with others during their decision-making process (Ko, 2018). There is a wealth of research that has investigated users’ motivations to shop on social media platforms. For example, Anderson et al., (2014) found that information access was a significant driver of purchase
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intentions on Facebook. Blazquez et al., (2019) later corroborate this finding by discovering that utilitarian motives, such as informational support, had the most significant influence on e-commerce browsing motivations amongst UK fast-fashion consumers.

Goh, Heng and Lin (2013) further found that the availability of both user-generated and marketer-generated information on Facebook had a positive impact on purchase intentions of a product. Thus, these findings appear to infer that product information provided on social media is vital for facilitating consumers’ purchasing decisions. Concerning clothing fit information provision, Kerviler et al., (2017) found that females are dissatisfied with the current communication of fit information on e-commerce websites and so, are galvanised to turn to social media applications, such as Instagram, to seek information themselves. Social media provides consumers with the ability to gather product information from users, who have already experienced the product, from several different sources such as, user-generated reviews, brand communities and blogs. As a result, consumers can draw on these different information sources to make better-informed purchase decisions (Blazquez et al., 2019). The proceeding section will review the importance of social media platforms concerning consumers’ product information search.

2.8.2.1. Social Networking Sites (SNS)

Chaffey et al., (2019, p.7) define social networking sites (SNSs) as online spaces that facilitate user-to-user communication within a group or between individuals through the exchange of messages and user-generated content. SNS users can 'like' or 'follow' a brand to receive updates on their newsfeed about their latest products (Phua, Jin and Kim, 2017) and to engage with fellow consumers on brands social media posts. The first SNS, MySpace, was introduced in 1999 (Chaffey et al., 2019); however, Facebook, which was created by Mark Zuckerberg in 2004, overtook it in 2008. At present, Facebook is globally accredited for being the most popular SNS (Chaffey et al., 2019; Nash, 2019). A recent report from Statista (2020e) found that there were over 2.6 billion monthly active Facebook users worldwide at the start of 2020, supporting that it is the biggest SNS worldwide. However, users of Instagram, a SNS also owned by Facebook, have been burgeoning since it started in 2014, and as a result, Instagram is the fourth most used SNS in the UK (Statista, 2018b).
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SNSs provide a place in which consumers can share product links, personal consumption information such as verbal and visual reviews and their product experiences with other users (Wang et al., 2019). Consequently, SNSs are a useful and credible channel to gather product information. Table 2.2 provides a summary of the UK’s most popular social media platforms that will form the discussion of the proceeding section.

<table>
<thead>
<tr>
<th>Social Media</th>
<th>Background Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>myspace</td>
<td>First introduced in 1999 and was later purchased by News Corp. in 2005 (Chaffey et al., 2019). Supported peer interaction whereby users could post photos, blogs, music and videos.</td>
</tr>
<tr>
<td>facebook</td>
<td>Created in 2004 by Mark Zuckerberg. The platform was initially served as a community for Harvard students; however, it has now become the most popular SNS whereby collaborative sharing can be undertaken.</td>
</tr>
<tr>
<td>YouTube</td>
<td>Founded in 2005. Allows users to share, upload, and view video blogs (vlogs) (Ladhari, Massa and Skandrani, 2020). Extremely popular for offering make-up tutorials or product reviews</td>
</tr>
<tr>
<td>Twitter</td>
<td>Launched in 2006. Microblogging website that limits the size of each blog post and take the form of ‘tweets. ‘Tweets ‘are a type of eWOM in which users can express opinions, foster discussion and share satisfaction about products.</td>
</tr>
<tr>
<td>Snapchat</td>
<td>Snapchat, originally introduced as Picaboo in 2011, is a mobile image sharing social media in which users can exchange image and video content which disappears in 10 seconds, giving the rise of ‘ephemeral content’ (Flecha-Ortiz et al., 2019).</td>
</tr>
<tr>
<td>Instagram</td>
<td>Founded in 2010 and acquired by Facebook in 2012. Instagram is unique from other social media platforms in that it focuses more on the aesthetic dissemination of information, i.e., sharing content visually through videos and photos (Guarda et al., 2020; Santiago, Magueta and Dias, 2020)</td>
</tr>
<tr>
<td>TikTok</td>
<td>In 2016, Chinese Technology firm, Bytedance created TikTok. In 2019, the number of global TikTok users exceeded 500 million, of which 60% of users were under 30 years old. The platform focuses on the ability to create and engage with videos (BoF, 2019). It is an algorithm-driven app, in which a user can specify which videos they wish to see, e.g., fashion, beauty and style (Anderson, 2020).</td>
</tr>
</tbody>
</table>

Table 2.2. Summary of Social Media Platforms

2.8.2.2. Brand Communities

Social media has become increasingly omnipresent in the everyday lives of consumers, forcing retailers to provide brand communities on their social media platforms (Habibi, Laroche and Richard, 2014). Muniz and O’Guinn (2001, p.412) define a brand community as ‘a specialised, non-geographically bound community, based on a structured set of social relationships among admirers of a brand’. Huang and Benyoucef (2015) found that providing a community where people can share knowledge and interact with each other was the most important feature of Facebook. Consumers can use social media brand communities (SMBCs) on retailers’ pages to obtain product information in the form of pictures and reviews from other users, develop a relationship, contribute knowledge and share
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Experiences (Tsai and Men, 2013; Chiang et al., 2017). Thus, it is apparent that SMBCs can assist in providing information to enhance the consumer’s decision-making process. Indeed, Tsai and Men (2013) found that respondents were motivated to use a Facebook brand community to search for sale information and to exchange information with other members, a finding further corroborated by Kaur et al., (2018). Hence, this suggests that information seeking is a crucial motivator of SMBC usage.

Similarly, Hajli et al. (2014) found that users participate in SMBCs to gather knowledge, and so, users seek out user-generated recommendations when they want to try a new product. Azar et al., (2016) also examined motivations for interacting with brands on Facebook and identified five drivers, namely; (1) information, (2) entertainment, (3) reward needs, (4) trust and (5) social influence. The aforementioned demonstrate that SMBCs not only provide useful product information but also offer more credible information compared to retailer-curated information. Indeed, Goh, Suang and Lin (2012) found that user-generated content in SMBC positively influenced purchase intentions.

More recently, Fernandes and Castro (2020) investigated two types of Facebook SMBC user; (1) the lurker, who mainly use SMBCs for reading other posts and thus exhibit a passive level of engagement and (2) the poster who actively partakes in discussions. The authors found that whilst social needs motivate posters, the need for information is the strongest predictor for lurkers (Fernandes and Castro, 2020), suggesting that consumers turn to SMBCs for their information needs, such as seeing the latest trends or product experiences. Dessart, Veloutsou and Thomas (2015) further claim that users learn from brand communities in that they can seek out ideas, help and information from the retailer and fellow consumers. Interestingly, in a study that explored the use of Facebook, Twitter, Instagram and Snapchat to follow brands, Phua et al., (2017) found that brand community engagement was the highest for Instagram as it allowed consumers to follow fashion, socialise and gather useful product information. Thus, it is apparent from the aforementioned that consumers are turning to SMBCs to seek out advice from user-generated content. However, with the recent introduction of commercial applications to social media platforms, it is paramount that e-commerce websites enhance their product information provision online to ensure the platform does not become redundant in the future.
2.8.2.3. Blogs
Web-blogs, also referred to as blogs, first emerged in the mid-1990 due to communicative digital technologies such as forums and communities (Findlay, 2015). A blog aims to share, discuss and disseminate information (Turban et al., 2018) and so, scholars perceive blogs to be a vital source of product information during the consumer’s decision-making process. In regards to fashion, Colliander and Dahlén (2011) unveiled that blog posts resulted in higher purchase intentions compared to traditional online magazines as the reader felt closer to the blogger. Thus, given the persuasive role of blogs, blog creators are also referred to as ‘influencers’ within both academic literature and the fashion industry. Initially, bloggers used platforms such as WordPress and Tumblr, which were abundant in text and represented a more static environment. However, the burgeoning rise of social media has now enabled bloggers to create content that is more dynamic by uploading audio and visual posts (Stubb and Colliander, 2019). Hence, the technical facilities provided by SNSs have permitted bloggers to disseminate information through microblogs (Twitter), aesthetic blogs (Instagram), video blogs (YouTube) or a mixture of the above (Facebook).

2.8.2.4. Microblog
Microblogs are a relatively new method of blogging, whereby influencers can disseminate and share information through short sentences, video links and images. Microblogging platforms, such as Twitter, limit posts to approximately 140 characters in length. Twitter is one of the most popular microblogging sites, which allow bloggers to ‘tweet’ (publish content), upload pictures and respond to posts (Smith, Fischer and Yongjian, 2012). Users of microblogs are motivated to keep up with the latest trends, news and opinions (Smith et al., 2012; Son et al., 2019) and so, are considered to be motivated by informational needs (McFedries, 2007). Wei, McIntyre and Straub (2020) found that participants preferred tweets that provided the most up-to-date and relevant information on brand quality and tips on how to use brands and products. Twitter users can search for a brand or product by using the Hashtag function and can see the latest information regarding that product or brand. Thus, it is apparent that fashion consumers may consider microblogs in the form of tweets to be a salient pre-purchase information provision.
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2.8.2.5. Aesthetic Blogs

Instagram is unique from other social media platforms in that it focusses more on the aesthetic dissemination of information, for example, sharing content visually through videos and photos (Guarda et al., 2020). Instagram is the most used platform by bloggers in the fashion industry and is a vital source of product information for consumers (Casaló, Flavián and Ibáñez-Sánchez, 2018). Phua et al., (2017) found that the primary use of Instagram is to follow fashion. Similarly, Patten et al., (2020) found that customers seek inspiration and information from fashion blogs on Instagram as it enabled them to keep up with the latest trends. Kerviler et al., (2017) unveiled that fashion blogs found on Instagram facilitated consumers’ garment fit decisions as respondents acknowledged that seeing a garment on non-idealised body shapes helped them to envisage how the product would fit on oneself. A recent study by Nash (2019) corroborates this finding by positing that Generation Y consumers preferred seeing high-street fashion on social media blogs as it permitted them to identify their sense of style with different fashion accounts. Indeed, the author revealed that one participant disclosed ‘…you can identify your body shape to the bloggers that you follow, and then you can imagine what outfits would look like on you’ (Nash, 2019, p.90).

Thus, these findings infer that current fit provisions on fashion e-commerce pages are not satisfactory and so, are galvanising consumers to turn to blogs to receive fit information from ordinary people with a similar body type to themselves. Hackett and Rall (2018) also allude to this claim as the authors argue that social media offers a platform, which better represents larger women, and women with diverse body shapes.

2.8.2.6. Video Blogs

Bloggers can also choose to disseminate information through video blogs (vlogs). Vlogs often feature influencers who review the latest products for retailers through short videos (Hill, Troshani and Chandrasekar, 2020), and are usually broadcasted on social media platforms such as YouTube (Ladhari, Massa and Skandrani, 2020) or Instagram TV. YouTube users can create, share and upload vlogs to their subscribers and anonymous viewers (Lee and Watkins, 2016) and so, anyone can seek out product information from vlogs in order to ameliorate their decision-making.

Burgess and Green (2018) unveiled that music videos and informational content such as reviews were the most sought out user-generated vlog content on YouTube. Lopes et al.,
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(2020) further corroborate this finding by revealing that fashion and beauty were the most sought-after content after music. Thus, this demonstrates the importance of vlogs during the consumer’s apparel decision-making. Indeed, Hill et al., (2020) highlighted that consumers who are unable to physically appraise garment criteria prior to purchasing experience products (i.e., clothing) are more likely to be dependent on external information, such as vlogs. Additionally, Lee and Watkins (2016) established that vloggers could positively influence purchase intentions for luxury fashion brands. Thus, in regards to fashion, it appears that consumers can turn to vlogs to see a demonstration of how garments fit, feel and interact with the body before finalising their purchase.

2.8.2.7. Blogger Credibility

Perceived credibility is one of the most influential characteristics that affect review perceptions (Xu, Chen and Santhanam, 2015) and so, it is no surprise that research concerning review credibility is replete. Credibility encompasses two criteria, namely; ‘expertise’ and ‘trustworthiness’ (Sternthal, Philips and Dholakia, 1978; Erdem and Swait, 2004, p.192). Expertise refers to the blogger having perceived knowledge about a relevant topic, whereas trustworthiness is concerned with the perceptions of honesty. The way in which products are presented on social media blogs has also been found to affect the perceived credibility of a blog. For example, Schouten, Janssen and Verspaget (2020) posit that unlike celebrities, bloggers promote their products in authentic, real-life settings, which in turn can increase the viewer’s trustworthiness. Colliander and Marder, (2018) found that a ‘snapshot’ aesthetic, which captures images of ordinary consumers taken in typical situations, increased credibility compared to a traditional studio aesthetic. This finding is similar to Nash (2019) who unveiled that the way in which bloggers accounts were displayed, such as the quality of photographs and the way that outfits were assembled online, created an increased desire to engage with the retailer.

However, retailers often pay social media influencers to review and promote new products, and so, the realisation that a blog post is sponsored may affect the credibility of the post. Proceeding on this track, Stubb and Colliander (2019) demonstrated that exposure to a social media post with an impartiality disclosure enhanced perceived review credibility significantly compared to the exposure of a post with an explicit sponsorship disclosure or no disclosure at all. Hence, it is apparent that consumers are becoming increasingly aware
of product review sponsorship, which may increase mistrust regarding the authenticity of the information (Lee and Ahn, 2013). Similarly, Wei and Lu (2013) established that most participants (N=69.6%) did not trust the endorser of a toner product as they thought that the influencer would receive monetary rewards for the advertisement. Moreover, Hazari et al. (2017) also discovered that consumers trust reviews from people who have previously bought the product but do not trust reviews from celebrities. Johnson and Potocki (2019) found that social blog posts were thought to be more credible and elicited more social comparisons than native ads (e.g., paid content that emulates the editorial content of the host platforms). Likewise, Schouten et al. (2020) established that respondents trusted and identified more with bloggers than with celebrities. Finally, Nash (2019) unearthed that participants perceived fashion bloggers and influencers to be more trustworthy than retailer-curated information. Hence, it is apparent that consumers are becoming increasingly aware of product review sponsorship, which may increase suspicion regarding the authenticity and credibility of the information (Lee and Ahn, 2013). However, it is also clear that, regardless of whether a retailer is sponsoring the blogger, the information disseminated from influencers is arguably more credible than retailer-curated information.

2.9. Summary of Part I: Online Fashion Retailing

Part I of this chapter critically examines how fashion retailing has evolved in the past two decades due to the arrival of the Internet and more recently, the development of web 2.0 tools (Verhoef et al., 2015). The chapter addresses that a considerable barrier of online fashion retailing is the inability to appraise garment criteria such as fit online. As a result, the chapter discusses the ways in which consumers seek further information in order to mitigate online product risk. Indeed, the inability to appraise product fit criteria online has led to a growing surge of webrooming, offline showroombing and bracketing behaviour. Moreover, consumers are beginning to seek out alternative clothing fit information from SNSs, blogs, vlogs, brand communities and microblogs, which present alarming issues for the future success of fashion e-commerce. Thus, with online clothing returns inundating the fashion industry, further exploration into how online retailers can improve the appraisal of clothing fit on their online platform is necessary.

Part I also outlines several research gaps in the existing literature. It is apparent that research investigating user-generated reviews in a social media context is plentiful, yet research
investigating user-generated reviews on fashion e-commerce websites is relatively scant (Wang et al., 2019). Indeed, the majority of studies that have previously investigated user-generated reviews have either used a SNS (Instagram/ Facebook) or a single e-commerce site, such as Amazon (Gang and Taeho, 2019; Hong and Pittman, 2020), or Taobao (Luan et al., 2016). However, as more consumers are turning to social media platforms to seek out product information (Kerviler et al., 2017), it is apparent that user-generated content, such as reviews, is a useful source of product information provision. Additionally, prior research that has investigated product reviews has focused predominantly on quantitative aspects of reviews, such as volume and valance rather than their informational content (Jang et al., 2019). Thus, to fill this apparent gap within the literature, this study aims to offer insights into how clothing fit reviews present on a fashion e-commerce website affect consumers’ online decision-making.
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Part II. The Online Decision-Making Process

2.10. Introduction
In regards to online retailing, effective product presentation not only attracts consumers to a website, but it also enriches consumers’ decision-making in the absence of direct product experiences (Yoo and Kim, 2014). The way in which retailers present garments and their information online is critical for helping consumers with their purchase decisions (Boardman and McCormick, 2019) and so, understanding online consumer behaviour is essential to the success of e-commerce (Lin et al., 2018). Consequently, this section will critically review consumer behaviour, in particular, how consumers formulate decisions when shopping online.

2.10.1. Definition of Consumer Behaviour
Consumer behaviour is concerned with what, why and how people buy (Kotler, 1965; Hussain et al., 2018). Thus, an understanding of how consumers develop and finalise buying decisions can help retailers to improve their marketing strategies. In particular, consumer behaviour explores the processes that are involved when individuals, select, search, purchase and use products to meet a specific need (Solomon, Bennett and Previte, 2012). As the aim of the present study is to investigate how garment fit provision on a retailer’s product page affects consumers’ garment appraisals online, a thorough understanding of the history and transition of consumer behaviour to the online realm is imperative.

2.11. Prior Consumer Behaviour Approaches
Psychologists, economists and sociologists have made significant contributions to the understanding and development of consumer behaviour (Arndt, 1989). Thus, it is vital to understand the different perspectives of consumer behaviour in order to gain a comprehensive understanding of this inherently complex phenomenon. Economists were the first research group to construct a theory that reflected consumer behaviour (Kotler, 1965).

2.11.1. The Economic Approach
The economic approach assumes that consumers collect as much information as possible to make an informed decision (Solomon et al., 2012). In particular, the primacy is on human reason and the ability to select products that maximise consumption utility and search costs
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(Pachauri, 2001). However, in reality, it is unlikely that consumers will have access to all available information before making a purchase, and so this approach overlooks irrational consumer behaviours such as impulse purchasing.

2.11.2. The Psychodynamic Approach
The psychodynamic approach is rooted in the workings of Sigmund Freud’s psychoanalytical theory, which states that human behaviour is never simple, as an individual’s motivations are not apparent to neither the observer nor to the individual (Kotler, 1965). Consequently, motivations from internal influences affect behaviour rather than environmental stimuli (Bray, 2008). However, this perspective has been challenged within prior online retailing literature which has established that online stimuli can greatly influence a consumer’s final behavioural response (Eroglu, Machleit and Davis, 2001; Koo and Park, 2017; Boardman and McCormick, 2019; Sina and Wu, 2019; Deng and Gu, 2020).

2.11.3. Behaviourist Approach
The behaviourist approach argues that an individual learns (response) from external cues and events (stimulus), as opposed to biological drives (Bray, 2008) and so, it largely discredits the psychodynamic approach. This paradigm is primarily associated with the Pavlovian learning model (Kotler, 1965), which theorises that individuals are influenced by their learning behaviour which is an accumulation of rewarding and punishing outcomes of previous buying behaviour (Foxall, 1993). However, this approach is limited in its inability to consider the diverse range of subjective responses when exposed to similar stimuli (Bray, 2008).

2.12. Analytical Cognitive Grand Models
Analytical grand models of consumer behaviour identify the key variables that explain consumer behaviour, as well as provide a myriad of factors that influence the decision-making process (Bray, 2008). Despite the wealth of grand models, such as; The Nicosia Model (1966), The Howard and Sheth Model (1969) and the three editions of the Engel, Kollat and Blackwell Model (1968), each of these models predominantly portray decision-making as a multi-stage process which involves five primary stages namely; problem recognition, search, alternative evaluation, purchase and outcomes.
2.12.1. The Engle, Kollat and Blackwell Model (EKB)

The Engel, Kollat and Blackwell Model (1968) (EKB) extended the five-stage problem-solving process and applied it to the realms of consumer behaviour (Darley, Blankson and Luethge, 2010). The EKB model has been revised numerous times, with its updated version being re-named to the Engel, Blackwell and Miniard Model (EBM) (Bray, 2008). The sequential process states that the identification of a problem triggers a consumer’s decision-making, which is then followed by a search for information, the development of an alternative, the final purchase and a post-purchase evaluation (Boardman and McCormick, 2019).

![Figure 2.2. The EBM Consumer Decision-Making Process](image)

**Source:** Engel, Blackwell and Miniard (1995, p.154)

The decision-making process initiates when the consumer recognises a problem and thus, seeks out a product that will resolve this issue (Yadav et al., 2013). In the search stage of the process, the consumer seeks out relevant information in order to assist their decision-making. During the evaluation of alternatives stage, consumers assess alternative products or shopping websites to select the best option (Huang and Benyoucef, 2017). The purchase
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stage involves purchase actions and related activities for fulfilling the transaction. Finally, the post-purchase stage includes the after-purchase activities such as word-of-mouth recommendations, returns and refunds (Huang and Benyoucef, 2017). However, amongst these stages, the pre-purchase activities (information search and evaluation of alternatives) are widely considered the most critical for marketing communication expenditure (Akalamkam and Mitra, 2018) and so, will be the predominant focus within this research.

2.12.2. Evaluative Criteria

The present study aims to investigate how different clothing fit information, present on a fashion retailer’s product page, affects consumers’ decision-making. Therefore, an understanding of evaluative criteria is imperative. Within the third stage of the EBM consumer decision-making model, the evaluation of alternatives, the consumer evaluates a product based on specific criteria (Blackwell, Miniard and Engle, 2006). Evaluative criteria are the measures used to compare different brands and products (Blackwell et al., 2006), or the dimensions used to judge the merits of competing options (Solomon et al., 2012). Some product criteria will have a more significant influence on product purchase than others. For example, prior research concurs that garment fit is the most salient evaluative criterion during the garment decision-making process (Eckman, Damhorst and Kadolph, 1990; Abraham-Murali and Littrell, 1995; Hsu and Burns, 2002; Bye and LaBat, 2005; Pisut and Connell, 2007; Apeagyei, 2008; Park et al., 2009; Howarton and Lee, 2010; Vuruskan and Ender, 2011; Hugo and Aardt, 2012; Lee et al., 2012; Kasambala, Kempen and Pandarum, 2014; Reid and Ross, 2015; Rahman et al., 2017; Cassidy, 2017; Rahman and Yu, 2018; Shin and Chang, 2018; Park, 2019; Gupta, 2020; Makhanya and Mabuza, 2020).

Eckman et al. (1990) synthesised 21 previous evaluative criteria studies and developed an apparel evaluation criteria framework based on in-store purchases. The authors found that consumers evaluated intrinsic (colour, style, fit and pattern) and extrinsic (price, country of origin) criteria before they made a purchase, in which they found fit to be one of the essential evaluative criteria. Similarly, Abraham-Murali and Littrell (1995) found that consumers evaluated products based on four critical criteria; physical appearance (style and fit), performance (drape and fabric), expressions (patterns) and extrinsic values (price), in which they also found styling and fit to be the most important during the decision-making process. McKinney and Shin (2016) established that garment fit and style were the most discussed
criteria amongst online clothing reviews. Thus, it is apparent that fit information plays a crucial role in apparel purchase decisions (Rahman and Yu, 2019; Rahman and Koszewska, 2020). However, an online digital representation of a garment reduces a consumer’s ability to appraise fit criteria (Reid et al., 2016), which has led to a surge in returns for online retailers. Thus, the present research aims to investigate how fit provision online can be enhanced in order to improve a consumer’s online garment fit appraisal process.

2.13. Online Consumer Decision-Making Model

Darley et al. (2010) adapted and extended the EBM decision-making model to the online realm, illustrated in Figure 2.3. Scholars have used this model to understand consumers’ decision-making in an online setting (Yadav et al., 2013; Chae and Lee, 2013; Reid and Ross, 2015; Zhang and Benyoucef, 2016; Boardman and McCormick, 2019). Whilst the model is analytical, some academics suggest that consumer behaviour cannot be understood simply through the analysis of the final decision (Chae and Lee, 2013) and so, consideration of cognitive evaluations are paramount (Boardman and McCormick, 2019). Accordingly, the online consumer decision-making model will not be used within the present research; however, an understanding of the pre-purchase stages (evaluation and information search) is vital for the development of the research hypotheses.
Online consumer behaviour is concerned with how consumers formulate decisions in an online environment and the variables that influence this behaviour such as, search, information acquisition, evaluation of products and online transactions (Vanhala et al., 2020). In particular, the Internet has revolutionised how consumers search and acquire pre-purchase information, yet all sources of information are not equally influential (Blackwell et al., 2006), making the online purchasing behaviour a complex phenomenon. Given the countless sources of online information, retailers face the challenge of how to effectively influence decision-making in favour of their products (Stankevich, 2017). Extant studies have failed to establish which sources of fit information on a product page are the most salient during the consumer’s decision-making process and so, this study aims to fill
this gap within the literature by investigating how product page design affects garment fit appraisals online.

2.13.1. Online Information Search
Compared to shopping in a physical retail store, consumers cannot consult in-store sales assistants in order to obtain product information (Moon, 2004) and so, when shopping online, many variables including the provision of product information, website design and more recently the presence of web 2.0 tools (Vanhala et al., 2020) influence the consumer’s decision-making. Moon (2004) highlights how the inherent characteristics of the Internet, namely, accessibility to large amounts of information, lower search costs and the intangibility of products have affected the consumer’s decision-making process. Akalamkam and Mitra (2018) classified online information as; information provisions on online websites, advertisements, recommendations, eWOM, expert reviews and product comparison sites. Hence, the multitude of information sources has modified how consumers perform their external information search (Senecal, Kalczynski and Nantel, 2005). Chapter 4 of the thesis will provide an in-depth review of prior research that has investigated the influence of online product information on the consumer’s decision-making.

2.13.2. Online Information Search and Web 2.0.
Web 2.0 tools have entirely transformed the online decision-making process, especially concerning how individuals evaluate and seek out product information. Specifically, consumers are quick to turn to user-generated content to support their pre-purchase activities (Yadav et al., 2013). Huang and Benyoucef (2017) investigated how s-commerce design elements affected a consumer’s decision-making. The authors found that for the information search process, information completeness was the most important feature, whereas, for the evaluation stage, the most crucial feature was the quality of information provisions. This finding infers that offering information provision, in the form of user-generated content, can considerably enhance the decision-making process. Yadav et al., (2013) further supports this inference by recommending that in the pre-purchase stage, marketers should support consumers’ decision-making by identifying the type of perceived risk and mitigate this risk with an appropriate source of user-generated content. However, this proposition was purely conceptual and so; the present research aims to empirically test this hypothesis by investigating whether user-generated content (i.e., the presence vs. absence of user-
generated fit reviews and consumers with different body shapes) can help to reduce consumers’ concerns with fit online.


The latter section of this chapter critically reviewed the underpinnings of human decision-making theory in order to establish how the advancements of the Internet have revolutionised the multi-stage online decision-making process. The chapter ascertains that amongst the decision-making stages, pre-purchase stages (information search and evaluative criteria) are the most critical, as they will have a direct bearing on the retailer’s communication strategy and marketing expenditure (Akalamkam and Mitra, 2018). The chapter reviewed how consumers formulate decisions online compared to physical stores as well as, highlighting the risks and barriers of online shopping, with the most poignant risk being the inability to evaluate garment criteria, such as fit. Part II also emphasised the influence of web 2.0 on the decision-making process, highlighting the significance of social presence and the ability to gather first-hand product experiences when formulating decisions. Whilst the chapter emphasises the importance of the multi-stage consumer decision-making process, recently, scholars have focused on particular determinants of decision-making (Stankevich, 2017), rather than looking at the model as a whole. Consequently, this research will only focus on the pre-purchase stage of the decision-making model (product evaluation and information search) in particular how different types of fit information affect the consumer’s garment fit appraisal online.

After synthesising the literature, it is evident that several gaps remain. Firstly, existing literature has established that garment fit is the most critical evaluative criterion (Section 2.12.2). However, there is a paucity of research that has investigated (1) how consumers evaluate fit online and (2) how different sources of garment fit information affect the consumer’s garment appraisal process, which this present study seeks to answer. Moreover, there is a consensus within the literature that user-generated reviews have entirely transformed how consumers formulate decisions (Section 2.13.2), especially how consumers search for and evaluate product information. Nevertheless, the role of user-generated reviews on consumers’ online fit appraisals such as, concerns with fit online and product fit diagnosticity has not yet been established within the literature, which the present study aims to address.
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The proceeding chapter will investigate the consumer’s garment fit appraisal process, with particular consideration of body shape, whilst establishing the importance of garment fit within a consumer’s decision-making.
Chapter 3. Literature Review of The Garment Fit Appraisal Process and Body Shape

3.1. Introduction
As mentioned in the preceding chapter, clothing fit is the most salient factor that a consumer ponders before making a purchase decision (Bye and LaBat, 2005; Apeagyei, 2008; Hugo and Aardt, 2012; Shin and Chang, 2018; Makhanya and Mabuza, 2020). However, issues regarding apparel fit within the fashion industry are profuse. Indeed, in the face of non-standardised clothing and vanity sizing, clothing size is becoming redundant, forcing consumers to seek out alternative ways to appraise the fit of a garment. Scholarly research has asserted that the lack of understanding of diverse body shapes and the overuse of ideal body shapes are the key drivers of poorly fitted garments (Gupta, 2020). Consequently, academics are recognising the importance of different body shapes in enhancing satisfaction with garment fit (Lee et al., 2007), with some going as far to state that adequate fit is about body shape, not clothing size (Gribbin, 2014; Dove, 2018). Fit is a multifaceted issue which encompasses not only objective criterion but also subjective consumer variables. Therefore, it is paramount that scholars investigate how consumers appraise fit in order to understand how consumers finalise and formulate clothing choices.

The first half of this chapter reviews the different perspectives from which garment fit has been researched, with specific emphasis on the different consumer variables that influence clothing fit satisfaction. The chapter will advance to outline the negligence of body shape, and how perceived body shape influences a consumer’s garment selection process. The latter section of this chapter will outline the current industry solutions to communicating fit online and highlight the shortcomings of such initiatives. The chapter will conclude with a summary of the chapter and the gaps identified in the literature that this present research aims to fill.

3.2. Defining Apparel Fit
Clothing fit has been researched in an array of disciplines from psychology and consumer behaviour to anthropology, suggesting that clothing fit transcends the mere realms of garment construction and technology. Consequently, within prior literature apparel fit has been defined in several ways. Indeed, Gupta (2020) acknowledges that an understanding of fit varies, from academics who research fit, garment technologists who confirm clothing fit
standards and consumers who physically appraise garment fit. However, in an attempt to comprehend the complex issue of apparel fit, practitioners must deal with the differences between academic, industry and consumer understandings of fit (Gill, 2015). Some have defined apparel fit purely from a consumer perspective, with Gribbin (2014) positing that fit is how a garment looks on a consumer. LaBat and DeLong (1990) further claim that a consumer determines on an individual basis what comprises of an acceptable fit and so, understanding garment fit from the consumer’s perspective is fundamental, a proposition further sustained by Lee et al., (2007). Scholarly research has also acknowledged that it is problematic to operationalise apparel fit, as it is contingent upon styles, fashion trends and a person’s self-perception (Seo and Namwamba, 2018; Song, Kim and Ashdown, 2020). More recently, Gupta (2020) adopted a definition of fit as the relationship between an individual and their clothing, which significantly affects the self-esteem, appearance and comfort of the wearer.

Collectively, these definitions infer that fit is a subjective, ‘consumer-centric attribute’ based on individual partialities (Rieke et al., 2016, p.208). However, this comprehension of fit should be taken with caution as it depicts clothing fit as being a purely arbitrary concept, which varies from person to person. Alternatively, Ashdown and Loker (2010) assert that both objective and subjective criteria define apparel fit. Despite the discrepancies in definitions, there appears to be some agreement that fit is concerned with garment size and the 3D body shape of the wearer (Brown and Rice, 2001; Rasband and Liechty, 2006; Zakaria, 2017). Hence, the present research will adopt this definition of clothing fit.

### 3.2.1. A Garment Technologist Perspective: Objective Fit Criteria

Garment technologists measure standard fit through five objective criteria, specifically: ease, line, grain, balance and set (Erwin, 1949; Faust and Carrier, 2009; Gill, 2015; Shin and Damhorst, 2018; Gupta, 2020). Ease refers to the amount of space between the human body and the garment (Shin and Damhorst, 2018) to enable effective movement (Song et al., 2020). Line is conceptualised as the structural alignment of the garment and is often assessed by viewing the seams of a product (Shin and Damhorst, 2018). Grain refers to the direction of yarns within a fabric (Shin and Damhorst, 2018). Indeed, the cut of a piece of fabric will determine the fit of the garment, and so, the grain is a vital consideration during garment construction. Balance refers to the dispersion of a garment across the body (Erwin, 1949).
Chapter 3. Literature Review of The Garment Fit Appraisal Process and Body Shape

This criterion will affect how the garment feels on the wearer’s body. Lastly, the set of a garment is established by the smoothness of the fabric on the body. Whilst these five criteria are useful in providing an objective understanding of what influences the fit of the garment, the understanding and application of these standards are limited to merely a garment technologist perspective of apparel fit. For instance, in a mixed-methods study, which examined young people’s understanding of fit, Shin and Damhorst (2018) found that participants did not refer to any of these objective terms of fit, suggesting that consumers have limited understanding of such parameters when understanding apparel fit. Hence, a consideration of the parameters on which individuals define apparel fit is necessary.

3.2.2. A Consumer’s Perspective: Subjective Fit Criteria

Beyond measurements and objective criteria, there is the concern of how females favour garments to fit them (Pisut and Connell, 2007), which is primarily influenced by personal variables such as body satisfaction, clothing benefits, societal expectations and perceived body shape. Thus, the wearer’s learned fit preferences largely influence clothing fit satisfaction, and so, the variation in consumer fit preferences makes it problematic to establish universal standards for good fit (Ashdown and O’Connell, 2006).

3.2.2.1. Body Satisfaction

According to scholarly research, an individual’s body cathexis, which is also defined as the satisfaction or dissatisfaction with one’s body (Markee, Carrey and Pedersen, 1990; Makhanya and Mabuza, 2020), results in preferences for particular clothing choices. Hence, when understanding clothing fit from a consumer’s perspective, body cathexis is a vital variable. Prior research has discerned that lower body cathexis correlates to a preference for greater body coverage and less revealing silhouettes in apparel, thus, leading females to select products that conceal or reveal parts of their body that they feel negative or positive towards (Markee et al., 1990; LaBat and DeLong, 1990; Feather, Ford and Herr, 1996; Alexander, Connell and Presley, 2005; Chattaraman and Rudd, 2006; Otieno et al., 2007; Pisut and Connell, 2007; Manuel, Connell and Presley, 2010; Song and Ashdown, 2013; Shin and Baytar, 2014; Yu and Damhorst, 2015). However, a more recent study by Makhanya and Mabuza (2020) challenges the aforementioned, as the authors discovered that body cathexis did not influence clothing fit preference. Nevertheless, despite the conflicting
findings, it is apparent that understanding consumers’ satisfaction with fit is far more convoluted than just producing ‘properly sized’ garments (Shin and Damhorst, 2018, p.352). Existing studies further indicate that when garments do not fit a consumer appropriately the consumer blames their body resulting in a manifestation of high-body image dissatisfaction (Apeagyei, 2008; Park et al., 2009; Kim and Damhorst, 2010; Gribbin, 2014; Rieke et al., 2016). Interestingly, Rieke et al., (2016) established that when luxury garments did not fit a consumer properly, the consumer would blame their body, yet when a fast fashion garment did not fit the consumer correctly, the wearer would blame the manufacture. This finding implies that there is an inherent acceptance by consumers that ready-to-wear (RTW) clothing does not fit well. However, the aforementioned infers that subjective psychological implications, such as body cathexis, is an influencing factor during the purchasing process.

3.2.2.2. Clothing Benefits Sought

Clothing benefits sought is a psychological theory, which posits that products can provide consumers with certain benefits, such as higher social status and role identification (Park and Sullivan, 2009). Shim and Bickle (1994) identified nine benefits from clothing, namely: self-improvement, social status, sex appeal/ femininity, fashion image, functional/comfort, role identification, figure flaw compensation, individuality and mature/sophisticated look. Hwang (1996) later employed this framework to investigate the relationship between body cathexis and clothing benefits sought. The findings revealed that participants who were dissatisfied with their weight indicated a high interest in figure flaw compensation, whereas females who were satisfied with their bodies were interested in the individuality benefits obtained from clothing. Kinley (2010) further supports this finding by unveiling that women who sought to gain sexy and fashion-forward benefits from clothing preferred a tighter garment fit. In a similar vein, Alexander et al., (2005) found that participants who used clothing to enhance their sex appeal preferred a tighter clothing fit as they wanted to emphasise certain areas of their body. Hence, the aforementioned infers that clothing benefits sought are a key when considering females preferred fit preferences and understandings of apparel fit.

3.2.2.3. Alternative Fit Variables

In a study which explored the criteria that consumers use when evaluating the rental of online formal wear, McKinney and Shin (2016) found four dimensions of fit evaluation, investigating how product page design affects clothing fit appraisal online.
specifically: aesthetic fit, physical fit, functional fit and social considerations, which also corroborates with prior literature (see: Shin, 2013; Shin and McKinney, 2017; Shin and Damhorst, 2018). Physical fit is the palpably perceived relationship between clothing and the body and includes parameters such as the tightness and length of a product (Shin, 2013). Aesthetic fit is the visual perception of the product when the body is clothed and includes criteria such as the overall appearance and attractiveness of the garment (Newcomb and Istook, 2011; Shin, 2013). Individuals evaluate functional fit when the clothed body is moving and concerns variables such as restriction or freedom of movements and donning and doffing. Finally, Shin and Damhorst (2018) found that when considering fit variables, young females were also concerned about what others thought about the fit of a garment. Hence, on this premise, it can be argued that social fit is a crucial consideration when understanding females fit preferences. Whilst the generalisability of these findings to other demographics may be questionable, Howarton and Lee (2010) found that female boomers also valued the opinions of others when assessing garment fit. Thus, this suggests that social deliberation of garment fit is a key consideration for females despite age. Accordingly, in the present study, when encouraged to review the fit of each of the dresses in phase 2 (garment try-on), participants will be asked to consider the consumer fit variables outlined by Shin and Damhorst (2018) to ensure a holistic understanding of garment fit.

3.3. Current Garment Fit Issues

Alongside the divergent definitions and criteria surrounding apparel fit, the two notable fit concerns identified in existing literature are, (1) a lack of standardised sizing and (2) negligence of body shape variation (Lee et al., 2012; Gupta, 2020). Indeed, individual body variation, coupled with the lack of standardised sizing systems in the apparel industry, adds to the substantial complexity in achieving a satisfactory fit (Shin and Damhorst, 2018). The proceeding section will discuss these issues in further detail.

3.3.1. A Brief Outline of the Development of UK Sizing Systems

Prior to the 18th Century, the majority of garments were tailor-made by dressmakers for specific people (Ashdown, 2014; Zakaria, 2017). It was not until the 20th Century that RTW garments were introduced on a mass scale (Faust, 2014). Indeed, towards the end of the 1930’s, there was a need for mass produced army uniforms in America, which spearheaded the development of several standards (Faust, 2014). Yet, whilst RTW menswear gradually became more industrialised, dressmakers in the domestic sphere continued to produce
women's wear due to the complex garment structures and so, there was delay in the systemisation of women’s clothing (Aldrich, 2007). However, the transformation of women’s fashion from the corseted distorted figure to a more ‘Parisian’ influenced rectangular shape, was the predominant factor that enabled the development of cheap RTW clothing for women, as the rectangular block shape could easily be graded into sizes (Aldrich, 2007). The development of a sizing system involves the investigation of target populations’ body dimensions to determine an individual’s size category, which in turn, should provide suitable fit. Between 1939 and 1940, O’Brien and Shelton (1941) were the first to methodically collect linear body measurements for sizing apparel in the US and were later followed by the UK in 1951 by Kemsley (1957) (Gill, 2015). Presently, both in the UK and globally, there are several standards, which outline the primary, and secondary measurements that are required for the sizing development of various garment types (Gill, 2015). For example, the BS ISO 8559-2:2017 states that measurements needed for women’s dress construction are bust girth (primary) and height, hip girth and waist girth (secondary).

However, despite this, issues with sizing provision in the fashion industry are profuse, as delineated in the proceeding section.

3.3.2. Non-Standardised Sizing

Sizing systems aim to help consumers to identify garments that will provide them with an appropriate fit (Beazley, 1998). Indeed, the purpose of a sizing chart is to satisfy the maximum number of people by using the minimum amount of sizing ranges possible (Apeagyei, 2010; Gill, 2015; Cassidy, 2017; Gupta, 2020). Thus, sizing charts are a guide to apparel sizing (Dove, 2018). However, currently, there are no international regulations surrounding how retailers must discern sizes, or if size must relate to actual body measurements. Ashdown (1998) posits that sizing systems are based on two or three body measurements such as hip, bust and waist, which do not accommodate for the variation amongst female body shapes. Hence, it is apparent that currently sizing systems do not take into consideration the discrepancy amongst female body shapes (Petrova and Ashdown, 2008). It is because of this lack of standardised sizing regulations that size inconsistencies amongst retailers prevail (Otieno et al., 2007; Kasambala, Kempen and Pandarum, 2016; Zakaria and Ruznan, 2020).
Moreover, instead of adhering to a consistent sizing system, fashion retailers implement individual sizing structures to appeal to a specific demographic with unique lifestyles (Alexander et al., 2005). Consequently, scholars argue that sizing charts are part of a more comprehensive marketing strategy (Gill, 2015). For example, retailers have previously optimised their own set of patterns based on the preferences of their target segment (Gupta, 2020). Presently, each manufacture cultivates their own sizing table based on measurements that fit certain body types which best represent the retailer’s target market (Alexander, Pisut and Ivanescu, 2012). Accordingly, consumers who find a fit in a particular size from one brand cannot necessarily select the same size from another brand (Peng and Al-Sayegh, 2014). In a study, which explored the fit paradigm from a sustainability perspective, Cassidy (2017) found that 48.28% of female participants disclosed that when they shopped at different retailers, they changed between dress sizes. In a similar vein, Rahman and Yu (2019) found that both male and female participants were reluctant to purchase clothing online as they had previously had trouble in finding the correct garment size due to unstandardised sizing. Additionally, Kaushik and Dhir (2019) discovered that one of the critical reasons for non-conforming apparel was due to fit variation, which further corroborates that inconsistent sizing leads to shopper dissatisfaction. Whilst this finding is limited as it explores online fashion retailers in India, the UK womenswear market has also reported similar issues (Mintel, 2020).

Whilst sizing inconsistency across retailers is disconcerting, the issue is further amplified when clothing sizes fluctuate within the same retailer. For instance, Faust, Carrier and Baptist (2006), in a study investigating the variations in Canadian RTW sizing systems, measured the same size garments produced by the same manufacture and discovered that the measurements varied by as much as three inches. However, in an effort to minimise this issue, many fast-fashion retailers have agreed to participate in the on-going Shape GB campaign, a nationwide sizing survey which aims to create standardised sizing in the UK (Kokoszka, 2018; ShapeGB, 2020). Yet, Brown and Rice (2001) propose that even with the creation and implementation of a standardised sizing system, only a few consumers would be catered for due to the diverse body shapes exhibited across females. Hence, it is apparent that currently, non-standardised sizing is a perpetual issue for the fashion industry and so, an alternative way of communicating garment fit online is necessary.
3.3.3. The Communication of Fit: Sizing Labels

At present, the most common way to communicate RTW clothing fit information is through sizing labels, which are expressed either alphabetically (S, M, L, XL) or numerically (6, 8, 10, 12, 14, 16, 18+) (Chun, 2007; Zakaria and Ruznan, 2020). Whilst this widely accepted communication strategy can assist a consumer’s purchasing decision (Workman and Lentz, 2000), it has also been perceived to be the least useful (Faust et al., 2006) and informative way to communicate clothing fit (Ashdown and Loker, 2010). There is an agreement within existing literature that the salient problem of garment labelling is that size designators have no relationship to actual bodily measurements (Alexander et al., 2012; Cassidy, 2017; Zakaria and Ruznan, 2020). Hence, the communication of fit through sizing labels is often a source of confusion and dissatisfaction amongst consumers (Otieno, Harrow and Lea-Greenwood, 2005). Consequently, scholars have frequently referred to sizing labels as ‘floating signifiers’ given their irrelevance to measurements of the body (Bishop, Gruys and Evans, 2018, p.180). Despite retailers’ efforts to improve fit communication by incorporating petite and plus-size collections (LaBat and DeLong, 1990), it is apparent that the communication of garment fit requires further improvement, primarily online whereby consumers are unable to physically trail different sizes.

3.3.4. Vanity Sizing

Another issue, which further complicates the consumer’s garment fit appraisal process, is vanity sizing. Kasambala et al. (2016) found that garment size is an essential criterion in what the consumer aspires to achieve through clothing in order to satisfy their emotional and physiological needs. Hence, in an attempt to mitigate issues surrounding negative body cathexis, some clothing retailers have partaken in a phenomenon known as vanity sizing. Ashdown and Loker (2010) operationalise vanity sizing as, the act of labelling garments with a smaller size with the endeavour to enhance a consumer’s body perception, a definition further sustained by Ketron and William (2018). This sizing manipulation strategy results in consumers frequently encountering clothing sizes that are bigger than their expected size (Hoegg et al., 2014).

Some scholars argue that vanity sizing is a profitable marketing strategy (Carufel and Bye, 2020), which aims to increase short-term product sales (Ashdown and Loker, 2010), and positively enhance the consumer’s mental perception of self (Aydinoglu and Krishna, 2012). Indeed, Ketron and William (2018) infer that consumers are increasingly responsive to
vanity sizing, as it permits them to obtain their ideal self, which in turn can serve as self-enhancement. Similarly, Aydinoglu and Krishna (2012) found that participants who fit into a pair of jeans that were labelled a smaller size disclosed an increase in their self-related mental imagery regardless of their self-esteem level. However, whilst increasing body satisfaction, vanity sizing has also been found to confuse and frustrate consumers as it complicates the issues surrounding fit and further erodes the information communicated by the sizing label (Ashdown and Loker, 2010). Hence, it is apparent that vanity sizing, alongside non-standardised sizing and fit communication, galvanise fit problems within the fashion industry and so, a new approach is necessary.

3.4. Body Shape Negligence

Despite the agreed understanding that apparel fit is concerned with the relationship between the size of a garment and the wearer’s 3D body shape (Rasband and Liechty, 2006; Zakaria, 2017), to date sizing and body shape remain separate variables with only a handful of retailers offering body shape provision (Gill, 2015). Prior studies have defined body shape as, the accumulation of a human skeletal structure coupled with the amount of muscle and distribution of fat on the body (Rasband and Liechty, 2006). At present, standard sizes do not accommodate all body shapes, but rather assume an average figure (Otieno et al., 2005). However, the variation between female body shapes often determines how well a garment will fit (Sattar et al., 2019) and the wearer’s perception of the garment (Pisut and Connell, 2007; Seo and Namwamba, 2018). Consequently, academics and practitioners are recognising the importance of different body shapes in enhancing satisfaction with apparel fit (Lee et al., 2007), with some going as far to assert that adequate fit is about body shape, not about clothing size (Gribbin, 2014; Dove, 2018).

Indeed, unlike sizing, fit is difficult to assess since it is not just about the appraisal of the correspondence of a size, but an emotional decision about what type of fit consumers perceive to look good on them (Lee, Kim and Fiore, 2010). Apeagyei (2008) revealed that 85% of UK females claimed that identically sized garments looked dissimilar on different body shapes. In a similar vein, Rasband and Liechty (2006) disclosed that females who have similar body shapes fit into the same clothing styles. In a more recent study, which investigated US females aged 18-54, Carufel and Bye (2020) found that multiple body forms existed across a single clothing size. Consequently, Gupta (2020) claimed that it is the lack of body shape understanding and the over-visualisation of ideal body shapes that are the
critical drivers of poorly fitted garments. Therefore, the aforementioned suggests that the incorporation of body shape provision online is vital. Indeed, although a female’s clothing size may differ from retailer to retailer, their body shape does not (Petter, 2018a). Accordingly, the present study responds to Mulgrew et al.’s, (2020) research call that further investigation of the effect of diverse body shapes in marketing is warranted. To date, two primary perspectives have examined body shape:

(1) **Garment Technologist Perspective:** which aims to develop body shape categorisation methods to improve garment and pattern construction.

(2) **Psychological and Consumer Behaviour Perspective:** which aims to explore the role of body shape as a moderator within the consumer decision-making process.

The proceeding section of this chapter will explore these two domains.

### 3.4.1. Body Shape Categorisation Methods

Prior literature demonstrates the various efforts made by academics to explore body anthropometry for the development of clothing patterns in an attempt to improve garment fit (Apeagyei, 2010). However, these approaches remain mainly academic and to date, the application of these methods in a marketable context is lacking (Gill, 2015). From the literature review, numerous body shape categorisation methods were identified, which are delineated in Table 3.1.
### Table 3.1. Summary of Existing Body Shape Categorisation Techniques.

<table>
<thead>
<tr>
<th>Method</th>
<th>Explanation</th>
<th>Scanner</th>
<th>Applications</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatometry Sheldon, Steves &amp; Tucker (1940)</td>
<td>Subjects were photographed from 3 perspectives (front, side and back). The authors introduced three male body typologies.</td>
<td>No</td>
<td>Douty, Moore &amp; Hartford (1974); Lesko (1982); Pouliot (1983); Shen &amp; Huck (1993); Feather et al., (1996)</td>
<td>1. Primitive and tedious process (Connell et al., 2006). 2. Visual appraisal. 3. Measurements of the back and side view only.</td>
</tr>
<tr>
<td>Female Figure Identification Technique (FFIT) Simmons, Istook &amp; Devarajan, (2004)</td>
<td>Body shape categorisation is determined by calculating circumference measurement ratios between the bust, waist, high hip, hip and abdomen. As a result, the authors developed nine body shape typologies.</td>
<td>Yes</td>
<td>Simmons, Istook &amp; Devarajan (2004); Lee et al., (2007); Grogan et al., (2013); Brownbridge et al., (2016); Zhang et al., (2017); Seo &amp; Namwamba (2018).</td>
<td>1. Does not consider height and length. 2. Lee et al., (2007) found that the diamond and oval body shapes were no longer applicable.</td>
</tr>
<tr>
<td>Figure Types Rasband &amp; Liechty (2006)</td>
<td>Identified a number of figure types based on specific areas of the body where weight accumulated.</td>
<td>No</td>
<td>Yoo (2003).</td>
<td>1. Does not consider height. 2. Subjective approach based on visual appraisal.</td>
</tr>
<tr>
<td>Multiple Regression</td>
<td>The method utilises two key bodily dimensions and measures the drop (the difference between the two dimensions) to devise a body type.</td>
<td>Yes</td>
<td>Sizing systems.</td>
<td>1. Based on two measurements, which do not accommodate for shape variation (Kasambala et al., 2016).</td>
</tr>
<tr>
<td>Principal Component Analysis (PCA)</td>
<td>An objective mathematical technique that converts a number of possible correlated variables into a small number of uncontrolled variables.</td>
<td>Yes</td>
<td>Song &amp; Ashdown (2011); Kim &amp; Song (2016); Zakaria &amp; Ruznan (2020); Lee, Song &amp; Kim (2020)</td>
<td>1. Does not differentiate the horizontal and vertical measurements from each other.</td>
</tr>
</tbody>
</table>
It is indicative from Table 3.1 that body shape categorisation methods are based on either, (1) a visual analysis of body proportions from the front and side silhouettes (Sheldon, Steves and Tucker, 1940; Connell et al., 2006) or (2) proportions of body circumferences (Simmons et al., 2004). For instance, Connell et al., (2006) adopted the former method whereby the authors developed nine scales for Body Shape Assessment (BSAS) by visually analysing the relationship of the whole body to the front and side views of 42 body scans of females, aged 22-55. The authors used the body scans to visually analyse females body builds based on the measurements of posture, hip shape, front torso, buttock prominence, back curvature and bust prominence (Connell et al., 2006). However, this approach is limited in that it does not provide a mathematical formula to categorise body types, and so, the findings cannot be replicated on a global scale. The visual analysis method has been further criticised for being inadequate as it is based on subjectivity, and body proportions can only be projected onto a screen one at a time (Song and Ashdown, 2011), which can result in ambiguous results. Lastly, Song and Ashdown (2011) make a vital point by highlighting that as the human body is circumferential, constructing body typologies based on width and depth is not sufficient.

Simmons et al. (2004) developed the latter body shape classification tool in which the authors used a 3D body scanner to develop the Female Figure Identification Technique (FFIT). Indeed, the emergence of 3D body scanning transformed anthropometric studies by allowing the body shapes and measurements of different demographics to be obtained proficiently (Bougouard, 2007). The FFIT technique focuses on classifying female body shapes based on the numerical ratios of the bust, waist, high hip, abdomen and hip in order to develop the essential circumferential measurements used to determine body shape (Simmons et al., 2004). Through a combination of 3D body scan data and a mathematical calculation, the researchers objectively developed nine key female shape categories, namely: hourglass, rectangle, oval, triangle, spoon, diamond, bottom hourglass, top hourglass and inverted triangle (Simmons et al., 2004).

Whilst some have criticised the FFIT method for overlooking the individual’s height, it has been used abundantly within clothing and body shape research (See: Simmons et al., 2004; Lee et al., 2007; Grogan et al., 2013; Brownbridge, Sanderson and Gill, 2016; Zhang et al., 2017), as the onus of this method is placed on the use of proportional relationships of
key circumferences rather than subjective visual shape classification (Grogan et al., 2013). Consequently, the present study will use the FFIT method to identify females’ body shapes.

### 3.4.2. Body Shape Terminology

Numerous different body shape classifications have been utilised in both existing literature and the retail industry (Vuruskan et al., 2014). This apparent discrepancy between body shape typologies has inhibited the standardisation of body shapes in the fashion industry (Gill, 2015), and has caused additional perplexity during the consumer’s decision-making process. Table 3.2 highlights the variation between body shape terms.

<table>
<thead>
<tr>
<th>Method</th>
<th>Classification</th>
<th>Illustration</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatometry</td>
<td><strong>Ectomorphic:</strong> Linear and fragile</td>
<td><img src="https://example.com/ectomorphic" alt="Illustration" /></td>
<td>Douty, Moore &amp; Hartford, (1974); Lesko (1982); Pouliot (1983); Shen &amp; Huck (1993); Feather, Ford &amp; Herr (1996).</td>
</tr>
<tr>
<td></td>
<td><strong>Mesomorphic:</strong> Muscle and bone</td>
<td><img src="https://example.com/mesomorphic" alt="Illustration" /></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Endomorphic:</strong> Soft round</td>
<td><img src="https://example.com/endomorphic" alt="Illustration" /></td>
<td></td>
</tr>
<tr>
<td>Representations</td>
<td>A: Triangle</td>
<td>Side views: b, d, i, r</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V: Inverted Triangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>H: Rectangle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Types</td>
<td>Oval, rectangle, diamond, hourglass,</td>
<td><img src="https://example.com/body_classes" alt="Illustration" /></td>
<td>Yoo (2003).</td>
</tr>
<tr>
<td></td>
<td>tubular, inverted triangle, triangle and ideal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geometric</td>
<td>Inverted triangle, hourglass,</td>
<td><img src="https://example.com/geometric_classes" alt="Illustration" /></td>
<td>Simmons, Istook &amp; Devarajan, (2004); Lee et al., (2007); Grogan et al., (2013); Brownbridge, Sanderson &amp; Gill (2016); Zhang et al., (2017).</td>
</tr>
<tr>
<td>Representations</td>
<td>rectangle, bottom hourglass, spoon,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>oval, diamond, top hourglass, and triangle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pear, hourglass, inverted triangle and rectangle (Connell et al., 2006)</td>
<td><img src="https://example.com/geometric_classes" alt="Illustration" /></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2. Summary of The Variation Between Body Shape Classifications
Table 3.2 demonstrates that previous body shape typologies include, somatotypes (Sheldon et al., 1940), alphabetic representations (August, 1981), miscellaneous objects, geometric representations (Simmons et al., 2004; Connell et al., 2006) or a combination of the aforementioned. Thus, it is apparent from Table 3.2 that currently, there is no standardised understanding of body shape. Indeed, in Rahman and Yu’s (2018, p.516) study, participants self-reported their perceived body shape by describing it with reference to a size such as, ‘petite’, ‘overweight’, ‘average’ and ‘curvy’. This finding suggests that consumers currently do not recognise the difference between body shape and size and consequently use the terms synonymously.

At present, the most common method for describing body shapes is through geometrical representations such as rectangle, triangle, inverted triangle, hourglass, bottom hourglass, top hourglass and spoon (Simmons et al., 2004; Rasband and Liechty, 2006; Connell et al., 2006; Lee et al., 2007), as both academics and industry practitioners have predominantly used these categories. However, it is interesting to note that despite the variation between body shape categories, the hourglass body shape features in five out of the six body shape descriptions (Table 3.2). For instance, for the BSAS, the hourglass body shape is placed at the centre of the continuum in which alternative body shapes are scaled up or down from (Connell et al., 2006). Hence, these findings potentially provide a reason as to why this particular body shape is dominant within the fashion industry. However, despite the disparity between body shape classifications, they all refer to approximately the same body types and are developed on body proportions from a frontal view (Vuruskan and Bulgan, 2011) demonstrated from Figure 3.1.
Contrary to prior findings, the method of depicting different body types as geometric shapes has been criticised for being derogatory (August, 1981) and for further enhancing negative body cathexis. Despite this, body shape plays an essential role in the consumer’s clothing appraisal and selection process (Rasband and Liechty, 2006; Faust and Carrier, 2009). Nevertheless, to date, an empirical validation of the role of body shape on the consumer’s garment appraisal is lacking. Accordingly, I hypothesise the following:

**H1a.** When exposed to visual fit information in the form of diverse body shapes, females will experience higher perceived product fit diagnosticity compared to the exposure of visual fit information in the form of one body shape.

**H2a.** When exposed to visual fit information in the form of diverse body shapes, females will have fewer concerns with fit online compared to the exposure of visual fit information in the form of one body shape.

Indeed, the present research will test how the presence of diverse body shapes (vs. hourglass) on a retailer’s product page affects a consumer’s cognitive garment fit appraisals and final behavioural outcome. The present study will adopt the geometric body shape classification as this approach has been employed profusely, not only within academic studies (see: Simmons *et al.*, 2004; Rasband and Liechty, 2006; Connell *et al.*, 2006; Lee *et al.*, 2007;
Chapter 3. Literature Review of The Garment Fit Appraisal Process and Body Shape

Grogan et al., 2013; Zhang et al., 2017) but by virtual fit assistant companies in the fashion industry.

3.4.3. The Hourglass Figure

Within the fashion industry, there is a noticeable dominance of the hourglass body shape. Lee et al. (2007, p.379) define the hourglass body shape as ‘… the appearance of being proportional at the bust and hips with a defined waistline’. Sizing systems for RTW garments use a core body shape to which a set of sizes are proportionally graded up or down in an attempt to fit the majority of the population (Apeagyei, 2008; Petrova and Ashdown, 2008; Zakaria, 2017; Gupta, 2020; Zakaria and Ruznan, 2020). The core body shape that retailers often start with during the garment fit stage is an hourglass figure (Pisut and Connell, 2007; Apeagyei, 2008; Petrova and Ashdown, 2008; Gribbin, 2014; Makhanya et al., 2014; Brownbridge et al., 2016; Rieke et al., 2016), which in reality represents a very small percentage of the population (Gribbin, 2014).

This practice is hugely problematic, as one single body type cannot represent the variety of female bodies within a target market (Bougouard, 2007; Ashdown and Loker, 2010). As such, there has been unending discussion within the literature regarding the need for greater representation of different body shapes in the fashion industry (Mulgrew et al., 2020). Prior body scanning research provides empirical evidence of the variation amongst female body shapes, exhibited in Table 3.3.
A closer inspection of Table 3.3 establishes that the most prevalent body shape found amongst 109 African females was a triangle (Makhanya et al., 2014; Makhanya and Mabuza, 2020), whilst Lee et al., (2007) found that the most significant body shape category for 1,799 Korean women was a rectangle. Moreover, Yin and Annett-Hitchcock (2019) found that the most prevalent body shape amongst 400 Chinese females was the spoon, compared to 340 US females in which the most prominent body shape was the bottom hourglass. These findings demonstrate that female’s body shapes vary not only across age but also amongst different cultures (Cassidy, 2017). Despite this disparity, prior research has found clothing fit to be the most important evaluative criterion across different cultures (Hsu and Burns, 2002). Moreover, although the prominence of body shape categories across

<table>
<thead>
<tr>
<th>Author et al. (Year)</th>
<th>Method</th>
<th>Sample</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexander (2003)</td>
<td>BSAS (Connell et al., 2006)</td>
<td>529 US adult females</td>
<td>45% were pear shaped, 34% were hourglass, 16% rectangle and less than 1% were inverted triangle.</td>
</tr>
<tr>
<td>Lee et al., (2007)</td>
<td>FFIT (Simmons et al., 2004)</td>
<td>6.310 US, 1,799 Korean Females</td>
<td>US Females: 11.8% hourglass and 49% rectangle. Korean Females: 0.5% hourglass, 70.6% rectangle</td>
</tr>
<tr>
<td>Vurusan &amp; Ender (2011)</td>
<td>Visual &amp; numerical evaluation.</td>
<td>83 US females</td>
<td>42% were a bottom hourglass 26% conformed to an hourglass</td>
</tr>
<tr>
<td>Grogan et al., (2013)</td>
<td>FFIT (Lee et al., 2007)</td>
<td>20 UK females</td>
<td>40% were an hourglass 30% were a rectangle.</td>
</tr>
<tr>
<td>Gribbin (2014)</td>
<td>Body Scan</td>
<td>US Females</td>
<td>Only 8% of Avalon’s demographic conformed to an hourglass body shape.</td>
</tr>
<tr>
<td>Makhanya et al., (2014)</td>
<td>FFIT (Lee et al., 2007)</td>
<td>109 African 125 Caucasian females</td>
<td>40% of Caucasian females had an hourglass and 58.7% of African females were a triangle.</td>
</tr>
<tr>
<td>Robinet &amp; Carrier (2014)</td>
<td>Principal component analysis.</td>
<td>11,500 French men, women, children</td>
<td>25.58% had a bottom hourglass whereas only 12.67% had an hourglass.</td>
</tr>
<tr>
<td>Brownbridge Sanderson &amp; Gill (2016)</td>
<td>FFIT (Lee et al., 2007)</td>
<td>Compared 637 scans to retailers sizing standards</td>
<td>Only 7 participants were found have comparative measurements to the standard industry forms.</td>
</tr>
<tr>
<td>Zhang et al., (2017)</td>
<td>FFIT (Simmons et al., 2004)</td>
<td>24 Europeans, Americans &amp; Asian</td>
<td>1 participant was found to have an hourglass body shape. Body shapes before shapewear: spoon rectangle, bottom hourglass.</td>
</tr>
<tr>
<td>Ridgway et al., (2017)</td>
<td>FFIT (Lee et al., 2007)</td>
<td>15 US, Caucasian, Asian, American females</td>
<td>Hourglass (N=5), Rectangle (N=5), Spoon (N=5).</td>
</tr>
<tr>
<td>Seo &amp; Namwamba (2018)</td>
<td>FFIT (Lee et al., 2007)</td>
<td>72 African-American females</td>
<td>73.6% had a pear body shape in comparison to 4.2% who were categorised as an hourglass.</td>
</tr>
<tr>
<td>Yin &amp; Annett-Hitchcock (2019)</td>
<td>FFIT (Simmons et al., 2004)</td>
<td>400 Chinese &amp; 340 US females, 18-35.</td>
<td>Chinese: 57% spoon, 26% bottom hourglass. US: 44% bottom hourglass, 22% spoon. Hourglass was the 3rd most popular for both.</td>
</tr>
<tr>
<td>Makhanya &amp; Mabuza (2020)</td>
<td>Self-reported.</td>
<td>109 African &amp; 125 Caucasian females.</td>
<td>African females: 56.3% triangle, 64.3% rectangle and 53.3% hourglass. Caucasian females: 80.5% triangle, 62.5% rectangle and 70.6% hourglass.</td>
</tr>
</tbody>
</table>

Table 3.3 Summary of Studies Depicting the Variation of Female Body Shapes
cultures diverges, the same body shapes categories, and FFIT method has been applied in several contexts, providing further validation of the FFIT categorisation method. It is also indicative from Table 3.3 that there is a paucity of research that investigates the divergences of body shapes amongst a UK market, with only one other study with a small sample size being identified (Grogan et al., 2013). Hence, further research into the different body shape classifications prevalent in a UK demographic is necessary.

3.4.4. Body Shape and Clothing Choices
As previously mentioned, body shape is an essential consideration during the consumer’s clothing selection. Indeed, body shape has been advocated to be the primary determinant of a female’s perception of her physical appearance (Makhanya and Mabuza, 2020). In a content analysis of 15 historical texts (1914-1961), Ridgway (2020) found that using dress to manipulate and improve body proportions to create an ‘ideal’ shape was a dominant theme throughout historical literature. Proceeding on a similar track, Fiore and Kimle (1997, p.144) defined five key dress styles and rationalised how each style of dress could create different body shapes. These findings suggest that women have sought body shape advice for as long as they have been wearing clothes.

However, the lack of visualisation and understanding about body shape diversity is thought to be the pertinent factor that contributes to poor garment fit (Gupta, 2020). Thus, it is suggested that a consumer’s self-perception of their body shape profusely affects their evaluation of clothing fit (Apeagyei, 2008). According to scholarly research, females select certain garments in order to (1) achieve their desired body shape (Apeagyei, 2008; D’Alessandro and Chitty, 2011; Zhang et al., 2017; Ridgway et al., 2017) or (2) hide or emphasise areas of their body (Klerk and Tselepis, 2007; Apeagyei, 2008; Tiggeman and Lacey, 2009; Frith and Gleeson, 2008; Grogan et al., 2013; Kang, Johnson and Kim, 2013; Kasambala et al., 2014). Thus, the aforementioned discussion provides the impetus to hypothesise that body shape is a vital information provision during the online garment fit appraisal.

Rahman (2015) found that participants who claimed to have a pear body shape avoided wearing skinny fit jeans, as they believed that their body was not slender enough for this type of jean. Analogously, Pisut and Connell (2007) found that females who had a pear or
rectangular body shape disclosed lower body cathexis and consequently searched for garments, which had a looser fit. Alternatively, in the same study, the authors found that females with a triangle or hourglass body shape were likely to purchase fitted clothing, as they felt more confident about their bodies. This finding emphasises that perceived body shape plays a significant role in the evaluation of clothing.

Additionally, Yoo (2003) demonstrated that preference for looser fitted silhouettes increased when the participant claimed to have a diamond body shape. More recently, Yasim and Tajuddin (2020) found that females with a pear body shape experienced poor fit at the waist. Hence, these findings extrapolate that females with different body shapes will experience different fit issues. Newcomb and Istook (2011) explored the apparel fit preferences of Mexican-American females and unveiled that participants who self-reported as having a diamond, oval, rectangle or triangle body shape were more likely to prefer loosely fitted tops. However, the majority of the aforementioned studies have assessed consumer fit preferences using black and white line drawings of garments, which do not permit consumers to evaluate the fit of a garment on a 3D body (Newcomb and Istook, 2011). Thus, a physical investigation of the different fit preferences of females with different body shapes is essential.

Prior literature also suggests that clothing can be used as a vehicle to achieve a desired body shape. For example, Grogan et al., (2013) in a physical garment try-on session found that UK female informants, aged 18-45, preferred to purchase garments that permitted them to achieve an hourglass body shape. Similarly, Seo and Namwamba (2018) discovered that African-American participants who self-identified as having a pear or rectangular body shape selected garments with a tighter fit around the waist in order to create the impression of having an hourglass body shape. Interestingly, Ridgway et al., (2017) demonstrated that whilst females with a rectangular or spoon body shape believed that optical illusion garments permitted them to achieve their ideal body shape, females with an hourglass body shape expressed the inverse, as their body proportions were already deemed to be ideal. It is also apparent from the discussion above that using apparel, as a vehicle to obtain a desired body shape does not diverge with either age or the socio-cultural context. Indeed, Rahman and Yu (2018, p.519) found that Canadian participants aged 53+ felt that their body shape had transformed from an hourglass to a pear over-time and as a result, they would select clothes
Aghekyan, Ulrich and Connell (2012) found that both American and Russian females perceived the hourglass body shape to be the most attractive, followed by the rectangle, whereas the pear-shaped body was the least attractive. This cross-cultural agreement provides some insight as to why females select certain styles of clothing in order to achieve an hourglass body shape. Hence, collectively these findings suggest that a relationship exists between an individual’s perceived body shape and their purchasing decisions. Indeed, if a consumer can envisage how a garment would on their own body shape, their intention to purchase that product may increase. However, a significant limitation is that currently, no research has investigated the influence of body shape provision on the online decision-making process, and so, further investigation is necessary. Accordingly, in light of the above, I hypothesise that:

**H3a.** When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.

It is important to note that prior studies that have explored body shape as a consideration during the consumer’s garment appraisal have asked participants to self-report their body shape (see: Alexander et al., 2005; Pisut and Connell, 2007; Newcomb and Istook 2011: Manuel et al., 2010; Seo and Namwamba, 2018; Makhanya and Mabuza, 2020). However, Grogan et al., (2013) and Ridgway et al., (2017) demonstrate that a discrepancy exists between a person’s perceived and actual body shape. Thus, participants’ perceptions of their body shape may not be correct, which imposes significant limitations on selecting the correct garment fit. However, Seo and Namwamba (2018) argue that whilst objective body shape categorisation methods are vital for identifying body shapes based on human data, an understanding of consumers’ self-perceived body shape is also paramount for understanding how the consumer emotionally feels and desires to look when wearing the garment. Therefore, in light of the current debate, the present study will investigate both objective and self-perceived body shape on the consumer’s online garment fit appraisal.

### 3.5. Current In-Store Fit Solutions: Body Scanning

Currently, there are a handful of different body scanners including, traditional 3D body scanners, suit-based scanners and mobile-based scanners, with the former being the most...
applied within the fashion industry. Indeed, in an attempt to mitigate the issues surrounding apparel fit, several retailers have implemented 3D body scanners in-store to help guide customers to find the right fit (Kokoszka, 2018). Grogan et al., (2019, p.550-1) define whole-body scanning as a process that, ‘generates an accurate 3D image of the body form in which body measurements can be produced and enables accurate and detailed assessment of the body’. 3D body scanning can extract over 100 bodily measurements in a matter of seconds (Gupta, 2020) and in doing so, it acts like a virtual tape measure overcoming the limitations of manual methods by producing more reliable and reproducible measurements (Apeagyei, 2010; Reid et al., 2020).

Body scanning has transformed research since the late 20th century, with applications in the fashion retailing industry and in the medical sector (Vuruskan and Ender, 2011). Body scanning has been used to undertake many 3D anthropometric national surveys such as SizeUK (2001/2002) as well as, international surveys in the USA, China, Spain, Mexico, Thailand, France, Korea and Taiwan (Apeagyei, 2010; Reid et al., 2020; Zakaria and Ruznan, 2020). Hence, compared to taking manual measurements, body scanning can capture a more comprehensive coverage of the population, enabling improved fit provision for target markets. More recently, retailers have started to implement this technology in-store (Grogan et al., 2019), demonstrated in Table 3.4.

<table>
<thead>
<tr>
<th>Retailer</th>
<th>Implantation of 3D Body Scanner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levi Strauss (2004)</td>
<td>Used a Bodymetrics 3D body scanner in selected Levi’s stores in an attempt to create customised jeans, known as ‘original spin’ (Kokoszka, 2018). However, the program was discontinued in 2004.</td>
</tr>
<tr>
<td>Selfridges &amp; Bloomingdales (2011)</td>
<td>Used a number of 3D body scanners by Bodymetric in-store to offer a more interactive shopping experience (Kokoszka, 2018).</td>
</tr>
<tr>
<td>New Look (2011)</td>
<td>Introduced a body scanning into its Westfield Stratford Store to help consumers to make better informed decisions about the fit of their jeans (Kokoszka, 2018).</td>
</tr>
<tr>
<td>Bodi.me (2017-present)</td>
<td>A body scanner company that has partnerships with brands including, Topshop, GAP, Lacoste, Levi’s and Forever 21. Customers can create a 3D avatar on site at the nearest body scanning facility (Kokoszka, 2018).</td>
</tr>
<tr>
<td>Amazon (2017-present)</td>
<td>Acquired body labs in order to better understand consumers’ body types and reduce returns (Kokoszka, 2018).</td>
</tr>
</tbody>
</table>

**Table 3.4 Summary of 3D Body Scanning Implementation**

It is indicative from Table 3.4 that several retailers have implemented body scanners in-store to not only assist consumers with their purchasing decisions, but also to provide retailers with a better understanding of the body shapes of their target market (Chun, 2007). However, only certain stores or areas can deploy body scanners. The reasons for this are that body...
scanners are costly (Gupta, 2020), require technical support (Peng and Al-Sayegh, 2014) and can be time-consuming to use during the consumer’s shopping journey.

Furthermore, having body scanning facilities in a public area imposes many ethical implications, which must be taken into consideration. For instance, Grogan et al., (2016, p.69), in a study which explored women’s long-term reactions to their body scan, found that although females were content with being scanned, they felt ‘threatened’ and ‘vulnerable’ when they saw a print out of their body scan. Contrary to this finding, in a more recent study, Grogan et al., (2019) found that body scanning could improve body satisfaction. Yet, despite the conflicting results, the authors concluded that body scanning should be employed with careful consideration (Grogan et al., 2016; 2019). Thus, having body scanners in a public space may comprise this recommendation. Body scanning has been considered by academics to be the cure-all solution for issues concerning apparel fit and garment returns; however, a vital flaw of the technology is that it does not take into consideration the learned fit preferences of the consumer (Workman and Lentz, 2000; Reid et al., 2020). This criticism infers that communicating the right fit is as much subjective as it is scientific. Thus, to exploit this technology successfully, the exploration of learned fit preferences during the garment evaluation process presents a vital variable within this research.

Lastly, whilst body scanners have been implemented in-stores, albeit limited, an understanding of how to leverage the technology online remains uncertain. Zozo, a Japanese online fashion retailer, endeavoured to bridge the discrepancy between physical body scanning and the online realm by developing a body-measuring suit and app (Drapers, 2018b; BBC, 2019b). However, the made-to-measure service failed (BBC, 2019b) and is no longer in existence. Hence, it is indicative that uncertainties on how to incorporate 3D body scanning data online and how to make this technology user-friendly remain.

3.6. Web 3.0 Technologies
The development of web 3.0 technologies has permitted the advancement of personalisation and information virtualisation online (Idrees, Vignali and Gill, 2020). Web 3.0 is a technological progression of Web 2.0, which focuses on data incorporation and the use of intelligent agents to better analyse the demand and choices of online consumers (Usman and Okafor, 2019; Idrees et al., 2020). Consequently, Web 3.0 technologies have permitted the
introduction of clothing size and fit recommendations, and virtual try-on provisions, which will be discussed in the proceeding section.

3.7. Current Online Solutions: Size and Fit Technologies

In an attempt to guide consumers with their online clothing fit decisions, a high proportion of retailers have turned to sizing platforms and virtual fitting rooms (Januszkiewicz et al., 2017). Gill (2015) categorised three typologies of virtual fit interfaces, namely: (1) size and style recommendation platforms, (2) fit recommendation platforms and (3) fit visualisation platforms. Januszkiewicz et al., (2017) and Miell et al., (2018) provide a further discussion of these typologies.

Size and style interfaces require consumers to input criteria such as, fit preferences and perceived body characteristics, which are linked to algorithms to provide consumers with a size or fit recommendation (Loker, 2007; Miell et al., 2018; Hernández et al., 2019). Fit recommendation platforms permit the consumer to try-on different garment sizes once they have entered their bodily measurements (Miell, et al., 2018). Lastly, fit visualisation platforms are centralised around the visual communication of garment fit in the form of avatars, tension maps and more recently, augmented reality (AR) (Gill, 2015; Javornik, 2016; Miell et al., 2018). Sizing and fit interfaces place the onus of garment fit determination directly in the hands of the consumers (Gupta, 2020) and so, the remainder of this chapter will critically analyse how fashion retailers are currently utilising these interfaces, as well as evaluating their potential limitations.

3.7.1. Sizing and Style Recommendation

Size and style recommendation interfaces are the most common format of fit technology used by retailers. Figure 3.2 illustrates an example of a sizing and style recommendation interface on ASOS’ website.
In a content analysis, Miell et al., (2018) found that 42% of online retailers used a size and style interface as it imposed the least risk for both consumers and retailers. Table 3.5 outlines a summary of sizing and style recommendation platforms currently employed by online retailers.
Table 3.5 Summary of Sizing and Fit Recommendation Platforms

<table>
<thead>
<tr>
<th>Fit/ Technology</th>
<th>Measurement method</th>
<th>Implementation</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FITANALYTICS</strong></td>
<td>Based on consumers height, weight and fit preferences, the interface recommends which size would fit best. It also uses the history of previous shoppers, with a similar ‘fit profile’ to make personalised recommendations (Drapers, 2018b).</td>
<td>ASOS, The North Face, Calvin Klein, Tommy Hilfiger, Hugo Boss, Patagonia, JD, Lacoste, Pull and Bear, Puma.</td>
<td>The platform assumes that users have enough understanding to classify their own body against the loose criteria (Januszkiewicz et al., 2017; Gill, 2015).</td>
</tr>
<tr>
<td><strong>dressipi</strong></td>
<td>Styling prediction platform that recommends products based on consumers’ styling preferences, body data, perceived body shape (triangle, inverted triangle and rectangle) and garments that they like and dislike.</td>
<td>John Lewis, Topshop, River Island, Long Tall Sally, The Modist, JD Williams, Wallis, Evans</td>
<td>Only provides visual descriptions of three body shapes. Instructs consumers to measure their body shape with a piece of string.</td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>True fit is an online personalisation platform, which recommends garment fit based on height, weight and age. In addition, it requires the consumer to identify a brand and size they are currently happy with.</td>
<td>Asics, Hudson’s Bay, Levi’s, Ralph Lauren, Aldo, Clarks, Carhartt, UGG, Lands’ End, House of Fraser.</td>
<td>High dependency on previous purchase history (Januszkiewicz et al., 2017), however, needs to be taken with caution.</td>
</tr>
<tr>
<td><strong>Fit Predictor</strong></td>
<td>Online survey, which calculates the best fitting sizes for consumers, based on preferred size, purchase history and similar brands that fit well.</td>
<td>Barney’s New York, Bloomingdale’s, Revolve, Chico’s, Lulus, Nordstrom.</td>
<td>Does not require physical measurements. The onus is on size (Januszkiewicz et al., 2017) not fit.</td>
</tr>
<tr>
<td><strong>VIRTUSIZE</strong></td>
<td>A virtual fitting tool, which asks consumers to compare an online product with a previous purchase, or requires consumers to measure a favourite item and compare the fit.</td>
<td>Ragtag, Lands’ End, Brothers, Nudie Jeans, Lumine, Zalora</td>
<td>Does not require any bodily measurements. No consideration to body shape and personal fit preferences.</td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
<td>Try Tuesday is an online style advisor, which recommends products based on a consumers age, style preference, usual garment size, height, body shape and personal fit preferences.</td>
<td>Marks and Spencer’s.</td>
<td>The platform assumes that users have enough understanding to define their own body (Januszkiewicz et al., 2017).</td>
</tr>
<tr>
<td><strong>Rakuten FitsMe</strong></td>
<td>Recommends how a product will fit based on body data; height, weight, age and bra size and body shape; hourglass, inverted triangle and triangle. This information is then mapped against retailer sizing charts.</td>
<td>Henri Lloyd, Pretty Green, Barbour, Thomas Pink, Superdry, Adidas.</td>
<td>Closed in 2018 and so, is no longer in existence suggesting the difficulty in sustaining this service long-time (Bazaki &amp; Wanick, 2019)</td>
</tr>
<tr>
<td><strong>SIZOLUTION</strong></td>
<td>Sizolution is an AI driven size and fit prediction tool, which requires users to input their height and weight and to upload a full body photograph.</td>
<td>Finn Flare, Faberlic, Hirmer, Henderson and Ostin.</td>
<td>There are concerns with data privacy, as users are required to upload a personal photograph.</td>
</tr>
</tbody>
</table>

3.7.1.1. Limitations: Sizing, Style and Fit Recommendation Platforms

When online sizing and fit recommendations tools were first introduced, they were anticipated to be the remedy of all fit solutions. However, more recently, questions have
been raised regarding the suitability of such interfaces. Januszkiewicz et al., (2017) in a content analysis, concluded that virtual fit platforms were not yet fit for purpose as there are currently no industry standards of how fit and style recommendations are based. Indeed, the study highlighted how amongst nine virtual fit platforms, there was little agreement regarding the requirement of bodily measurements needed to calculate size and fit recommendations (Januszkiewicz et al., 2017). Additionally, the authors found that placement definition of bodily measurements varied across each platform, implying that virtual fit platforms make erroneous clothing recommendations, which add to the fit problem, rather than solving it (Januszkiewicz et al., 2017). In an earlier study, Ashdown, Calhoun and Lyman-Clarke (2009) asked 20 female participants to use a sizing recommendation technology provided on H&M’s websites, and to evaluate the recommended jean size during a garment try-on. The findings demonstrated that only 4 out of 20 participants were satisfied with the fit of the recommended jean, suggesting that size recommendations are inherently flawed.

When using fit recommendation technologies, customers are required to either, (1) know their figure type and identify it from basic images (Bazaki and Wanick, 2019) or (2) manually record their bodily measurements. Scholars have highlighted limitations with both requirements. Indeed, academics have criticised the former by highlighting that a fundamental shortcoming of virtual fit platforms is that they assume that consumers possess the knowledge to correctly classify their own body against vague shape criteria such as, Flatter, Average and Curvier, which is highly subjective (Gill, 2015; Januszkiewicz et al., 2017; Miell et al., 2018). Figure 3.3 highlights an example of this vague terminology.
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Figure 3.3. An Example of Vague Body Criteria
Source: ASOS (2020)

For example, Alexander, Pisut and Ivanescu (2017) discovered that 46% of participants inaccurately perceive their bodies to be bigger than they are. Thus, it is apparent that personal perception of one’s body may lead to the inaccurate evaluation of one’s figure and ultimately, an incorrect fit recommendation. Moreover, the latter requirement has been criticised for not being reliable, as consumers lack the accuracy in recording bodily measurements which often results in human error (Ashdown and O’Connell, 2006; Park et al., 2009; Song and Ashdown, 2013) and as a result, leads to inaccurate fit recommendations (Lee and Xu, 2020). Consequently, the aforementioned suggests that verbal fit and sizing recommendations are neither suitable nor accurate in addressing the fit problem.

3.7.2. Fit Visualisation Platforms: Virtual Fitting Rooms

Whilst scholars have criticised size and fit recommendation technologies for being impersonal (Miell et al., 2018) and providing limited detail in terms of visual fit assessment (Gill, 2015), fit visualisation platforms, also known as virtual fitting rooms (VFRs), are centralised around the pictorial provision of clothing fit (Miell et al., 2018). Figure 3.4 demonstrates an example of a VFR.
Table 3.6 further outlines a summary of VFRs, which are currently employed by online fashion retailers.
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<table>
<thead>
<tr>
<th>Fit Technology</th>
<th>Measurement method</th>
<th>Implementation</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metail</strong></td>
<td>Provides personalised size, style and fit advice based on consumers’ input measurements. The Metail service, ‘MeModel’, permits consumers to create 3D models by manually entering a number of body measurements. Consumers can then tweak their body shape and upload a facial image of themselves (Lee &amp; Xu, 2020). Acquired by TAL Apparel in 2019.</td>
<td>Tesco, Warehouse, Shop Direct, Zalando, House of Holland, Evans, UK’s Warehouse, House of Holland, Rocket Internet’s.</td>
<td>Assumes consumers know their body shape, height and measurements. The avatar rotates but users are unable to see how the garment interacts with the body. The attractiveness can be low as the technology primarily targets a model that represents the consumer’s image (Lee &amp; Xu, 2020).</td>
</tr>
<tr>
<td><strong>beCurves</strong></td>
<td>Creates a virtual model based on the consumer’s self-reported body measurements; height, bust, waist, hips, arm length as well as the consumers styling preferences.</td>
<td>M&amp;S, Crew Clothing Company, Coast.</td>
<td>Consumers can only see the avatar in a limited number of apparel items e.g., three dresses. The consumer is unable to see how the garment interacts with the body.</td>
</tr>
<tr>
<td><strong>triMirror</strong></td>
<td>Integrated on fashion e-commerce websites. By entering their own measurements i.e., height, bust, cup size, waist, low waist and hips, a consumer can see a virtual model, as well as a tension map, which identifies the tightness/looseness of certain areas.</td>
<td>Tri-Mirror, Jean Shop.</td>
<td>Requires consumers to input their own manual measurements. Consumers may not have sufficient knowledge regarding the difference between waist and low waist.</td>
</tr>
<tr>
<td><strong>My Virtual Model</strong></td>
<td>Consumer manually inputs their bodily measurements on a predefined 3D avatar model. The model can be modified based on individual preferences (e.g., skin tones, hair colour) (Lee &amp; Xu, 2020)</td>
<td>Land’s End, Limited Too, H&amp;M, Lane Bryant, Blair Saks Fifth Avenue.</td>
<td>3D avatar is created based on a few subjective measurements and so, its accuracy is relatively low (Lee &amp; Xu, 2020).</td>
</tr>
</tbody>
</table>

**Table 3.6. Summary of Fit Visualisation Platforms**

### 3.7.2.1. Limitations: Fit Visualisation Platforms

As demonstrated in Figure 3.4, Fit visualisation platforms focus on the creation of a 3D virtual avatar which can either be created from importing 3D body scan data or by forming a parametric model based on inputting self-reported body measurements (Song and Ashdown, 2015; Lee and Xu, 2020). For example, Metail, a U.K. based start-up, enables users to develop game-like avatars by providing primary bodily measurements to further enhance the resemblance of the virtual model (Gallino and Moreno, 2018). Thus, a VFR aims to offer a personalised experience for consumers that enables them to try clothes on a 3D avatar with similar body features (Bazaki and Wanick, 2019, Lee and Xu, 2020). Lee et al., (2010) in an experiment found that, compared to product enlargement tools, 3D avatars increase shopping enjoyment, decrease perceived risk and improve attitudes towards the...
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retailer. Moreover, Hernández et al., (2019) found VFRs to be more accurate than sizing charts for online size selection. However, there is a debate within existing literature concerning how useful VFRs are on the consumer’s online garment fit appraisal. For instance, whilst Gallino and Moreno (2018) found that VFRs increased consumer loyalty, reduced uncertainty and helped consumers to better evaluate their choice sets, Merle, Senecal and St-Onge (2012) concluded that VFRs did not result in greater confidence about garment fit or increase purchase intentions. Although Shin and Baytar (2014) found that females who were concerned about the fit of a garment online were more inclined to use virtual try-on, the authors did not establish whether the use of a VFR reduced concerns with garment fit online. Prior literature has also found that 3D avatars do not provide users with a real sense of self (Kim and Forysthe, 2008), suggesting that it would be hard to envisage how a garment would look on a consumer. Moreover, Gallino and Moreno (2018) established that VFRs did not reduce try-on at home behaviour. Hence, it is apparent that VFRs are currently not an efficient source of garment fit provision online.

Furthermore, VFRs do not permit the user to evaluate all dimensions of clothing fit, such as the subjective, physical and functional aspects. Indeed, whilst VFRs may offer insight into the visual fit of a garment, they do not provide information on how the product feels in relation to different body shapes, nor do they provide information regarding the behaviour of the garment in motion (Bougourd, 2007). Hence, further software development is essential to overcome these critical limitations.

Numerous studies have examined the usefulness of VFRs from a consumer’s perspective by undertaking a comparison between the appraisal of virtual fit and the actual fit of the garment. In particular, Kim and LaBat (2013) in a study, which investigated the accuracy of VFRs during the garment fit evaluation process, found that participants perceived the fit of the virtual trousers to be smaller than the real-life garment. This finding is supported by a more recent study by Hernández et al., (2019) who also discovered that a virtual shirt was perceived as being smaller than the real garment. Additionally, Song and Ashdown (2015) found that the virtual garment was looser compared to when the actual garment was tried on; leading the authors to conclude that virtual try-on is not suitable for communicating style and silhouette to consumers. Moreover, Kang and Lee (2010) found that the effectiveness of virtual try-on was heavily dependent on the fabric of the garment. The study revealed that
the visualisation of a skirt made from polyester was less effective than the display of a skirt made from wool. Likewise, in a comparative study, Holte (2020) found physical fitting rooms scored higher for delivering size, shape/fit, fabric and colour information in comparison to VFRs. The author further concluded that VFRs must improve the provision of these four variables to make the online experience similar to that of the physical try-on experience (Holte, 2020). Consequently, the aforementioned suggests that VFRs are still limited in their correct provision of garment fit online. Given the apparent technological limitations of VFRs, Jakhar et al., (2020) suggest that fashion retailers should focus their efforts on vital website dimensions, such as pictures and product descriptions, which offer more valuable information to consumers. Accordingly, in light of this suggestion, the present study will investigate how visual (body shape) and verbal (user-generated fit reviews) fit information affect consumers’ online behaviour.

3.7.3. Fit Visualisation Platforms: Augmented Reality (AR)

More recently, online retailers have invested in AR in an attempt to enhance consumers’ decision-making (Park and Yoo, 2020). Fashion retailers can use AR visualisation technology in two primary ways. The first way enables garments to be placed onto the bodies of different fashion models. Alternatively, the second way permits the overlay of digital garments onto consumers’ bodies in real-time via a computer monitor or mobile (Baytar, Chung and Shin, 2016; Bonetti, Waraby and Quinn, 2018; Perry et al., 2019; Plotkina and Saurel, 2019; Lee and Xu, 2020; Baytar, Chung and Shin, 2020). Figure 3.5 displays an example of the former AR fit visualisation strategy.
Interestingly, ASOS have now removed this AR function from their website suggesting that it is still an untapped opportunity for online retailers (Mintel, 2019b). Additionally, it appears from Figure 3.5 that the onus is on size, rather than different body shapes. Thus, what remains unknown is how body shape provision affects consumers’ garment appraisals online.

However, the majority of research focuses on the second use of AR visualisation technology. Some scholars advocate that showing a virtual product on a consumer’s real-life body will enable them to judge the fit of the product better as it offers more personal information (Baek, Yoo and Yoon, 2018; Smink et al., 2019; Lee and Xu, 2020). However, how advantageous AR VFRs are on the consumer’s decision-making is contested within the literature. Indeed, prior studies have discovered that AR VFRs enhance perceived informativeness, improve online product evaluations (Smink et al., 2019), increase curiosity about a product and intention to purchase (Beck and Crie, 2018; Baek et al., 2018), are novel compared to a traditional website (Yim and Park, 2019), increase emotional responses which creates a greater purchase intention (Watson, Alexander and Salavati, 2018), decrease cognitive risk arising from the uncertainty of a product (Bonetti et al., 2018) and finally, can reliably convey product attributes such as size and colour (Baytar et al., 2020). Interestingly, Yim and Park (2019) found that participants who disclosed lower body image recorded a more favourable evaluation of AR VFRs, compared to traditional websites.
However, it is important to note that the majority of existing AR VFR studies have either explored sunglasses (see: Verhagen et al., 2014; Verhagen, Vonkeman and Dolen, 2016; Hilken et al., 2017; Poushneh, 2018; Baek et al., 2018; Yim and Park, 2019) or make-up products (see: Hilken et al., 2017; Watson et al., 2018; Smink et al., 2019; Park and Yoo, 2020; Fan et al., 2020; Yoo, 2020; Smink et al., 2020), with the expectation of Baytar et al., (2020) who explored one style of dress. Thus, as the aforementioned findings are limited to face products, the results cannot be generalised to whole body products, such as garments.

3.7.3.1. Limitations: Fit Visualisation Platforms Using AR
Contrary to the advantageous outlined above, Plotkina and Saurel (2019) found that AR VFRs are less convenient and useful compared to product images of online fashion models. Indeed, in an m-commerce experiment, the authors found that having pictures of human models with similar features to that of a consumer (body size) were considered to be more useful than AR VFRs. Additionally, Baytar et al., (2016) highlighted that AR VFRs can cause a discrepancy between the virtual try-on process and the actual fit outcome. The authors found that participants perceived a looser fit of the dress around the bust area and a tighter fit around the waist and hip area when using AR, compared to the actual dress try-on. A more recent study, Baytar et al., (2020) found that participants disclosed that the weight, comfort, fit and style of the dress performed better when physically trying on the garment, compared to using the AR VTO, leading the authors to conclude that AR cannot offer the adequate provision of tactile garment attributes (Baytar et al., 2020). Hence, this infers that AR VFRs can further complicate the online garment fit appraisal process.

Moreover, prior research has established that AR is more irritating than a traditional website (Yim and Park, 2019). For example, Yim and Park (2019) found that AR VFRs increase consumer dissatisfaction if the output generates cartoonish product visualisations (Yim and Park, 2019). Moreover, Poushneh (2018) posit that, poor augmentation quality whereby the AR technology is unable to map the virtual product on a user’s body precisely can increase dissatisfaction. Proceeding on this track, Yoo (2020) highlighted that despite the growing interest in AR, consumers avoid using it when shopping online due to low quality. Hence, this suggests that if AR is not easy for the consumer to use then it can lead to negative online experiences (Zhang et al., 2019). Likewise, AR has also been found to be intrusive compared to traditional website features (Smink et al., 2019). Indeed, in order to use AR VFRs,
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retailers not only access users’ personal cameras to collect facial and body images (Smink et al., 2019), but also require the sharing of personal information such as email addresses and location. Hence, questions have arose concerning AR systems and data concerns (Bonetti et al., 2018; Plotkina and Saurel, 2019). Poushneh (2018) found that the ability to govern access over personal information significantly affects user satisfaction when using AR VFRs. Consequently, AR influences a consumer’s perceptual barriers such as trust and privacy issues, which may ultimately result in the resistance to adopt the technology (Perry et al., 2019) and to share personal information (Poushneh, 2018). Finally, Lee and Xu (2020) argue that AR VFRs lead to a lower perceived attractiveness as, unlike 3D avatars, it imposes digital clothing items onto a consumer’s real-life figure without offering tools to modify that figure. Hence, given the limitations outlined above, the present study will not explore Virtual Try-On (VTO).

3.8. Chapter Summary and Identified Gaps
This chapter critically reviews the literature concerning garment fit and the importance of both objective and perceived body shape on the consumer’s decision-making. The chapter proceeds to identify how consumers define garment fit and the variables that are considered during their subjective appraisal. The chapter further reviews fit issues that are currently plaguing the fashion industry, such as vanity sizing, non-standardised sizing, and the negligence of diverse body shapes. A review of prior literature indicates that currently, virtual fit solutions do not help consumers to accurately appraise garment fit online. Specifically, this chapter emphasises the negligence of diverse body shapes within the fashion industry, with the hourglass figure being the core body shape used by fashion retailers not only at the beginning of the garment construction stage but also for marketing purposes.

Hence, this present study responds to the call by Hernández et al., (2019), who suggest that alternative methods of clothing fit selection, besides physically trying-on the garment, are necessary. Indeed, this research will test how the inclusion of body shape stimuli (objective fit) and user-generated fit reviews (subjective fit) affect a consumer’s garment fit appraisal online. It is paramount that fashion retailers understand the relationship between body shape and consumers’ online apparel choices and clothing fit preferences (Makhanya and Mabuza, 2020), which is what this study aims to investigate.
Chapter 3. Literature Review of The Garment Fit Appraisal Process and Body Shape

From the literature review, it was evident that several gaps remain. Firstly, whilst numerous efforts have been made by scholars to identify female body shapes, these approaches remain largely academic and have failed to be applied and tested in a commercial context (Gill, 2015). Moreover, although many researchers have advocated the inclusion of more ‘realistic’ models to be a better way to present garment fit online (Yu and Damhorst, 2015; Boardman and McCormick, 2019; Mulgrew et al., 2020), this proposition has never been tested in existing online retailing literature. Thus, this study aims to overcome this limitation by testing how body shape provision on a retailer’s product page affects consumers’ decision-making.

Moreover, section 3.4.3 highlights that there is limited research that has investigated the different body shapes prevalent in the UK market (Grogan et al., 2013). Hence, by undertaking a body scanning session (phase 2), this study seeks to extend existing research by examining the different body shape classifications of a UK female demographic. Finally, according to prior literature, fit is as much subjective as it is objective; however, research that investigates females’ understanding of fit through a physical garment try-on session is lacking. Indeed, although Grogan et al., (2013) undertook a physical garment try-on, the authors only explored participants’ relationship with the aesthetic fit of the dress and body image and so, overlooked the alternative consumer fit variables established by Shin and Damhorst (2018). Therefore, through a pragmatic approach, this research will not only overcome this limitation by investigating all consumer fit variables subjectively through a physical garment try-on, but it will also test the influence of subjective fit provisions (user-generated fit reviews) on consumers’ online decision-making (phase 3).

The proceeding chapter will investigate current fit information sources on fashion retailers’ product pages and critically investigate how these different information provisions influence the consumer’s online fit appraisal.
Chapter 4. Literature Review of Information Provisions on Fashion Retailers’ Online Product Pages

4.1. Introduction
Online shoppers evaluate product criteria based on information provisions disseminated on a retailer’s product information page, and so, how retailers present product information online is a critical determinant of consumers’ online shopping behaviour (Deng and Gu, 2020; Xia et al., 2020). Presently, when shopping for clothing online, consumers’ fit evaluations are restricted to numeric sizes, verbal retailer-curated fit descriptions, and visual images and videos of clothing worn by professional models, which do not represent the body shapes of an average person (Sattar et al., 2019). The appraisal of apparel fit online is hugely problematic as the physical inspection of a garment is postponed until the product is delivered and physically tried on by the consumer (Li et al., 2019). Consequently, online returns are vastly increasing with sizing and fit issues being the key drivers within the UK womenswear market (Mintel, 2020). To mitigate this issue, fashion retailers have endeavoured to enhance the provision of fit information on their product pages in an attempt to reduce product asymmetries (Bell et al., 2018) and discrepancies online (Dzyabura et al., 2019). Yet, the issue with online returns is prevalent, suggesting a new approach is crucial.

This chapter reviews the literature concerning online fashion product page design by analysing how specific product information affects the consumer’s online decision-making concerning garment fit. The first half of the chapter will define a product information page and critically investigate how different sources of information influence consumers’ online garment fit appraisals. The latter half of this chapter will discuss how the incorporation of user-generated content on e-commerce product pages has influenced decision-making. The chapter will conclude with a chapter summary and highlight identified gaps within the literature that this thesis aims to fill.

4.2. The Fashion Product Information Page
The product information page is the most crucial page on an e-commerce website (Schmutz et al., 2010), as it can be used by retailers to turn visitors into buyers if used correctly (Bleier et al., 2019). Figure 4.1 provides an example of a fashion product information page.
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Bleier et al., (2019, p.98) broadly define a product information page as ‘the virtual space that presents a product and illustrates its value to the customer’. More specially, it is the place in which users can find detailed information about a product (Lam, Chau and Wong, 2007), by interacting with several different information provisions. Product presentation on a retailer’s website is similar to in-store visual merchandising (Yang et al., 2020) and so, the design of product information online is paramount. In line with Dvir and Gafni (2018), this research adopts Rowley’s (2008) understanding of online information provision as the textual or visual information available on a website. Typically, product information pages are composed of images (visual) and descriptions (verbal) of the product (Kim, 2019; Narwal and Nayak, 2020). However, more recently, retailers are beginning to incorporate user-generated content that can be both visual and verbal as part of their information provision strategies.

When shopping online, consumers not only investigate the information on the website, but they also evaluate whether it is useful (Rubab et al., 2018) and diagnostic. As such, a salient way to retain online consumers is to enhance the provision of product information online (Kim and Lennon, 2012). Yet, within the existing literature, there is currently a debate concerning the most effective way to present product information online (Koo and Park, 2017). For instance, Kim and Lennon (2008) unveiled that verbal information was superior

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to visual product details in regards to increasing purchase intention, a finding further corroborated by Choi et al., (2019). Alternatively, Li et al., (2016) found evidence for the preference of visual information upon exposure to high information load conditions. Similarly, Hsieh and Chen (2011) found that picture or video-based websites gained more consumer attention compared to text or text-picture based websites. More recently, in a study, which conducted a prioritisation of online apparel visual merchandising dimensions, Jakhar et al., (2020) found that pictorial presentation ranked the highest amongst alternative website design features such as product information, presentation customisation and website environment.

Alternatively, other studies have found that a combination of both verbal and visual information is a vital determinant of the online decision-making process (Wells, Valacich and Hess, 2011). Indeed, Blanco, Sarasa and Sanclemente (2010) found that when both visual and verbal information are present, users remember more information about the product. Yet, the authors also found that product familiarity mediated this relationship, in that, respondents who were less familiar with the product perceived higher quality of the information in the text only condition. Hence, given the existing contradictions amongst previous studies, it is apparent that both visual and verbal information are influential during the online decision-making process and so, further exploration of online information provision is necessary.

Given that the intangibility of products can fail to turn online browsers into consumers (Wang et al., 2019), the ways in which garment information is presented online is fundamental for helping consumers with their decision-making (Boardman and McCormick, 2019). However, fashion product presentation on a retailer’s product page is a distinctively under-researched area (McCormick and Livett, 2012), with the majority of existing research investigating non-fashion websites. Consequently, this study responds to the call by Wang et al., (2019), who suggests that a further investigation into how consumers respond to various online product presentations is crucial. Whilst there exists an extensive body of research investigating online information provision, many of these studies have explored product information sources in isolation (Bleier et al., 2019; Narwal and Nayak, 2020) when in reality consumers often appraise multiple product cues simultaneously. In particular, what remains unknown is the role of verbal and visual product information on the consumer’s
online garment fit appraisal. Accordingly, this study will aim to fill this noticeable paucity in the existing literature.

4.3. Verbal Product Information

Verbal product information includes product titles, detailed product descriptions, style advice and sizing charts (Bleier et al., 2019). Prior research has found that verbal product information helps consumers to feel more knowledgeable about a product (Kim and Lennon, 2008; Kim and Lennon, 2010), facilitates the recall of product features (Blanco et al., 2010), increases purchase intentions (Kim and Lennon, 2008), offers practical information (McCormick and Livett, 2012), ameliorates decision-making (Blanco et al., 2010), and helps to overcome visual product misconceptions (Baytar et al., 2020). At present, verbal garment fit information is communicated through sizing charts, product descriptions which include the height and size worn by the model and more recently product reviews (McKinney and Shin, 2016). Yet, the role of verbal product information on the consumer’s online garment fit appraisal is limited, and so, further investigation is required. A discussion of the different types of verbal fit information featured on a fashion retailer’s product information page will proceed in the next section.

4.3.1. Product Title and Descriptions

Product titles provide consumers with a quick summary of the product’s key features. They usually comprise of vital information such as style, trends, brand and colour. Whereas, product descriptions include more elaborated product details such as fibre content, fabric construction, colour, price, item care, item quality, sizing, item measurement, country of origin, texture, fabric and quantity available (Park et al., 2005). Previous studies have highlighted that verbal product information has been found to have a positive influence on purchase intention (Kim and Lennon, 2008) and helps consumers to imagine the touch and feel of a product (Yu, Lee and Damhorst, 2012). Indeed, Mou, Zhu and Benyoucef (2019) found that, although high-quality product descriptions did not increase purchase intentions, they did have a significant positive affect on cognitive product involvement in cross-border e-commerce. These findings demonstrate that verbal information is salient during the online decision-making process.

However, for product descriptions to add value to the consumer’s shopping journey, they should eliminate uncertainty and risk about the product (Mou et al., 2019). However,
scholars suggest that for experience goods, which inevitably inflict a higher level of risk, verbal information alone is not sufficient for communicating salient product criteria, such as fit. For instance, Hong and Pavlou (2014) in a literature review, highlight the difficulty of communicating experience product attributes via verbal descriptions. Similarly, Rahman (2018), in a study that investigated the presentation of footwear online, found that textual content alone did not provide consumers with enough information to judge the fit of shoes online. Hence, these findings conjecture that retailer-curated product descriptions are not suitable when communicating experience product attributes such as garment fit.

Furthermore, Saarijärvi et al. (2017, p.22) found that a prominent motivation for returning clothing is ‘disconfirmation driven’ returns, which is often caused by misleading product descriptions. This finding suggests that product descriptions galvanise online product returns and so, an investigation into how verbal information can be enhanced to assist the decision-making process is essential. Moreover, Santamaria (2019) discovered that deceiving product descriptions are a deterrent for 57% of UK online consumers. Henceforth, these findings emphasise that retailers must provide product descriptions that are diagnostic in communicating vital clothing attributes, such as fit. With product descriptions being criticised for being uninspiring and unhelpful (Scalefast, 2019), it is paramount that the presentation of verbal fit information is enhanced considerably.

4.3.2. Sizing Charts

When shopping online, consumers have to rely on a sizing chart provided by the retailer (Faust et al., 2006) to formulate their fit decisions. Online sizing charts aim to communicate garment size to the consumer. Figure 4.2 exhibits an example of an online sizing chart.

![Figure 4.2. Example of a Sizing Chart](Source: ASOS (2020))

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Extant literature suggests that sizing charts have both negative and positive impacts on the consumer’s online decision-making. For instance, providing an accurate sizing chart on a retailer’s website can reduce the uncertainty about the fit of a garment (Kim and Lennon, 2010), provide consumers with informative and practical information (McCormick and Livett, 2012), and help consumers to check the availability of their size (Jang and Burns, 2004). Moreover, Jakhar et al., (2020) found that sizing information was considered to be the most important aspect of online product information.

Alternatively, prior research also suggests that sizing provisions online are extremely problematic during the consumer’s decision-making (Kim and Damhorst, 2013). For instance, Reid et al., (2016) found that the communication of fit through a sizing chart is questionable due to the variation between sizes amongst retailers, which is a predominant barrier for females when shopping online. More recently, Hernández et al., (2019) found that clothing selection based on sizing tables tends to result in the choice of a larger size. Finally, Saarijärvi et al., (2017) found that sizing charts drive product returns as they are part of a consumer’s benefit maximisation strategy. Indeed, the authors revealed that consumers would often buy many sizes with the intention to keep the one size that fits best. Consequently, the aforementioned extrapolates that sizing charts alone are not an adequate source of fit information provision and further investigation into how websites can offer better clothing fit provision is paramount.

4.4. Visual Product Information

Visual product information on product pages is paramount as products cannot be directly examined online (Maier, 2019). Rahman (2018) claimed that visual product cues (i.e. fit and colour) are superior to non-visual signals as they provide consumers with quick and detailed information. Karimov et al., (2011) categorised visual information features as, product images, zooming functions and 3D depictions. More recently, visual information has evolved to include video (Kim, 2019), avatars (Shin and Baytar, 2014; Gallino and Moreno, 2018) and augmented reality (McLean and Wilson, 2019; Park and Yoo, 2020; Baytar et al., 2020). Previous studies have verified that using effective visual aids online can enhance perceived website usefulness (Peng et al., 2017), reduce product returns (Kim and Damhorst, 2013; Sahoo et al., 2018), mitigate product risk and facilitate online decision-
making (Park et al., 2005). Thus, pictorial information should be a vital consideration when designing the online fashion website (Jakhar et al., 2020).

Alternatively, previous studies have also established that current online visual product presentations are not effective in promoting the virtual product experience (Yoo and Kim, 2014). Indeed, Scalefast (2019) disclosed that the most common mistake prevalent on product pages is that the visual information fails to capture and communicate products attributes fully. Similarly, Reid and Ross (2015) found that the key barrier to purchasing clothing online was the inaccuracy of pre-purchase visual information. Hence, for visual product information to be successful, it must be close in the representation of end-use (Then and DeLong, 1999) and it should provide consumers with a realistic expectation of the product (De, Hu and Rahman, 2013). Rahman (2018) found that the fundamental reason as to why shoppers do not have confidence in their fit decisions online is that the visual representation of the product does not provide enough fit information. Hence, it is apparent that the visual communication of apparel online needs to be improved.

4.4.1. Static Model Image

Presently, online retailers present garments on human models (Plotkina and Saurel, 2019) in an attempt to enhance the provision of direct body-related information. For a pure-play retailer, product images and videos are the only ways in which consumers can envisage how a garment interacts with the body. Thus, online images are used as a visual cue to enhance a consumer’s understanding of a product (Xia et al., 2020). When shopping online, consumers cannot physically try-on a garment and so, seeing a model wear the item of clothing becomes a vital indicator that can affect a consumer’s appraisal (Xia et al., 2020). Figure 4.3 demonstrates an example of an online product image.
Prior research has found that the presence of a human fashion model reduces uncertainty when shopping online (Then and DeLong, 1999), provides helpful fit information (Boardman and McCormick, 2019), enhances the appeal of a garment (Wang et al., 2014), reduces product risk (Then and DeLong, 1999; Kim and Lennon, 2010; St-Onge et al., 2017) and increases purchase intentions (Ashman and Vazquez, 2012). Hence, it is evident that displaying a photograph of a model wearing the product is a salient way in which consumers can gather garment fit information (McKinney and Shin, 2016). In an eye-tracking study, Wang et al., (2014) found that participants fixated the most on product images of human models wearing the product. Boardman and McCormick (2019), who discovered that both older and younger consumers spent more time looking at model images than any other source of product information, substantiate this finding. Collectively, these findings emphasise the critical role of fashion model images on the decision-making process.

Alternatively, researchers have also discovered that the type of fashion model used on fashion product pages is problematic. For instance, online consumers appraise the fit of a garment on a body shape and size that does not adequately represent that of the average consumer (Sattar et al., 2019). Indeed, Saarijärvi et al., (2017) found that seeing a garment on a fashion model essentially galvanised garment returns, as participants revealed that they were unable to see the garment on a model with a similar body type and so, were forced to order many sizes and return the ones that did not fit. Moreover, in a content analysis of models’ body shapes online, Shin and Baytar (2014) unveiled that from 592 online fashion
models 60% (N=354) of them had an hourglass or X body shape. Whilst this finding should be interpreted with caution, as the method used to discern the body shapes was based on August’s (1981) subjective visual appraisal, it emphasises the overwhelming dominance of the ideal hourglass body type.

Consequently, Nash (2019) found that participants were deterred from retailers’ websites, as they perceived the image of the model to be unrealistic. The author further found that participants perceived social media platforms to be extremely beneficial as they permitted consumers to follow bloggers who had a similar body shape. Kerviler et al., (2017, p.947) further support this finding by unearthing that, female consumers are motivated to turn to Instagram to see what products look like on ‘non-idealised body shaped models’. Thus, the aforementioned suggests that currently, the selection of fashion models on a product page is not efficacious. The practice of selecting idealistic models to feature on product pages is argued to have a further detrimental impact on users’ body self-perceptions, resulting in negative online experiences (Shin and Baytar, 2014) and heightened non-conformity. Indeed, Kim and Damhorst (2013) state that consumers may feel a higher degree of discrepancy between their body and the ideal body of an online fashion model, which in turn can result in greater concerns with fit online and difficulties with envisaging the fit of a garment.

Proceeding on the same track, Kaushik and Dhir (2019) disclosed that the main factor for non-conformance in apparel is garment shape variation, which occurs due to the discrepancy between the body shapes of models shown on a website and the body types of consumers. Whilst this finding is limited in its exploration of online fashion retail in India, similar results have also been unearthed for the UK female market. For example, Boardman and McCormick (2019) found that UK females felt that models used in online product images were not a realistic representation of the average consumer size and so, revealed that they sought to see different size and shaped models. Thus, it is indicative that the current visual provision of garment fit is inadequate.

Consequently, the aforementioned findings have stimulated academics to call for further research to investigate the impact of average models with realistic body shapes on a consumer’s decision-making process (Yu et al., 2012; Yu and Damhorst, 2015; Saarijärvi et
In particular, Plotkina and Saurel (2019) recommend that future research should test whether the presence of models with diverse body shapes, wearing the same garment, can help to increase purchase intentions, a suggestion more recently posited by Baytar et al., (2020). Yet, evidence for the positive influence of diverse body shapes on consumers’ garment fit appraisals is inconclusive. Hence, this study will respond to the call by Plotkina and Saurel (2019) and Baytar et al., (2020) and fill this gap within the literature. Accordingly, in light of the above, I hypothesise that:

**H3a.** When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.

### 4.4.1.2. Model Size

Although research on body shape is lacking, numerous studies have investigated the impact of fashion models’ body size on product risk (Shim and Lee, 2009), advertisement effectiveness (Halliwell and Dittmar, 2004; Yu, 2020), brand image (D’Alessandro and Chitty, 2011; Watson, Lecki and Lebcir, 2015), perceived attractiveness (St-Onge et al., 2017; Aagerup and Scharf, 2018) and more predominantly, body satisfaction (Kim and Damhorst, 2013; Yu and Damhorst, 2015; Clayton, Ridgway and Hendrickse, 2017; Moreno-Dominguez et al., 2019) and motivational schema (Yu, 2020). Table 4.1 outlines the pivotal studies that have investigated the size of online fashion models.
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<table>
<thead>
<tr>
<th>Author</th>
<th>Method</th>
<th>Sample</th>
<th>Findings</th>
<th>Limitation</th>
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<tr>
<td>Halliwell &amp; Dittmar (2004)</td>
<td>Model (no model vs. thin vs. average size)</td>
<td>202 females</td>
<td>Exposure to thin models resulted in greater body anxiety. Yet, advertisements were equally effective regardless of model size.</td>
<td>Limited to media advertising.</td>
</tr>
<tr>
<td>Alessandro &amp; Chitty (2011)</td>
<td>Body type (thin vs. fat) x cultural background</td>
<td>Females aged 20-25</td>
<td>Respondents with a higher BMI were dissatisfied with their body shape. Brand attitude, credibility and purchase intention were higher on exposure to thinner model.</td>
<td>Singaporean and Australian female sample.</td>
</tr>
<tr>
<td>Kim &amp; Damhorst (2013)</td>
<td>Web-based survey in response to online models</td>
<td>348 female college students</td>
<td>Self-discrepancy from online models affected body dissatisfaction. Body dissatisfaction was (+) related to concerns with fit. Concerns with fit were (−) related to purchase intentions.</td>
<td>Used 5 models that were similar in size.</td>
</tr>
<tr>
<td>Shin &amp; Baytar (2014)</td>
<td>Models body (MIB vs. MVB) x satisfaction</td>
<td>249 female college students</td>
<td>When provided with MIB, concerns were less. (−) relationship between body satisfaction and concerns with fit and a (+) relationship between concerns and virtual try-on.</td>
<td>Explored avatar models.</td>
</tr>
<tr>
<td>Bian &amp; Wang (2015)</td>
<td>Model size (size 4 vs. 10) x brand</td>
<td>260 female students aged 18-25</td>
<td>Females perceived the size 10 model as being more attractive for new brands. Self-esteem shapes the evaluation of a model.</td>
<td>Laboratory experiment.</td>
</tr>
<tr>
<td>Watson, Lecky &amp; Lebeir (2015)</td>
<td>Body size (underweight, slender, average and obese)</td>
<td>198 Germans 18-65</td>
<td>For older consumers, model size did not affect brand perception. Younger consumers reported an increase in positive brand image when a slender model was used.</td>
<td>Explored a German demographic</td>
</tr>
<tr>
<td>Clayton et al., (2017)</td>
<td>Body type (thin/average/plus-size)</td>
<td>49 females aged 18-30</td>
<td>Females reported the greatest body satisfaction when viewing a plus size model. Body satisfaction decreased when viewing an average/thin model.</td>
<td>US females Small sample size (N=49).</td>
</tr>
<tr>
<td>St-Onge et al., (2017)</td>
<td>Body type (thin vs. overweight) x gender</td>
<td>184 females</td>
<td>The more attractive model was found to be the thin model. Perceived attractiveness was positively related to purchase intentions.</td>
<td>Small sample size.</td>
</tr>
<tr>
<td>Moreno-Domínguez et al., (2019)</td>
<td>Social comparison x instruction</td>
<td>145 Spanish women</td>
<td>Exposure to overweight models resulted in improved body image and a decrease in body dissatisfaction. Exposure to thin models increased body dissatisfaction.</td>
<td>Spanish demographic</td>
</tr>
<tr>
<td>Aagerup &amp; Scharf (2018)</td>
<td>Model (obese vs. normal) x nationality x gender x BMI</td>
<td>1,225 students</td>
<td>Women rated fashion brands worn by obese models significantly higher on attractiveness than normal weight models. Men displayed the opposite response.</td>
<td>Sample limits generalisability.</td>
</tr>
<tr>
<td>Plotkina &amp; Saurel (2019)</td>
<td>VTO x Model fit (ethnicity and body size) x model no fit</td>
<td>415 US females</td>
<td>Images of human models with similar features to the consumer (i.e., same body size) increased purchase intentions compared to VTO and human models with no resemblance.</td>
<td>Static webpages were explored.</td>
</tr>
<tr>
<td>Mulgrew et al., (2020)</td>
<td>Body size (thin vs. average) x pose</td>
<td>379, 17-30 Australia n females</td>
<td>Women who viewed the thin model engaged more in upward appearance comparison compared to those exposed in average model.</td>
<td>Only explored static images.</td>
</tr>
<tr>
<td>Hendrickse et al., (2020)</td>
<td>Body size (thin vs. plus-size) and slogan type</td>
<td>202 female students</td>
<td>Participants who viewed plus-sized models reported greater body satisfaction compared to females who viewed skinnier models.</td>
<td>Explored Instagram.</td>
</tr>
<tr>
<td>Yu (2020)</td>
<td>Model size: thin, average and no model</td>
<td>380 female students</td>
<td>Females with high appearance motivational schema showed greater purchase intentions when exposed to thin models.</td>
<td>Student sample.</td>
</tr>
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</table>

Table 4.1. Research Investigating the Impact of Model Size
Chapter 4. Literature Review of Information Provisions on Fashion Retailers' Online Product Pages

As outlined in Table 4.1, although research that has investigated the impact of fashion models’ body size on purchase intentions is plentiful, the findings are mixed. For example, whilst some scholars have found that exposure to thin models increases body dissatisfaction, which in turn decreases purchase intentions (Kim and Damhorst, 2010; Yu and Damhorst, 2015), St-Onge et al. (2017) found that participants perceived thinner models to be more attractive which consequently increased their purchase intentions. This finding is also supported by D’Alessandro and Chitty (2011), who discovered that thinner models increased respondents’ perceived source credibility and purchase intention of a brand. Yet, in a more recent study, Aagerup and Scharf (2018) found that women rated fashion brands significantly higher in terms of attractiveness when obese models wore the garments compared to normal-sized models. Similarly, Plotkina and Saurel (2019) found that images of fashion models that have similar features to the consumer (i.e., same body size) increased purchase intentions compared to virtual try-on and human models with no resemblance. Hence, to reconcile and extend these findings, there is a need to further our understanding of how body shape stimuli affect consumers’ online purchase intentions, which this research will test within phase 3 (online shopping experiment).

Interestingly, Pounders and Mabry-Flynn (2019) unveiled that female participants are dissatisfied with the current marginalised perceptions of women’s bodies within the media as being thin or plus-size. Hence, this study aims to deviate away from marginalised sizing and offer new insights through an investigation of diverse body shapes that better reflect society. Whilst it is suggested that body shape is a salient visual component of consumers’ product evaluations and an influential factor in purchasing clothing (Park et al., 2009), to date evidence for this online is inconclusive.

4.5. Zoom and Enlargement Tools

In a further effort to mitigate the lack of touch when shopping online, retailers have adopted visual-enabling tools, such as zoom functions, to help consumers undertake a more extensive viewing (Yoo and Kim, 2012; Petit, Velasco and Spence, 2019). Jai, O’Boyle and Fang (2014) unearthed that enlargement functions can provide an enhanced image of the texture and pattern of apparel products, a finding further corroborated by Boardman and McCormick (2019). There is an extensive discussion concerning the importance of a zoom facility for online retailers within the body of product information design literature, indicating that the
presence of this tool is imperative. Findings have verified that a zoom function can increase confidence and purchase intentions (McCormick and Livett, 2012), reduce product returns (De et al., 2013; Sahoo et al., 2018), lead to a more pleasurable shopping experience (Kim and Lennon, 2012) and enhance the visual perception of the product (Jang and Burns, 2004; Kim and Lennon, 2010; Jai et al., 2014; Boardman and McCormick, 2019). Furthermore, there is a consensus within the literature that employing an enlargement tool can help minimise users’ perceived risk of shopping online, as it provides the ability to examine the product in more detail and evaluate multiple dimensions of it (Jang and Burns, 2004; Kim and Lennon, 2008; Jai et al., 2014; Yu and Damhorst, 2015), in a more realistic manner (Verhagen et al., 2014). Thus, in light of the aforementioned, it is no surprise that academics have concluded that online retailers would improve the quality of their product information pages by incorporating a sophisticated zoom function (Karimov et al., 2011; Algharabat et al., 2017).

Furthermore, Ashman and Vazquez (2012) found that a zoom function is vital during the information gathering stage of the decision-making process and empirically verified that zoom tools stimulate attachment to pure-play retailers. Siddiqui et al., (2003) also found that, in regards to fashion purchases, consumers desire a detailed zoom function, which allows them to capture a close-up view of the product that they intend to purchase. Hence, these findings suggest that extensive product viewing features are arguably more insightful when compared to a one-dimensional static image. However, Boardman and McCormick (2019) found that participants criticised the zoom function for not being competent enough to appraise all product details, such as garment fit. This finding suggests that the zoom function alone cannot fully overcome the inability to see small details or to judge the fit of a garment online. Proceeding on a similar track, Naegelein et al., (2019) revealed that purchase rates were the lowest upon exposure to a zoom function alone, compared to exposure to either static photos or a combination of visual-enabling technologies. Hence, this implies that zoom technologies should not be viewed as the panacea of adequate garment appraisal online; instead, they should be used alongside alternative visualisation tools such as multiple product views.
4.6. Multiple Product Views

Online retailers also provide consumers with the opportunity to view the product from a number of alternative perspectives and angles (De et al., 2013; Bug and Helwig, 2020). Figure 4.4 demonstrates an online multiple product view.

![Multiple Product Views on a Product Information Page](source: ASOS (2020))

Alternative product viewpoints can include presenting the product in various positions, such as the front, back and side (Park et al., 2005), or from a 360-degree image rotation in which consumers can use a mouse or their fingers to rotate and zoom in on the product image (Cyr, 2014; Kim, Baek and Yoon, 2020). Hence, concerning online garment fit appraisals; product views may help the consumer envisage how the garment interacts with the body in different positions.

Prior studies have found that seeing the product from various viewpoints can enhance a consumer’s assessment of the product (Ha, Kwon and Lennon, 2007), facilitate a more in-depth product inspection (Naegelein et al., 2019), enhance product confidence and increase purchase intentions (McCormick and Livett, 2012; Kim et al., 2020). Naegelein et al., (2019) found that not only did the presence of alternative images increase purchase likelihood, but they also depicted images in different consumption contexts, which in turn helped participants to learn whether the product would fit their specific preferences. In a similar vein, Boardman and McCormick (2019) found that the absence of alternative images on a product information page encouraged avoidance behaviours, as participants felt that they could not obtain enough information about the product. Hence, it appears that the ability to view multiple images of a product online plays a vital role during the decision-making process.
However, prior studies have also challenged the aforementioned. For instance, Song and Kim (2012) revealed that consumers perceived more information from one large product photo, rather than seeing alternative images of the product. This finding extrapolates that seeing multiple product images may lead to information overload, which in turn may affect the consumer’s visual fluency when shopping online. Additionally, De et al., (2013) found that the presence of alternative product images was associated with higher product returns as they encouraged consumers to formulate unrealistic anticipations about the product. Furthermore, in an eye-tracking study, Boardman and McCormick (2019) found that whilst participants viewed the front and back image of the dress, they spent less time looking at the other alternative product images. Thus, this infers that within clothing presentation contexts, only the front and back perspective of an image are vital during the decision-making process.

4.7. 360-Degree Rotation

Together with multiple product views, numerous online fashion retailers have also implemented more dynamic visualisation technologies (Park and Yoo, 2020) such as 360-degree spin tools (Verhagen et al., 2016), to assist consumers’ decision-making. Existing research has validated that online product rotation tools evoke higher mental imagery during the decision process (Jai et al., 2014), provide consumers with detailed information in regards to clothing appearance (Kim and Forsythe, 2009), reduce concerns with online apparel purchases and, in turn, can lead to higher purchase intentions (Park et al., 2005). Prior research also suggests that product rotation tools can assist consumers in their fit decisions online. For example, Park et al., (2005) disclosed that viewing rotating products could help consumers judge the fit of a garment online. However, as this finding is vastly outdated, it must be interpreted with caution. Given that returns due to issues with fit and sizing are at an all-time high (Mintel, 2020) it can be inferred that rotation tools alone are no longer satisfactory for consumers when shopping for fashion garments online.

4.8. Catwalk Videos

Product videos, also referred to as catwalk videos in the context of online fashion retailing, are an extension of zoom and multi-view functions (McCormick and Livett, 2012). Product videos often display a model walking against plain background exhibiting the garment from the front, back and side whilst in motion for approximately 20 seconds (Bug and Helwig, 2020). Fashion brands create promotional product videos in an attempt to provide both audio...
and visual information to aid consumers’ product evaluations online (Flavian, Gurrea and Orus, 2017). Figure 4.5 demonstrates an example of an online catwalk video.

![Catwalk Video on ASOS's Product Information Page](image)

**Figure 4.5. Catwalk Video on ASOS’s Product Information Page**  
*Source: ASOS (2020)*

Existing research findings suggest that product videos are extremely valuable in providing consumers with the movement and fit of a garment online and so, are deemed to be beneficial in aiding consumers decision-making (Boardman and McCormick, 2019). Orus, Gurrea and Flavian (2017) found that product videos produced better attitudes towards products compared to less stimulating presentation formats.

Despite numerous fashion retailers using videos to display products online, it is apparent from reviewing the literature that product videos, as a source of product information, are a distinctively under-researched area (McCormick and Livett, 2012). Not only are empirical findings lacking within the literature, but also it is apparent that there are inconsistencies amongst the limited results that have explored product videos. For example, Siddiqui *et al.*, (2003) asserted that consumers expect to find product videos on a fashion website. Kawaf and Tagg (2017), who disclosed that product videos are no longer perceived to be a luxury, further corroborate this finding. Yet, in a content analysis of 97 women’s apparel websites, Kim, Kim and Lennon (2011) discovered that only 5.2% of websites featured a product video. Although this finding is outdated, Turban *et al.*, (2018) suggest that consumers are more likely to find product videos on social shopping websites, as opposed to fashion retailer's online product pages.
to e-commerce websites. This finding infers that videos are still a relatively innovative source of product information and that retailers are not yet fully leveraging product videos on their e-commerce platforms. This reasoning is further supported by Boardman and McCormick (2019), who found that product videos were the least viewed product presentation feature. Interestingly, when the authors questioned the participants as to why they did not consider the product video, participants revealed that they were not aware of the presence of a product video. Hence, this implies that the placement of product sources online is vital in ensuring their success.

However, according to scholarly research, product videos are a salient source of product information as they can create experiences that emulate real products (Roggeveen et al., 2015). For instance, Orus et al., (2017) established that online product presentation videos convey higher vividness and realism compared to traditional product presentations and can positively influence information processing. Bleier et al., (2019) allure to similar findings by revealing that product videos facilitate consumers’ sensory experiences and are a valuable information source for experience products. Whilst these findings are insightful, it is essential to note that the product videos tested in previous studies were limited to simple rotation ones (Boardman and McCormick, 2019).

Interestingly, Jai et al., (2014) discovered a similar issue with the choice of fashion models used in product videos by revealing that participants who interacted with product videos were self-referencing themselves whilst watching it. Thus, this finding extrapolates that whilst product videos can help consumers to somewhat appraise the functional fit of a garment; the presence of idealistic models can also encourage consumers to form an unrealistic expectation of the fit of a garment. Proceeding on this track, academics have suggested that integrating more visual and tactile experiences, such as featuring product videos of models with various body types, may help consumers better evaluate product criteria (Yu et al., 2012).

4.9. Online Recommendations

In an attempt to maximise shopping efficiency, B2C e-commerce websites are often built with a history-based product recommendation mechanism (Chen et al., 2017; Ko, 2018). Online recommendations aim to provide consumers with a personalised product based on
their purchase history, interests (Kim and Srivastava, 2007; Salvatori and Marcantoni, 2015) or return record. There are two main types of product recommendations; (1) sizing recommendation systems that help to improve consumers fit decisions by suggesting sizes that other consumers have bought previously, (2) product recommendation systems that propose alternative products that the consumer may like. Chapter 3 of the thesis outlines a critical discussion of the former online sizing recommendations and so, this section of the thesis will discuss the latter. Figure 4.6 displays an example of product recommendations on a fashion retailer’s website.

Figure 4.6. An Example of Online Product Recommendations
Source: ASOS (2020)

The aim of an online product recommendation is to cross-sell clothing items, similar to what the consumer has viewed previously, in order to maximise profits. Prior studies have demonstrated that online product recommendations can help consumers to build and add to their shopping baskets (Castagnos, Jones and Pu, 2009; Castagnos and Pu, 2010), develop trust and loyalty to pure-play retailers (Ashman and Vazquez, 2012), aid the decision-making process by reducing the risk of online purchases (Strahle, 2013), and help consumers
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to refine their search criteria (Castagnos et al., 2009). Indeed, Castagnos, Jones and Pu (2010) in an eye-tracking study, found that consumers consulted product recommendations near the end of their search process to enhance their decision confidence. Similarly, in a more recent eye-tracking study, Dospinescu and Perca-Robu (2017) found that the area of the website to receive the first fixation was recommendations. Hence, it is apparent that product recommendations are vital decision tools that can help users to find products that will suit their personal preferences.

Alternatively, other research in the online product information literature challenges the effectiveness of commercial product recommendations due to the development of web 2.0 tools. For instance, Kim and Srivastava (2007) found that during the decision-making process, recommendations from other shoppers are more influential compared to retailer recommendations. Senecal and Nantel (2004) and Smith, Menon and Sivakumar (2005) further sustain the above finding. However, Smith et al., (2005) found that consumers’ preferences for peer recommendations (vs. commercial) are heavily dependent on the consumer’s shopping goal. Indeed, the researchers discovered that participants who had a hedonic shopping goal preferred information from a peer recommendation whereas; utilitarian shoppers preferred recommendations that are more editorial. Hence, these findings suggest that in the presence of user-generated reviews, commercial recommendations are becoming redundant. However, given the inconsistencies, what remains unclear is the role of user-generated fit reviews on the online garment fit appraisal process suggesting further investigation is required.

4.10. S-Commerce

As previously mentioned in Chapter 2 of the thesis, a stable definition of s-commerce is lacking (Huang and Benyoucef, 2013; Bürklin, Henninger and Boardman, 2019). Yet, previous studies accept that s-commerce can be achieved in two distinct ways, (1) by bringing social media applications to e-commerce platforms or (2) bringing e-commerce capabilities to social media sites (Huang and Benyoucef, 2015; Chen et al. 2017). As this literature review examines the different types of information provisions available on apparel product information pages, the former definition of s-commerce shall be adopted. There is a noticeable paucity of research that has explored the influence of user-generated content, present on fashion e-commerce websites, on consumers’ online behaviour (Wang et al.,
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2019) and more specifically fit appraisals online. Thus, further research is paramount. The proceeding section of this literature review will outline previous studies that have investigated the influence of e-commerce user-generated content on the online decision-making process.

4.10.1. User-Generated Content on Product Pages

User-generated content is online information that is produced and disseminated by consumers who have already tried a product and are keen to share their experiences with other potential consumers (Hazari et al., 2017; Wang et al., 2019). User-generated content on a retailer’s product page can be presented both verbally, through written review narratives and visually, through star ratings, images, and more recently video reviews (Bleier et al., 2019; Diwanji and Cortese, 2020). Presently, research that has investigated the influence of user-generated fit reviews on consumers’ online garment fit appraisals is limited. Indeed, to date, only two studies have examined the role of fit review valance on the consumer’s decision-making process (Shin and McKinney, 2017; Shin, Chung and Baytar, 2020) and so, what remains unknown is whether fit information present in a user-generated review affects consumers’ concerns with fit online, perceived product fit diagnosticity and in turn, purchase intentions. Prior research suggests that user-generated fit reviews may provide consumers with first-hand fit information, which in turn, may reduce the risks associated with buying garments online (Shin et al., 2020). The following section will discuss this phenomenon in further detail.

4.10.2. Narrative Reviews

The most common format of user-generated content on a product page is verbal product reviews. Verbal reviews are subjective and independent product evaluations from the buyer’s perspective (Shin and McKinney, 2017; Wang et al., 2019). Figure 4.7 demonstrates an example of a narrative product review on Amazon’s website.
Researchers have found that written product reviews are the most widely used decision aid in e-commerce (Amblee et al., 2017) and so, are advocated as being one of the most relevant sources of product information when shopping online (Aw, 2020). Verbal product reviews express personal experiences with specific products (Helversen et al., 2018), which are then read by other consumers to assess whether particular characteristics of the product would match their unique preferences (Sahoo et al., 2018). In an eye-tracking study, which investigated consumers’ review search behaviour, Luan et al., (2016) discovered that participants who were shopping for experience products fixated on both attribute and experience reviews. This finding is not surprising given the experiential nature of clothing. Consequently, the aforementioned infers that user-generated reviews are an extremely influential and relevant source of product information (Aw, 2020; Zhu et al., 2020).

However, limited research has explored the qualitative informational aspects expressed in user-generated reviews. Indeed, McKinney and Shin (2016) unearthed that the most common apparel evaluative criteria found in online product reviews were fit, garment styling, social feedback, appropriateness, colour and pattern, fabric and physical comfort. The authors further established that fit was the most commented criterion, suggesting the importance of reviews when making fit related decisions. Yet, what remains unknown is how first-hand fit information found in user-generated reviews affects consumers’ cognitive processes such as concerns with fit online and perceived product fit diagnosticity. Therefore, in light of the aforementioned, I hypothesise the following:

**H1b.** When exposed to verbal fit information in the form of user-generated fit reviews, females will experience higher perceived product fit diagnosticity compared to the absence of user-generated fit reviews.
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**H2b.** When exposed to verbal fit information in the form of user-generated fit reviews, females will have fewer concerns with fit online compared to the absence of user-generated fit reviews.

Scholarly research has found user-generated reviews to be extremely influential during the consumer’s online information search. Indeed, Aw (2020) demonstrated that the perceived usefulness of online reviews was the primary reason for webrooming intention, inferring that user-generated reviews are a vital source of information. To this end, Saarijärvi et al., (2017) suggested that to reduce product returns from consumers buying multiple garment sizes, retailers should allow customers to review and comment on the size of the garment to help aid consumers in their decision-making. However, to our knowledge, this recommendation remains inconclusive, suggesting further investigation is essential. In a mixed-methods study, Rodrigues et al., (2017, p.98) found that ‘hand on descriptions’ of products from consumers who have previously experienced the product led to a greater online purchase of clothes. Hence, prior research advocates that written product reviews are useful in that they offer more information regarding the experience attributes of a product, which are harder to convey from retailer-curated product descriptions (Hong and Pavlou, 2014). Thus, given the aforementioned, I hypothesise that:

**H3b.** When exposed to verbal information in the form of user-generated fit reviews, females will report higher purchase intentions compared to the absence of user-generated fit reviews.

### 4.10.3. Star Ratings

Review ratings provide consumers with a statistical overview of the overall perceived quality and assessment of the product (Filieri, 2015; Shin and McKinney, 2017; Helversen et al., 2018; Sahoo et al., 2018) and are commonly depicted on a 5-star rating scale (Holsing and Olbrich, 2012; Hong and Pittman, 2020). Figure 4.8 illustrates an example of a review rating on Amazon’s website.
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Whilst Helversen et al., (2018) discovered that the anecdotal information found in a review is more influential than statistical information when formulating a decision, other researchers have found that star ratings are one of the most important attributes impacting the likelihood of purchasing online (Tamimi and Sebastianelli, 2015). For instance, underpinned by the S-O-R framework, Chen et al., (2017) discovered that learning from product ratings (stimuli) had a positive impact on affective and cognitive appraisals (organism), which in turn increased purchase intentions (response).

Moreover, Paul Hayes, the CEO of fashion brand Seasalt, disclosed that 90% of the total sales made in December 2019 were from products with 4 or 5 ratings (Drapers, 2020b), which suggest that star ratings can be efficacious during the decision-making process. In further support of this suggestion, Friedrich, Overhage and Schlauderer (2020) unearthed that ratings had a more substantial effect on online product choice difficulty compared to other social cues, such as likes and sale numbers. Alternatively, product ratings have also been found to be a problematic source of product information during the decision-making process. Qui, Pang and Kim (2012) found that in the presence of conflicting product ratings, product diagnosticity and review credibility decreased, signifying that ratings can encourage product uncertainty if they are not consistent. Yet, it is apparent that star ratings are an influential factor during the online decision-making process.

Previous findings further suggest that the extent to how influential star ratings are is heavily contingent on other variables such as product category, price and age. For example, Huang, Lurie and Mitra (2009) found that star ratings are more effective in driving purchasing for experience products, compared to search products. Yet, Mudambi and Schuff (2010) revealed that ratings for experience products are less helpful when they are extreme, compared to reviews with moderate ratings. The authors further found that the helpfulness of a review increased for search products when the review rating was either high or low and for experience products when the rating was moderate. Alternatively, Baek et al., (2013)

Figure 4.8. An Example of A Review Rating on Amazon’s Website
Source: Amazon (2020b)

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found that review ratings were imperative for experienced goods and lower-priced goods, compared to that of higher-priced products and search goods. Thus, despite the conflicting differences in findings, both studies emphasise that the perceived helpfulness of a review is contingent upon product category. Interestingly, Helversen et al., (2018) found that whilst younger adults strongly relied on star ratings during the decision-making process, older participants did not consider them when shopping for domestic products. Whilst, the researchers did not provide a reason for this, the findings are valuable in providing insights into how product ratings influence the decision-making across different age categories. Accordingly, as extant literature has verified star ratings to be an influential source of user-generated information, they will feature alongside the verbal reviews in phase 3 of the study (online shopping experiment).

4.10.4. Pictorial Reviews

Whilst traditional displays of user-generated reviews are more textual (Ertimur and Gilly, 2012), online websites are now beginning to feature more visual forms of user-generated content (Zinko et al., 2019) such as videos and images (Zhu et al., 2020). For instance, online retailers such as Amazon, Urban Outfitters and SHEIN encourage consumers to upload post-consumption images directly onto retailers’ product information pages (Bleier et al., 2019). Figure 4.9 provides an example of a pictorial review.

![Pictorial Review Example](image-url)

Figure 4.9. An Example of a Pictorial Review
Source: Amazon (2020b)
Zinko et al., (2019) unearthed that the presence of images in a review amplified trust and purchase intentions. Hence, it is apparent that visual forms of user-generated content are an increasingly influential source of product information in the online shopping environment, especially for fashion consumers (Cheung and Vazquez, 2014) who like to see how a garment interacts with the body before purchasing. Moreover, Ertimur and Gilly (2012) suggest that visual user-generated content can add value to product presentations as consumers can easily identify themselves with the content, which in turn reinforces the authenticity of the message.

Displaying user-generated images on a fashion product information page can allow online shoppers to see how the garment looks on a real-life consumer, as well as seeing the garment in a real-life situation rather than in a professional setting (De et al., 2013). Yet, the influence of user-generated images on the consumer’s decision-making process is an under-researched area within the literature (Karimov et al., 2011). Indeed, prior research that has explored user-generated images have predominantly investigated image-sharing sites such as LookBook, Instagram (Saravanakumar and Suganthalakshmi, 2012; Colliander and Marder, 2018) or hotel websites (Zinko et al., 2019), suggesting that this phenomenon is more aligned with the social shopping experience (Turban et al., 2018). To this end, there is a lack of understanding regarding the impact of visual user-generated content on the consumer decision-making process, in particular, the online garment fit appraisal, and thus further investigation is necessary. Accordingly, this study aims to fill this gap within research by empirically testing how the inclusion of real-life consumer images with different body shapes on a product information page affects the consumer’s online garment appraisal process.

4.10.5. Video Reviews
As outlined previously in Chapter 2 of the thesis, consumers are turning to social media applications such as YouTube and Instagram to obtain product review information in the form of videos. However, online user-generated video reviews are becoming more prominent on retailers’ interfaces (Bug and Helwig, 2020), recently exemplified by Amazon (Xu et al., 2015; Diwanji and Cortese, 2020). Research has demonstrated that video reviews add product richness (Yoo, Kim and Sanders, 2015), increase brand attitude (Diwanji and Cortese, 2020), require less cognitive effort, provide a more realistic visual product
presentation and, in turn, can convey palpable product experiences (Xu et al., 2015). Moreover, Xu et al., (2015) found that participants perceived video reviews to be persuasive, helpful and more credible when compared to written or image-based reviews. Whilst this finding is limited in that the authors do not explore fashion products, it is apparent that review presentation format has a significant impact on the online decision-making process, with some suggesting that videos are the most advantageous. Similarly, in a focus group, Ertekin (2017) found that participants preferred shoppable videos made by consumers as it permitted them to see how garments fit on actual people and so, the shoppable videos provided a better appraisal of garment fit.

Interestingly, Dou et al., (2012) found that the credibility of user-generated video reviews is contingent on who is creating the review. The authors established that participants trusted video reviewers when they perceived the video to be made by a user, compared to a video review made by the product maker. Whilst these findings can only be generalised to US students, it is apparent that the creator of the review has a consequential impact on the credibility of the appraisal. However, given that video reviews require more substantial effort compared to written reviews (Xu et al., 2015), in practice, the majority of retailers only feature written reviews. Yet, Zhu et al., (2020) suggest that retailers should incorporate image and video reviews on their websites, especially for experience products, as this may reduce the information asymmetries online.

4.10.6. Review Length and Quantity

The majority of existing studies have examined the quantitative characteristics of user-generated reviews, such as review length (Jang et al., 2019). Mudambi and Schuff (2010, p.188) define review length as, ‘the extensiveness of a reviewers’ comments’, and is often discerned through the number of words or characters within a review (Yue et al., 2017; Gang and Taeho, 2019). Although there is currently no objective criterion that defines what constitutes as a long or short review, Yue, Liu and Wei (2017) categorised a long review as exceeding five words. However, it is important to note that this criterion was specific to the context of online food retailing and so, fashion reviews, which contain many different evaluative criteria (i.e., fit, size, and colour), may challenge the perception of review length.
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Wang, Wang and Yao (2019) state that the extent of review helpfulness is dependent on the
length of the review. Risselanda, De Vries and Verstappen (2018) found that longer reviews
enhanced a consumer’s product comprehensions. Similarly, in a meta-analysis of review
characteristics, Wang et al., (2019) established that longer reviews are favourable for
consumers’ online shopping decisions, as participants are more likely to discover relevant
product information from longer reviews. Yue et al., (2017), Srivastava and Kalro (2019),
Mudambi and Schuff (2010) further corroborate the above finding; however, the latter found
that product type moderated this relationship. Whilst these findings infer that lengthier
reviews are more helpful in assisting consumers with information gathering, Ghose and
Ipeirotis, (2011) found that exceedingly long reviews require higher cognitive resources and
so, can lead to information overload. Similarly, Zinko et al., (2019) found that both
information overload and information underload of a review resulted in lower trust and
purchase intentions. Interestingly, Eslami, Ghasemaghaei and Hassanein (2018) unearthed
that medium-length reviews were significantly more helpful than shorter or longer reviews.
Thus, it is apparent that review length should be a vital consideration when featuring user-
generated reviews on a product page, as they should help to assist the garment appraisal
process without leading to information overload for the consumer. Hence, Chapter 6
provides a further consideration of review length when developing the fit reviews for this
study.

Aside from review length, there are additional circumstances that complicate the decision-
making process (Hu and Krishen, 2019) such as review quantity. Review quantity refers to
the number of consumers who have written a review (Hong and Pittman, 2020). Although
Hong and Pittman (2020) found that a high number of reviewers increased the credibility of
the review, other studies have suggested that the growing influx of online reviews can cause
information overload, leading to the consumer feeling confused (Flavian et al., 2016). For
instance, Hu and Krishen (2019) found that participants, who were presented with a choice
of how many reviews to read, disclosed that they were less overloaded by the information
and as a result, they were more satisfied with their purchasing decisions.

Additionally, Xu et al., (2015) suggest that providing reviews in a video format is an
excellent way to mitigate information overload from multiple reviews. Tata, Prashar and
Gupta (2020) further found that the majority of participants stated that they read 4-6 reviews
online before finalising their purchase decision, suggesting any more than can lead to information overload. Hence, whilst numerous scholars have argued that user-generated reviews are a useful source of information, providing too many reviews on a product information page may leave the consumers feeling perplexed. Accordingly, review quantity is also a fundamental consideration for this study when developing the fit reviews.

4.10.7. Review Valance and Emotion

One of the most widely researched characteristics of user-generated reviews is the valence and emotions expressed via the language used within reviews. In particular, academics have investigated how different emotions, also known as the ‘emotional polarity of reviews’ (Zhu et al., 2020, p.274), affect the perceived helpfulness and credibility of a review. User-generated reviews are created to either inspire or discourage other consumers from buying the product (Sen and Lerman, 2007; Racherla, Mandviwalla and Connolly, 2012) based on the reviewer’s subjective experiences. The direction of the review, whether that be positive, negative or neutral, is understood within the literature as valence (Shin and McKinney, 2017). Whilst there is an agreement within the literature that review valance affects consumers’ purchasing behaviour, prior research indicates that they differ in impact.

For instance, some academics have uncovered support for a negativity bias of user-generated reviews (Maheswaran and Chaiken, 1991; Craciun and Moore, 2019). Negativity bias theory implies that negative reviews are more significant and influential compared to positive or neutral reviews (Eslami et al., 2018). Indeed, Purnawirawan et al., (2015) found that negative reviews had the strongest impact on review usefulness and attitude and so, concluded that negative reviews were more effective. Similarly, Eslami et al., (2018) discovered that reviews that were intrinsically negatively were significantly more helpful than positively framed reviews, which is also supported by Srivastava and Kalro (2019).

However, academics have found that alternative variables, such as product category, age and information overload moderate negativity bias. For instance, Sen and Lennon (2007) found a negativity review bias for utilitarian products, whereas, for hedonic products, they discovered a positivity review bias. Moreover, Zhu et al., (2020) found that negative reviews were more influential for experience products, compared to search products. Similarly, Helversen et al., (2018) in a study, which investigated the influence of reviews on older and
younger adults’ purchasing behaviour, found that reviews expressing negative experiences are more influential for older adults. Alternatively, Kim and Gupta (2012) challenge the above-findings, as they discovered that negative reviews decreased information value, as participants relate negative reviews to the reviewer’s subjective and irrational outlooks.

Conversely, previous studies have found evidence for a positivity bias. Cui et al., (2014) found that positive reviews helped minimise product uncertainty and risks associated with the purchase decisions, a finding further corroborated by Adjei, Noble and Noble (2010). Additionally, Tata et al., (2020) found that positive reviews were more influential in terms of purchase intentions, compared to negative reviews, a finding more recently sustained by Guo, Wang and Wu (2020). Shin, Chung and Damhorst (2018) found that positive reviews about garment fit positively affected review credibility and purchase intentions. Shin et al., (2020) further sustain this positivity bias in a more recent study and further found that positive fit reviews had higher review credibility compared to negative reviews.

Interestingly, Flavian et al., (2016) found that positive reviews had an impact on several stages of the online decision-making process, including search process satisfaction and purchase intention, but only when the review was read at the very point of purchase. This finding infers that the influence of positive reviews may decrease over time. Minnema et al., (2016) studied the impact of positive reviews on the post-purchase stage of the decision-making process. The researchers found that whilst overly positive reviews encouraged more purchases, they also galvanised more online product returns. This finding suggests that positive reviews may lead to higher product expectations and as a result, higher product returns due to disconfirmation. Thus, it is apparent that both positive and negative reviews have a significant impact on the decision-making process and so, unlike Yue et al., (2017), should not be studied in isolation. Hence, the present study will explore positive, negative and neutral fit reviews concurrently.

Whilst the aforementioned investigated negative or positive reviews, other studies have looked more precisely at the different emotions expressed within reviews and how they influence consumers’ purchasing decisions. For example, Ahmad and Laroche (2015) identified that anxiety expressed in a review had a negative impact on the helpfulness of a review, whereas, reviews that expressed happiness or disgust had a positive influence on the
helpfulness vote. Thus, although this study is limited through its investigation of kitchen appliances, it demonstrates how emotions exhibited within reviews can influence the perceived helpfulness of a review. Similarly, Gang and Taeho (2019) discovered that anger articulated in a review had a greater negative impact on the perceived helpfulness for experienced goods compared to search goods. The authors further unveiled that sadness evoked in a review decrease perceived helpfulness, whereas fear embedded in reviews positively influence perceived helpfulness.

Additionally, Ismagilova, Dwivedi and Slade, (2019) found that regret conveyed in a review had a positive effect on the helpfulness of the review. Nonetheless, Craciun and Moore (2019) found that unemotional reviews were more credible compared to emotional reviews. Interestingly, the authors demonstrated that credibility differed due to gender, whereby female reviewers were perceived to be more credible than male reviewers. Thus, these findings show that emotions embedded in reviews both positively and negatively impact the decision-making process. Hence, as positive and negative reviews exist on retailers’ product information pages simultaneously (Huang et al., 2018), positive, negative and moderate fit reviews will be investigated within this study, to test how user-generated fit reviews affect a female’s cognitive processes and behavioural outcomes.

4.10.8. Social Media Applications
As outlined in Chapter 2 of the thesis, social media sites are becoming increasingly omnipresent in consumers lives (Phua et al., 2017) and so, retailers are beginning to incorporate social media links onto their product information pages to encourage consumers to share outfit ideas (Kawaf and Tagg, 2012), gather and disseminate product information (Sands, Harper and Ferraro, 2011; Yoo et al., 2015), and to provide additional information about the company (Dessart et al., 2015). Figure 4.10 illustrates an example of social media links on a retailer’s product page.
According to previous studies, having social media applications present on a retailer’s website enriches communication between consumers (Huang and Benyoucef, 2013), increases consumers’ shopping experiences (McCormick and Livett, 2012), enhances purchase intentions (Chen and Yen, 2004), trust (Hajli et al., 2014), social interaction (Koo and Park, 2017) and facilitates better online garment fit appraisals (Kerviler et al., 2017; Nash, 2019). Moreover, Chen et al., (2017) found that product information located on social media applications is more vivid as it is communicated and displayed in several ways, such as through videos, pictures, audio and written descriptions. These findings appear to infer that consumers perceive social media product presentation to be superior in comparison to retailer-curated product presentations. Consequently, the aforementioned presents alarming challenges for the future success and usage of B2C websites. Therefore, an investigation into how product fit provision can be enhanced on retailers’ product information pages is vital.

4.11. Chapter Summary and Identified Gaps
This chapter reviews existing literature regarding online fashion information provision and examines explicitly how different sources of online product information affect a consumer’s online garment fit appraisal. The chapter begins by defining the importance of a retailer’s product page and proceeds to provide a critical synopsis of previous literature that has examined the saliency of fashion information design on the consumer’s decision-making. The review demonstrated the importance of both visual and verbal product information,
Chapter 4. Literature Review of Information Provisions on Fashion Retailers’ Online Product Pages

while further highlighting that the depiction of ideal models further complicates the decision-making process. Moreover, this chapter also identifies the importance of user-generated reviews in an e-commerce setting, with particular reference to how they can help consumers to better select garments that are more in line with their learned fit preferences (Shin and McKinney, 2017). The latter part of this chapter highlights that consumers are turning to social media platforms to gather user-generated content to facilitate better online garment fit appraisals (Kerviler et al., 2017; Nash, 2019).

From the literature review, several gaps have been identified. Firstly, abundant research has investigated the influence of visual and verbal information on consumers’ online decision-making but has reported mixed findings. Moreover, the role of these two information sources on the online garment fit appraisal remains under-researched. Secondly, despite there being little research concerning the presence of human fashion models on retailers’ websites (Plotkin and Saurel, 2019) to date studies have only focused on the size of the model, rather than their body shape. Consequently, evidence for the positive influence of diverse body shapes on the consumer’s garment fit appraisal is inconclusive. Thirdly, although scholars advocate that user-generated reviews can help reduce fit related returns (Saarijärvi et al., 2017), enable consumers to make better fit decisions (Shin and McKinney, 2017) and increase purchase confidence, the role of user-generated fit reviews on consumers’ RTW garment fit appraisal is under-researched. Indeed, existing research that has investigated user-generated fit reviews have only explored the valance of fit reviews (i.e. positive and negative) (Shin and McKinney, 2017; Shin et al., 2020), rather than examining how fit information found in a user-generated review affects consumers’ online clothing appraisals. Thus, the present study aims to overcome these noticeable paucities by investigating how both visual (body shape) and verbal (user-generated reviews) fit information affects consumers’ online decision-making.

The following chapter will outline the research framework that will underpin the present study.
Chapter 5. Research Framework

5.1. Introduction

A theoretical framework was selected to underpin the research process and to ensure that the research aims and objectives were thoroughly achieved. A research framework not only tests the theorised relationships amongst the concepts under investigation, but it also provides a clear structure to the research (Hennink, Hutter and Bailey, 2020). Consequently, the present study will adopt the Stimulus-Organism-Response (S-O-R) framework, posited initially by Mehrabian and Russell (1974), to investigate how consumers cognitively process garment fit information, present on an online fashion retailer’s product page, in order to generate a final behavioural response. The S-O-R framework has been utilised multifariously by academics to understand cognitive concerns with apparel fit online (Shin and Baytar, 2014), and how online product presentations can generate approach and avoidance behaviours (Park et al., 2005; Kim and Lennon, 2010; Boardman and McCormick, 2019; Tang and Zhang, 2020). However, the present research strives to make novel contributions by extending the S-O-R framework to incorporate both visual and verbal fit stimuli, to empirically investigate the consumer’s online garment fit appraisal, which, to date, has never been examined.

The first half of this chapter reviews and offers a consideration of alternative frameworks that have previously been adopted by scholars to examine online consumer behaviour. The advantages and limitations of these frameworks are also delineated. The chapter will proceed to define the S-O-R framework by synthesising previous online experimental research that has also utilised this framework. The latter part of the chapter will justify why the S-O-R paradigm is suitable for the present study, as well as outlining how it will be employed to test the research hypotheses. The chapter will conclude with a chapter summary and identified gaps that this present research aims to fill.

5.2. Consideration of Alternative Frameworks

Before selecting an overarching framework for the present study, the researcher considered several alternative theoretical paradigms. Table 5.1 outlines a summary of the different frameworks that have previously been applied within online retailing research. Indeed, scholars have used a number of the theoretical frameworks in an attempt to understand
Chapter 5. Research Framework

consumers’ online shopping behaviours, including, The Theory of Reasoned Action (TRA), The Theory of Planned Behaviour (TPB), The Technology Acceptance Model (TAM), The Unified Theory of Acceptance and Use of Technology (UTAUT), Social Cognitive Theory (SCT), The Online Consumer Decision-Making Process and The Stimulus-Organism-Response (S-O-R) framework. The proceeding section provides a detailed discussion of these frameworks.
### Chapter 5. Research Framework

<table>
<thead>
<tr>
<th>Framework</th>
<th>Description</th>
<th>Application</th>
<th>Limitations</th>
<th>Used By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Reasoned Action (TRA)</td>
<td>Behaviour is predicted by understanding the relationship between the subjective norm and attitude to comply.</td>
<td>Has been used to identify elements of consumer attitude, intention to shop online (Davies et al., 2011; Raman, 2019) and behavioural intentions (Lin &amp; Huang, 2013).</td>
<td>Does not allow for an in-depth understanding of how online stimuli, leads to a certain behavioural response.</td>
<td>Xu &amp; Paulin (2005); Davies et al., (2011); Lin &amp; Huang, (2013); Raman (2019).</td>
</tr>
<tr>
<td>Theory of Planned Behaviour (TPB)</td>
<td>Explains the relationship between three main variables; the subjective norm, perceived control of a situation and one’s attitude towards the behaviour.</td>
<td>Has been used to investigate how consumers use online reviews for decision-making (Fogel &amp; Zachariah, 2017) and to examine consumer responses to product presentations (McCormick &amp; Livett, 2012).</td>
<td>The model has been criticised for being too ‘rational’, as it does not contemplate cognitive processes (Ajzen, 2011).</td>
<td>Bagozzi et al., (2006); McCormick &amp; Livett (2012); Dixit, Badgaiyan &amp; Khare (2019).</td>
</tr>
<tr>
<td>Technology Acceptance Model (TAM)</td>
<td>Motivation to use technology is explained through their attitudes towards the technology, along with its perceived ease of use and usefulness.</td>
<td>Has been used to understand consumers’ acceptance of AR, VTO applications (Kim &amp; Forseythe, 2007; Huang &amp; Liao, 2015; Boardman, Henninger &amp; Zhu, 2020) and UG reviews (Benlian et al., 2012).</td>
<td>Solely focuses on utilitarian values (Boardman, Henninger &amp; Zhu, 2020). The present study is not testing a consumer’s intention to use a new technology.</td>
<td>McLean &amp; Wilson (2019); Plotkina &amp; Saurel (2019); Boardman, Henninger &amp; Zhu (2020).</td>
</tr>
<tr>
<td>The Unified Theory of Acceptance and Use of Technology (UTAUT)</td>
<td>Behavioural intention is determined by performance, effort expectancy, social influence and facilitating conditions, which are moderated by additional variables.</td>
<td>Has been applied to investigate s-commerce intention (Abed, 2018), online virtual fitting room adoption (Huang &amp; Qin, 2011) and factors influencing the adoption of fashion mobile apps (Son, Jain &amp; Kumar, 2019).</td>
<td>The theory does not consider cognitive influences of online behaviour, which is vital aim of this study. Moreover, the present research is not investigating the drivers of technology usage and acceptance.</td>
<td>Venkatesh et al., (2003); Yang (2010); Huang &amp; Qin (2011); William, Rana &amp; Dwivedi (2015); Soni, Jain &amp; Kumar (2019).</td>
</tr>
<tr>
<td>Social Cognitive Theory (SCT)</td>
<td>Behaviour is learned through the bidirectional interaction between cognition, social environment and behaviour.</td>
<td>Has been used to understand social cognitive determinants of social media usage (Khang, Han &amp; Ki, 2014) and motivations to engage in eWOM (Lee et al., 2012).</td>
<td>Advocates that behaviour is learned in a social context, thus the application of the theory is better suited for social media (Laranjo, 2016).</td>
<td>Lu &amp; Hsiao (2007); Lee et al., (2012); Khang, Han &amp; Ki (2014); Hinedo (2017).</td>
</tr>
<tr>
<td>Online Consumer Decision-Making Framework</td>
<td>Highlights the identification of a problem, information search, consideration of alternatives, purchase and outcome.</td>
<td>Has proven useful to examine the influence of online product presentations on decision-making (Boardman &amp; McCormick, 2019) and to understand the drivers of shopping online.</td>
<td>The present study only investigates the information search and post-purchase stages of the decision-making process and so, does not explore all stages of the model.</td>
<td>Chae &amp; Lee (2013); Reid &amp; Ross (2015); Boardman &amp; McCormick (2019).</td>
</tr>
<tr>
<td>Stimulus-Organism-Response (S-O-R)</td>
<td>Cues in an environment have the ability to affect users’ emotional and cognitive states, which drive responses.</td>
<td>Has been used to investigate how the presentation of product information can impact consumer behavioural responses (Kim &amp; Lennon, 2010).</td>
<td>The framework is presented by static boxes. Such linear depictions do not allow for feedback loops (Jacoby, 2002).</td>
<td>Donovan &amp; Rossister (1982); Eroglu et al., (2003); Gao &amp; Li (2019); Sina &amp; Wu (2019).</td>
</tr>
</tbody>
</table>

Table 5.1. Considerations and Summary of Alternative Frameworks
Chapter 5. Research Framework

The following section will appraise the frameworks outlined in Table 5.1, and justify why they are or are not suitable for use within the present study.

5.2.1. The Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980) attempts to predict and understand behavioural intentions (Lin and Huang, 2013). The psychology-based theory posits that behavioural intentions are predicted by understanding the relationship between two determinants, (1) the subjective norm and (2) attitude to comply (Ajzen and Fishbein, 1980; Perry et al., 2019). Subjective norms refer to the perceived social pressure to undertake a specific behaviour (Ajzen and Fishbein, 1980), which has more recently been understood as the consideration of others approval or disapproval of conducting a certain behaviour (Erkan and Evans, 2016; Perry et al., 2019). Whereas, an attitude refers to an individual’s approach towards the performance of the behaviour (Fishbein and Middlestadt, 1987).

![Figure 5.1. The TRA Framework](image)

Source: Madden, Ellen and Ajzen (1992, p.4)

Whilst the framework has been widely used to investigate consumers’ attitude and intention to shop online (Xu and Paulin, 2005; Davies et al., 2011; Raman, 2019), intention to share knowledge in online social environments (Lin and Huang, 2013), and to determine shopping channel choice (Verhoef, Neslin and Vroomen, 2007), the present study will not adopt the TRA framework. The current research does not seek to explore the drivers of an individual’s behaviour (Botha and Atkins, 2005), but rather how garment fit information provided on a product page influences consumers’ cognitive processes and behavioural intentions. The TRA framework does not allow for an in-depth exploration of how different presentations of fit information can affect individual behavioural responses. Furthermore, the investigation of a person’s subjective norms and attitudes are not relevant to the aims of the study. Thus, this framework is not appropriate for achieving the objectives of the present research.
5.2.2. Theory of Planned Behaviour (TPB)

Due to the TRA framework being criticised by academics for assuming that people do not have voluntary control over situations, Ajzen (1991) provided an extension of the model namely, The Theory of Planned Behaviour (TPB). The TPB model attempts to explain the relationship between three main variables, (1) the subjective norm, (2) perceived behavioural control of a situation and (3) one’s attitudes towards the behaviour (Ajzen and Fishbein, 1980). The model advances to suggest that these three variables determine a user’s behavioural intention, which is the direct antecedent of the actual behaviour (Ajzen and Fishbein, 1980). Whilst the subjective norm and attitude are operationalised the same as in TRA, perceived behavioural control is concerned with the influence of specific variables that facilitate or impede behaviour (Hegner, Fenko and Travest, 2017).

![Figure 5.2. Theory of Planned Behaviour Model](source:Ajzen (1991, p.182))

The framework has been utilised by researchers to investigate how consumers use online reviews for decision-making (Fogel and Zachariah, 2017), understand online review writing intention (Dixit, Badgaiyan and Khare, 2019), and to examine consumers’ responses to product presentations (McCormick and Livett, 2012). However, the TPB model is not an appropriate framework to utilise within this present study as the model has been criticised for being too ‘rational’ as it does not contemplate cognitive processes (Ajzen, 2011), which is a central criterion within the present study.
5.2.3. The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), created by Davis, Bagozzi and Warshaw (1989), is an extension of the TRA framework, which investigates a user’s acceptance of information systems (Davis et al., 1989; Liang, Lee and Workman, 2020). Thus, it is a technology-based theory. The initial application of the model was to workplace tasks; however, it is now more commonly used to investigate online consumer behaviour (Perry et al., 2019).

The adapted theory posits that consumers’ intentions to use a particular technology can be explained through an understanding of their attitudes towards the technology, along with the perceived ease of use and perceived usefulness of the technology (McLean and Wilson, 2019; Diwanji and Cortese, 2020). Perceived usefulness refers to the subjective probability that using a specific technology will ameliorate a person’s performance (Davis et al., 1989). Whereas, perceived ease of use denotes how easy and free of effort the user expects the technology to be (Davis et al., 1989; McLean and Wilson, 2019).

![Figure 5.3. The Technology Acceptance Model (TAM)](source: Davis, Bagozzi and Warshaw (1989, p.985)

There are two more recent extended versions of the original TAM model, namely TAM2 (Figure 5.4) and TAM3 (Figure 5.5). Venkatesh and Davis (2000) offered an extension of the original TAM model, TAM2, by including social influences, ‘subjective norm’, ‘voluntariness’ and ‘image’ and cognitive instrumental processes, ‘job relevance’, ‘output quality’, ‘result demonstrability’ and ‘perceived ease of use’. However, given that TAM2 largely overlooks how external factors directly influence the ‘perceived ease of use construct’ (Lindsay, Jackson and Cooke, 2011), Venkatesh and Bala (2008) devised TAM3 by combining TAM2 and the model of the determinants of perceived ease of use.
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Figure 5.4. TAM2
Source: Venkatesh and Davis (2000, p.188)

Figure 5.5. TAM3
Source: Venkatesh and Bala (2008, p.280)
Chapter 5. Research Framework

TAM and its extended versions have been used abundantly in prior research to understand consumers’ acceptance of online customisation (Cho and Fiorito, 2009), examine consumers’ attitudes towards online AI styling devices (Liang et al., 2020) and investigate the acceptance of new virtualisation technologies such as Augmented Reality, Virtual Reality (Kim and Forsythe, 2007; 2009; Huang and Liao, 2015; Plotkina and Saurel, 2019; McLean and Wilson, 2019; Boardman et al., 2020). The theory has also been used to investigate consumers’ acceptance of user-generated review recommendations (Benlian et al., 2012) and user-generated video reviews (Diwanji and Cortese, 2020), examine intentions to use online sizing and fit recommendation technologies (Miell et al., 2018) and finally, to investigate how body satisfaction relates to the virtual product experience (Yu and Damhorst, 2015). Yet, the framework has been criticised for oversimplifying technology adoption (McLean and Wilson, 2019), as it solely focuses on utilitarian values (Boardman et al., 2020).

Consequently, the framework excludes consumers’ personal and cognitive influences (Moon and Kim, 2001; Cyr and Head, 2013), such as perceived product diagnosticity and concerns regarding clothing fit online, which are vital considerations within the current research. Additionally, the present study does not attempt to explore users’ perceived ease or usefulness of new sizing technologies online, but how different types of fit provisions affect cognitive processes, which in turn drive specific behavioural responses.

Although this study aims to design a new product page, which focuses on enhanced fit provision online, TAM is not an appropriate framework to use as the product information page will not feature new technology. Instead, it will focus on how the design of both verbal and visual product fit information affects consumers’ garment fit appraisals online. Thus, in light of the aforementioned, TAM and the most recent versions of TAM2 and TAM3 are not appropriate for the present study.

5.2.4. The Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al., (2003) developed The Unified Theory of Acceptance and Use of Technology (UTAUT) in an attempt to harmonise the existing literature concerning the acceptance of new technology. Indeed, the theory was created through a detailed literature review and synthesis of eight theories: TRA, TAM, The Motivational Model, TPB, a
combination of TBP/TAM, The Model of PC Utilisation, Innovation Diffusion Theory (IDT) and Social Cognitive Theory (Williams, Rana and Dwivedi, 2015). Subsequently, the UTAUT posits that there are four direct determinants of behavioural intention, namely, performance and effort expectancy, social influence and facilitating conditions, which are further moderated by variables such as, gender, age, experience and voluntariness of use (Venkatesh et al., 2003).

Figure 5.6. The Unified Theory of Acceptance and Use of Technology (UTAUT)
Source: Venkatesh et al., (2003, p.447)

In an attempt to understand consumer usage further, Venkatesh et al., (2012) produced an updated version of UTAUT, namely UTAUT2, which includes ‘hedonic motivation’, ‘price value’ and ‘habit’ as additional variables.

Figure 5.7 The Unified Theory of Acceptance and Use of Technology (UTAUT2)
Source: Venkatesh et al., (2012, p.160)
Both the UTAUT and UTAUT2 have been used to investigate m-commerce behaviour intention (Yang, 2010), s-commerce behavioural intention (Abed, 2018), online virtual fitting room adoption (Huang and Qin, 2011), the drivers of performance expectancy for fashion brand websites and drivers of word-of-mouth (Loureiro, Cavallero and Miranda, 2018) and factors influencing the adoption of fashion mobile apps (Soni, Jain and Kumar, 2019). However, the present research is not concerned with understanding the drivers of technological acceptance and behavioural intention and so, both the UTAUT and UTAUT2 are not suitable in achieving the aims and objectives of the present study.

5.2.5. Social Cognitive Theory (SCT)

Bandura (1986) developed the Social Cognitive Theory (SCT), originally termed the Social Learning Theory, in order to explain individual human behaviour. The theory posits that behaviour is learned through the interaction between cognition, behaviour and the social environment (Bandura, 2001), and that ultimately these determinants shape behaviour (Ifinedo, 2017). The SCT advances to suggest that four processes guide observational learning (Nabi and Clark, 2008) namely:

1) Attention- whereby the learner has the ability to pay attention to others.
2) Retention- the learner has to recall and maintain this information.
3) Motor reproduction- the learner must possess to the skill-set to reproduce the behaviour.
4) Reinforcement- the learner is likely to replicate the behaviour if the reward is positive.

Accordingly, Bandura (1986) developed a schematisation of triadic reciprocal causality, which outlines how personal, behavioural and environmental determinants affect each other bidirectionally.
There is an extensive application of the SCT within the Information Systems and Human-to-Computer literature. For example, the theory has been used to investigate the influential social cognitive determinants of social media usage (Khang, Han and Ki, 2014), online knowledge sharing (Lu and Hsiao, 2007), motivations to engage in eWOM (Lee, Kim and Kim, 2012), intentions to use weblogs (Ifinedo, 2017), and intentions to share information in weblogs (Lu and Hsiao, 2007). Consequently, although it is useful to apply the SCT to a social media environment (Laranjo, 2016) whereby users can learn from others within the context of social interactions, it is not an appropriate theory to use in the context of this thesis which aims to explore how information provisions on an e-commerce website affect consumers’ online garment appraisals. Moreover, the application of the SCT to a fashion context is limited.

5.2.6. The Online Consumer Decision-Making Framework

As previously discussed in Chapter 2 of the thesis, the consumer decision-making process is a map of the consumer’s journey, which can help researchers to better understand how and why consumers formulate their purchase decisions (Blackwell et al., 2006). Darley et al., (2010) later adapted the framework to understand how consumers formulate decisions in the online realm. The framework highlights the identification of a problem, the search for information, the consideration of an alternative, a purchase and finally a post-purchase evaluation (Chae and Lee, 2013; Boardman and McCormick, 2019).
The framework has proven useful in prior research as it considers the influence of online environmental stimuli on the consumer’s decision-making (Wen et al., 2014; Boardman and McCormick, 2019), which is also a vital aim of this present study. Additionally, the framework has been implemented in order to understand the barriers and enablers of online purchasing (Reid and Ross, 2015), and to explore the consumer’s decision-making process in an e-commerce environment (Zhang and Benyoucef, 2016).

However, whilst the framework has been commended for its rational and analytical approach (Boardman and McCormick, 2019), decision-making cannot be holistically understood through an analysis of the final decision (Chae and Lee, 2013). Therefore, Chae and Lee (2013) suggest that researchers must analyse the cognitive processes that mediate a decision. Hence, adhering to the recommendation of Boardman and McCormick (2019), to comprehend consumers’ decision-making processes fully, an understanding of intervening

Figure 5.9. The Adapted Online Consumer Decision-Making Process
Source: Darley et al., (2010, p.96)
organismic states is vital. Interestingly, Zhang and Benyoucef (2016) synthesised the decision-making process framework with the S-O-R framework to examine consumer behaviour in an s-commerce context, outlined in Figure 5.10.

Figure 5.10. Framework for Consumer Behaviour in Social Commerce
Source: Zhang and Benyoucef (2016)

Figure 5.10 highlights the integration of both the S-O-R framework and the online decision-making process. However, the framework is purely conceptual and to date, has not yet been tested. An understanding of the consumer online decision-making process is paramount for the present study. Indeed, this research aims to investigate the effect of both visual and verbal fit stimuli on the consumer’s information search and in turn, how cognitive influences affect purchase intentions. Thus, an understanding of these stages of the consumer decision-making process is vital in achieving the aims of the present study. However, this research does not seek to explore every step of the decision-making framework. Moreover, as the framework also considers consumer shopping motivations (Wen et al., 2014), it is not a useful framework to use as shopper motivations are not a consideration within the present study.

5.3. The Stimulus-Organism-Response Model

Woodworth developed the S-O-R framework in 1954 as an extension of the original Watsonian behaviouristic Stimulus-Response (S-R) process, which theorised that human behaviour is a learned response to external stimuli (Zhang and Benyoucef, 2016). However, a criticism of the classic S-R theory is that it treats humans’ internal states as a ‘black box’ (Kotler, 1965, p.37; Liu, Li and Feng, 2013, p.830), inferring that it does not consider the intermediary influence of an individual’s internal processes on their behavioural responses. Thus, to overcome this deficiency, Woodworth in 1954 extended the S-R framework to incorporate the internal organismic processes.

Mehrabian and Russell (1974) more famously applied the S-O-R model to environmental psychology and highlighted that in a variety of settings, environmental cues could affect an
individual’s cognitive and affective reactions, resulting in certain behavioural responses (Lam, 2001; Wu and Li, 2018). Thus, the S-O-R paradigm conjectures that environmental stimuli influence organismic responses which mediate the relationship between environmental stimuli and final behavioural responses (Sina and Wu, 2019; Boardman and McCormick, 2019; Chopdar and Balakrishnan, 2020). Figure 5.11 illustrates the S-O-R framework.

Figure 5.11. The S-O-R Framework by Mehrabian and Russell (1974).

Eroglu et al., (2001, p.179) define environmental stimuli as, ‘the sum total of all the cues that are visible and audible to the online shopper’. Thus, stimuli refer to any environmental and informational cues that influence an individual’s cognitive and affective reactions that in turn drive behavioural responses (Mehrabian and Russell, 1974; Wang and Chang, 2013; Zhang et al., 2014). Indeed, like a physical apparel store, the online environment is composed of stimuli manifesting in many different forms (Jiang et al., 2010), which can provoke a fundamental cognitive change (Kawfa and Tagg, 2012) resulting in certain behavioural responses.

The organism refers to the cognitive and affective intermediary states between the stimulus and the response (Donavon and Rossiter, 1982; Eroglu et al., 2001; Gao and Bai, 2014). It is where the consumer translates environmental stimuli into meaningful information and appraises this information before drawing a conclusion (Koo and Ju, 2010). Affective states denote consumers’ emotional processes in response to environmental stimuli (Sina and Wu, 2019). Mehrabian and Russell (1974) posit that three emotional states mediate approach or avoidance behaviours, namely, pleasure, arousal and dominance (also known as PAD).

Donovan and Rossiter (1982) later tested and corroborated these affective states. Pleasure refers to general positive emotions such as feeling joyful, happy or satisfied with an experience (Koo and Ju, 2010; Brunner-Sperdin, Grissemann and Stokburger-Sauer 2014;
Koo and Park, 2017). Arousal is associated with extreme positive emotional responses such as feeling excited, alert or stimulated (Donovan and Rossiter, 1982; Koo and Park, 2017). Finally, dominance refers to feelings of control (Mehrabian and Russell, 1974). Whilst, many researchers have found PAD to be advantageous (Mehrabian and Russell, 1974; Donovan and Rossiter 1982; Jeong et al., 2009), others have criticised the importance of these emotional states by suggesting they are too constricted in their scope (Kim and Lennon, 2010) and so, limit full internal exploration. Eroglu et al., (2001, p.181) specified that in essence, cognitive processes are, ‘everything that goes into the consumer’s mind’. The organism signifies the consumer’s unique cognitive system set-up (Wang and Chang, 2013; Wu et al., 2014) and thus, refers to how individuals internally process, acquire, retrieve and digest information from stimuli (Sina and Wu, 2019), which in turn can affect behavioural responses.

The concluding element of the S-O-R framework represents the final behavioural outcome of the consumer (Eroglu et al., 2001; Wu et al., 2014), which is expressed more commonly through approach and avoidance behaviours (Mehrabian and Russell, 1974). Approach behaviours are positive behavioural responses, such as the need to physically stay online, the desire to recommend the environment to others, the willingness to communicate with others in the environment and the desire to re-visit the environment in the future (Mehrabian and Russell, 1974; Donavon and Rossiter, 1982). Alternatively, avoidance responses are negative behaviours, which are the opposite of positive behavioural responses (Eroglu et al., 2001). The following section will discuss the previous application of the S-O-R framework to the physical and online retail environment.

### 5.3.1. The S-O-R Model: The In-Store Retail Environment

Donovan and Rossiter (1982) were the first to test the S-O-R paradigm in the physical retail environment to explore how atmospheric cues affected a person’s emotional states, such as pleasure, arousal and dominance (PAD). The authors further explored how affective states influenced shoppers’ approach and avoidance behaviours. The findings suggested that pleasure significantly influenced all behavioural responses and arousal increased time spent in-store and willingness to interact with sales personnel (approach behaviours) (Donovan and Rossiter, 1982). As research materialised concerning the considerable impact of in-store retail stimuli on consumers’ behavioural responses, researchers commenced to develop retail...
studies typologies (Eroglu, Machleit and Davis, 2003). For instance, Baker (1986) developed a typology, which grouped in-store environmental stimuli into three categories, social (people in-store), design (visual cues) and ambient factors (non-visual cues). Scholars have further tested these typologies using the S-O-R paradigm to investigate the influence of in-store cues on consumers’ internal processes and behavioural responses, exhibited in Table 5.2.

<table>
<thead>
<tr>
<th>Authors</th>
<th>(S)</th>
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<th>(R)</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mehrabian &amp; Russell (1974)</td>
<td>Environmental Cues</td>
<td>Emotional state of the organism measured by PAD</td>
<td>Approach/ Avoidance</td>
<td>In a pleasant environment the greater the arousal and the greater the approach behaviour.</td>
</tr>
<tr>
<td>Spangenberg et al., (1996)</td>
<td>Scent</td>
<td>Internal evaluations</td>
<td>Approach/ avoidance</td>
<td>Subjects exposed to scent perceived that they had spent less time in the store.</td>
</tr>
<tr>
<td>Hul et al., (1997)</td>
<td>Music</td>
<td>Cognitive/ Affective</td>
<td>Approach behaviours</td>
<td>Participants reported longer waiting durations but positive emotions when positive music was playing.</td>
</tr>
<tr>
<td>Lam (2001)</td>
<td>Environmental cues</td>
<td>Emotions, Cognitive, Physiological</td>
<td>Approach/ avoidance</td>
<td>Literature review of previous work to develop a conceptual framework.</td>
</tr>
<tr>
<td>Jang et al., (2018)</td>
<td>Visual Complexity</td>
<td>Pleasure/ Arousal</td>
<td>Approach</td>
<td>High visual complexity has a negative impact on pleasure when fashion involvement is low.</td>
</tr>
</tbody>
</table>

Table 5.2. Application of the S-O-R framework in the Retail Store Environment

The S-O-R paradigm has been utilised by academics to explore the impact of specific in-store stimuli such as colour (Bitner, 1992; Crowley, 1993), music (Hul, Dube and Chebat, 1997), olfactory cues (Spangenberg, Crowley and Henderson, 1996), visual complexity (Jang et al., 2018), as well as holistic in-store environmental cues (Eroglu and Machleit, 1990; Lam, 2001).

5.3.2. The S-O-R Model: The Online Retail Environment

The S-O-R framework has proven successful in its application to the physical store environment, with academics highlighting that consumer behaviour is not just a simple input-to-output process (Park, Shin and Ju, 2014). Consequently, many scholars have examined the S-O-R paradigm in the online environment. Eroglu et al., (2003) were the first to extend the S-O-R model to the online environment by proposing that, just like their offline
counterparts, online retail stores can also create an environment that influences shopping behaviour. Figure 5.12 exhibits the adapted framework.

![Diagram: Extension of the S-O-R Framework to Online Retailing](image)

**Figure 5.12. Extension of the S-O-R Framework to Online Retailing**  
**Source:** Eroglu, Machleit and Davis (2003, p.142)

Eroglu *et al.*, (2003) used the S-O-R framework to test the impact of online environmental cues (site atmosphere) on consumers’ internal states (affect and cognition) and behavioural outcomes (approach or avoidance behaviours). The results verified that by increasing online atmospheric qualities, shoppers’ pleasure also increased which resulted in respondents exhibiting approach behaviours (Eroglu *et al.*, 2003). Thus, this infers that online environmental cues can significantly influence the consumer’s online shopping journey.

In regards to affective states, Eroglu *et al.*, (2003) removed dominance on the basis that pleasure and arousal alone can explore a holistic range of emotions in response to environmental stimuli (Eroglu *et al.*, 2003). Additionally, Koo and Park, (2017) posit that dominance is associated with cognitive aspects. Thus, within their application of the S-O-R framework, Eroglu *et al.*, (2003) explored the organism through affective (pleasure and arousal) and cognitive states. Concerning online shopping, cognitive processes encapsulate how consumers interpret online information, evaluate certain product criteria and develop attitudes towards the website (Eroglu *et al.*, 2001). When interacting with a website, consumers’ cognitive involvement is more intense due to the myriad of information such as merchandise descriptions, images, price, terms of sale, delivery and return policies (Eroglu *et al.*, 2003; Jiang *et al.*, 2010). Hence, research suggests that online product appraisals involve more cognitive effort compared to offline shopping (Tang and Zhang, 2020). Consequently, product page information design should be at the forefront of
practitioners’ minds to improve consumers’ cognitive appraisals and drive positive behavioural outcomes. Table 5.3 provides a synopsis of the previous S-O-R applications to the online environment.
<table>
<thead>
<tr>
<th>Author</th>
<th>Aim</th>
<th>(S)</th>
<th>(O)</th>
<th>(R)</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim et al., (2007)</td>
<td>Explored the effects of interactivity on consumer attitudes.</td>
<td>Image interactivity (thumbnail vs. 3D model)</td>
<td>Perception enjoyment involvement</td>
<td>Desire to stay, patronage intention.</td>
<td>3D model generated shopping enjoyment, engagement and a more positive perception of the online store environment.</td>
</tr>
<tr>
<td>Chang &amp; Chen (2008)</td>
<td>Explored the impact of cues on purchase intentions</td>
<td>Online Cues: website quality and brand</td>
<td>Trust and perceived risk</td>
<td>Purchase intention</td>
<td>Perceptions of website quality and brand affect consumers’ trust and in turn purchase intentions.</td>
</tr>
<tr>
<td>Wu et al., (2014)</td>
<td>Investigated store layout on shopping intentions</td>
<td>Store layout design and atmosphere</td>
<td>Emotional, arousal and attitude</td>
<td>Purchase intentions</td>
<td>Atmosphere has a more influential effect on arousal than store layout design.</td>
</tr>
<tr>
<td>Jai et al., (2014)</td>
<td>Investigated visual stimuli on apparel websites</td>
<td>Picture, zoom and rotation</td>
<td>Mental imagery, emotion and attitude</td>
<td>Evaluation difficulty</td>
<td>Zoom evoked extensive activation during the product evaluation.</td>
</tr>
<tr>
<td>Koo &amp; Park (2017)</td>
<td>Exploration of cues for designing online stores</td>
<td>Visual information, navigation, social cues</td>
<td>Emotional behaviours (Pleasure)</td>
<td>Approach behaviours</td>
<td>Unlike social and navigation cues, visual cues did not have enough power to generate a pleasure.</td>
</tr>
<tr>
<td>Kaur et al., (2017)</td>
<td>To understand the influence of seller offline cues</td>
<td>Brand familiarity and offline presence</td>
<td>Trust and attitude</td>
<td>Purchase intentions</td>
<td>Seller offline cues have a positive impact on online purchases.</td>
</tr>
<tr>
<td>Watson et al., (2018)</td>
<td>Impact of AR on purchase intentions</td>
<td>AR retail application</td>
<td>Affective states</td>
<td>Purchase intentions</td>
<td>AR enhanced affective responses and, in turn, the intention to purchase.</td>
</tr>
<tr>
<td>Boardman &amp; McCormick (2019)</td>
<td>Explored the effects of online product presentation</td>
<td>Images, zoom and product videos</td>
<td>Visual, affective and cognitive states</td>
<td>Approach/ avoidance behaviours</td>
<td>Consumers wanted as much visual information as possible during the decision-making.</td>
</tr>
<tr>
<td>Deng &amp; Gu (2020)</td>
<td>Investigated information display</td>
<td>Attribute vs. product orientated.</td>
<td>Arousal</td>
<td>Approach or avoidance</td>
<td>Positive emotions were positively correlated with excitement and approach.</td>
</tr>
<tr>
<td>Baytar et al., (2020)</td>
<td>Examined whether AR conveys reliable information</td>
<td>Image Interactive Technology</td>
<td>Telepresence</td>
<td>Product attitudes, purchase intentions.</td>
<td>The size and colour of a dress can be accurately communicated through AR virtual try-on.</td>
</tr>
<tr>
<td>Yang et al., (2020)</td>
<td>Emotional branding on fashion websites</td>
<td>Product presentation</td>
<td>PAD</td>
<td>Intention to revisit</td>
<td>Product presentation can increase consumers’ arousal states, increasing patronage intention.</td>
</tr>
</tbody>
</table>

Table 5.3. Application of the S-O-R Framework to the Online store Environment
Chapter 5. Research Framework

Table 5.3 exemplifies that the S-O-R framework has been used considerably in online retailing, specifically in regards to product information design (Jai et al., 2014; Koo and Park, 2017; Boardman and McCormick, 2019). However, Table 5.3 illustrates that there is a noticeable lack of research that has investigated the effect of different verbal and visual fit stimuli on consumers’ behavioural responses. Therefore, the present study aims to provide novel theoretical contributions by extending the S-O-R paradigm to investigate how different visual and verbal fit information affect internal states and in turn, drive behavioural responses.

5.3.3. The S-O-R Model: Factorial Experiments

The S-O-R framework has proven useful when implementing factorial web-experiments, as depicted in Table 5.4.

<table>
<thead>
<tr>
<th>Author</th>
<th>Stimulus (IV)</th>
<th>Organism (DV)</th>
<th>Response</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim &amp; Lennon (2008)</td>
<td>Visual (product image) x Verbal (product description)</td>
<td>Imagery and discursive information processing</td>
<td>Purchase intentions</td>
<td>Did not explore fit information.</td>
</tr>
<tr>
<td>Kim, Kim &amp; Lennon (2009)</td>
<td>Product information (flat vs. model) x music (present vs. absent)</td>
<td>Emotional states and website attitude</td>
<td>Purchase intentions</td>
<td>Convenience sample of college students.</td>
</tr>
<tr>
<td>Kim &amp; Lennon (2010)</td>
<td>Amount of information (high vs. low)</td>
<td>Perceived risk and satisfaction</td>
<td>Intention to revisit and purchase</td>
<td>Only explored the amount of information.</td>
</tr>
<tr>
<td>Song &amp; Kim (2012)</td>
<td>Visual information (size of image and number of product views)</td>
<td>Mental imagery, amount of information, perceived risk</td>
<td>Patronage intentions</td>
<td>Only explored visual product information.</td>
</tr>
<tr>
<td>Yoo &amp; Kim (2012)</td>
<td>Presentation (coordination x face)</td>
<td>Affective and cognitive states</td>
<td>Purchase intentions</td>
<td>Explored female college students.</td>
</tr>
<tr>
<td>Shin &amp; Baytar (2014)</td>
<td>Models ideal body vs. Models virtual body</td>
<td>Cognition: Concerns with fit online and body satisfaction</td>
<td>Intention to use virtual technology</td>
<td>Only explored visual product information.</td>
</tr>
<tr>
<td>Kim (2019)</td>
<td>Visual (large vs. small) x verbal (concrete vs. abstract)</td>
<td>Information processing</td>
<td>Approach and avoidance responses</td>
<td>Small sample size.</td>
</tr>
<tr>
<td>Sina &amp; Wu (2019)</td>
<td>3D vs. 2D x 3 product display methods; colour, brand and discount</td>
<td>Flow, pleasure, arousal and merchandise quality</td>
<td>Satisfaction, duration and intentions</td>
<td>US student females.</td>
</tr>
<tr>
<td>Deng &amp; Gu (2020)</td>
<td>Information display: attribute vs. product</td>
<td>Arousal</td>
<td>Approach or avoidance</td>
<td>40 Japanese students.</td>
</tr>
<tr>
<td>Tang &amp; Zhang (2020)</td>
<td>Task cues x aesthetic x social</td>
<td>Perceived utilitarian, hedonic and connectiveness</td>
<td>Approach and avoidance</td>
<td>Mobile devices and tablets were excluded.</td>
</tr>
</tbody>
</table>

Table 5.4. Application of the S-O-R Framework within Experimental Research
Chapter 5. Research Framework

It is indicative from Table 5.4 that the S-O-R framework has proven useful to illustrate hypothesis testing within experimental research. The independent variables investigated in extant online retailing studies are operationalised as varying types of product information (stimuli). For instance, Kim (2019) manipulated online stimuli (product presentation: visual x verbal) to test how different types of online product presentations affect consumers’ information processing (organism) and drive approach or avoidance behaviours (response). However, Table 5.4 also suggests that prior research has not yet empirically verified the impact of garment fit stimuli on consumers’ cognitive and behavioural outcomes. Hence, further research on the consumer’s online garment fit appraisal, through the application of the S-O-R framework, is vital.

Interestingly, Table 5.4 suggests that the vast majority of studies have predominantly focused on affective states, such as pleasure, arousal and satisfaction (Kim and Lennon, 2010; Wang et al., 2014; Kaur et al., 2017; Sina and Wu, 2019; Yang et al., 2020; Liu et al., 2020). This observation extrapolates that cognitive states are somewhat overlooked, with only specific cognitive measures, such as concerns with fit online (Shin and Baytar, 2014), information processing (Kim, 2019), perceived diagnosticity (Wang and Chang, 2013), perceived amount of information (Yoo and Kim, 2012) and perceived risk (Park et al., 2005; Lee et al., 2010), being explored in prior research. Thus, it appears that the literature concerning product information design is somewhat affective-concentrated, implying that further research is required to investigate how different types of information can reduce online cognitive intangibility, which is a significant aim of this study.

Additionally, the final stage of the S-O-R framework depicts consumers’ responses, which is a suitable way to measure different behavioural outcomes under varying experimental treatments. Prior experimental studies have tested behavioural responses by measuring purchase intentions (Park et al., 2005; Kim and Lennon, 2008; 2010; Wang, Minor and Wei, 2011; Wang and Chang 2013; Baytar et al., 2020), intention to re-visit (Kim and Lennon, 2010), behavioural intent (Kim, 2019) and intention to use virtual technologies (Shin and Baytar, 2014). Thus, as phase 3 of the present research undertakes an online shopping experiment, the S-O-R framework is an advantageous paradigm to explore how different fit information (stimuli) affects a consumer’s perceived product fit diagnosticity and concerns with clothing fit online (cognition) and in turn, purchase intentions (behavioural response).
5.4. Application of the S-O-R Framework to the Present Study

The S-O-R model is advantageous in that it rejects the idea that consumers are passive learners who merely produce an automatic response upon exposure to stimuli (Wang and Chang, 2013). Instead, the framework emphasises that experiences, provoked within the organism, mediate the relationship between the stimulus and response (Wang and Chang, 2013; Sina and Wu, 2019). Accordingly, the S-O-R framework is paramount to fulfil the aims of the present study, which examines how different types of fit information (stimuli) affect consumers’ internal cognitive processes and subsequent behavioural responses.

As previously outlined, scholars have validated the S-O-R framework when investigating how product presentation stimuli affect internal processes and drive behavioural responses (Kim and Lennon, 2008; Wang and Chang, 2013; Shin and Baytar, 2014 Kim, 2019; Boardman and McCormick, 2019; Baytar et al., 2020). However, previous studies have not yet dealt with the impact of different verbal and visual fit stimuli on consumers’ cognitive and behavioural responses. Thus, to address this noticeable scarcity, this study will extend the S-O-R framework to offer an empirical understanding of how garment fit provision (stimuli) affects consumers’ internal states and behavioural responses. Hence, the theoretical framework will be developed based on an adaptation of the S-O-R framework by Eroglu et al., (2003) and the product information design literature. The proceeding section will operationalise the stimuli, organism and response that will be tested within the present study.

5.5. Stimuli: Visual and Verbal Fit Information

Online fashion product presentation is exceptionally influential on the consumer’s online decision-making. Yet, the majority of studies that have investigated online e-commerce design have overlooked the importance of product presentation by often associating it with aesthetic design (Yang et al., 2020). However, in apparel e-commerce, both visual and verbal stimuli are essential presentation components of the digital environment (Kim, 2019). Thus, it is no surprise as to why there has been a wealth of research concerning these two types of information sources.

Visual and verbal product stimuli that have been explored in prior research, include; product movement and videos (Park et al., 2005; Jai et al., 2014; Boardman and McCormick, 2019),
product images (Kim, Fiore and Lee, 2007; Kim and Lennon, 2008; Song and Kim, 2012; Yoo and Kim, 2012; Wang et al., 2014; Koo and Park, 2017; Boardman and McCormick, 2019; Kim, 2019), zoom functions, (Jai et al., 2014), virtual try-on avatars (Holzwarth and Janiszewski, 2006; Shin and Baytar, 2014; Baytar et al., 2020) and product descriptions (Kim and Lennon, 2008; Kim, 2019). Despite Eroglu et al., (2001) suggesting that within online environments social cues are lacking, few academics have also started to explore social stimuli such as reviews (Wang and Chang, 2013). However, whilst there exists an extensive body of research investigating online information stimuli, many of these studies have explored verbal or visual product information sources in isolation (Bleier et al., 2019; Narwal and Nayak, 2020) when in reality customers often appraise multiple product cues simultaneously.

Furthermore, despite the in-depth exploration of different online stimuli variables, prior studies have overlooked the role of verbal and visual fit information on consumers’ online decision-making. With previous research demonstrating the salient consideration of garment fit during the consumer’s decision-making process (Apeagyei, 2008; Bye and LaBat, 2005; Hugo and Aardt, 2012; Shin and Chang, 2018), an investigation of garment fit stimuli on a product page is necessary. As such, this study will overcome these limitations by responding to Wang et al.’s., (2019) research call to examine the effects of visual and verbal information on a consumer’s cognitive processes and in turn behavioural responses when shopping for fashion items online.

As previously outlined, consumers currently appraise the fit of a garment through visual and verbal stimuli, such as product images, descriptions and consumer reviews (McKinney and Shin, 2016). Therefore, within the present study, visual fit stimuli are operationalised as product images that differ in models with different body shapes (hourglass vs. diverse body shapes). Alternatively, verbal stimuli are operationalised as the presence vs. absence of user-generated fit reviews. According to prior research, consumers are still undertaking the majority of clothing purchases in-store (Bell et al., 2018; Statista, 2019; Boardman and McCormick, 2019), suggesting that currently, apparel websites do not offer adequate fit provision. Thus, further exploration into how a retailer can improve the provision of apparel fit stimuli online is necessary.
5.5.1. Visual Fit Stimuli: Body Shape

Prior research has verified that online product images can, reduce product returns (Kim and Damhorst, 2013; Sahoo et al., 2018), mitigate product risk and facilitate online decision-making (Park et al., 2005). Alternatively, Rahman (2018) found that the fundamental reason as to why shoppers do not have confidence in their fit decisions online is that current visual representations of the product do not provide accurate fit information. Currently, online consumers appraise the fit of a garment on a body, which does not fully represent the body shape of the average consumer (Sattar et al., 2019). Therefore, in the present study, the visual fit stimulus was chosen in response to the recommendation by Plotkina and Saurel (2019) that future research should test whether the presence of models with diverse shapes, wearing the same garment, can help increase consumers’ online purchase intentions. This recommendation has been further sustained by academics within the field of online fashion retailing (Yu and Damhorst, 2012; De et al., 2013; Yu and Damhorst, 2015; Saarijärvi et al., 2017; Alexander et al., 2017; Boardman and McCormick, 2019; Baytar et al., 2020). In particular, Gupta (2020) posits that the factors currently galvanising unsatisfactory fit are, the lack of understanding of different body shapes and the overrepresentation of ideal body shapes. Accordingly, an investigation into body shape provision online is paramount.

The overrepresentation of ideal body shapes can be further evidenced by Shin and Baytar’s (2014) research, which unveiled that from 592 online fashion models 60% (N=354) of them had an hourglass or X body shape. Consequently, scholars have reasoned that the inability to see a clothing product on different body types has driven consumers to turn to social media platforms to obtain it themselves from user-generated content (Kerviler et al., 2017; Nash, 2019). Therefore, adhering to the assertions by Gribbin (2014) and Dove (2018), who advocate that garment fit is not about size but body shape, this present study will investigate the effect of body shape (stimuli) on consumers’ cognitive and behavioural outcomes.

As mentioned in Chapter 4 of the thesis, to date, studies in the field of online retailing have only focused on the size of online fashion models (Halliwell and Dittmar, 2004; Shim and Lee, 2009; D’Alessandro and Chitty, 2011; Kim and Damhorst, 2013; Shin and Baytar, 2014; Watson et al., 2015; St-Onge et al., 2017; Aagerup and Scharf, 2018; Moreno-Domínguez et al., 2019; Plotkina and Saurel, 2019). Accordingly, what remains unknown is...
the role of body shape provision on consumers’ online decision-making, suggesting further investigation is necessary to fill this salient research gap.

5.5.2. Verbal Fit Stimuli: User-Generated Reviews
According to scholarly research, consumers are more likely to trust product information produced by other consumers compared to retailer-created information (Hsiao et al., 2010; Park and Cho, 2012; Wei and Lu, 2013; Chen et al., 2017; Hazari et al., 2017; Nash, 2019). Rodrigues et al., (2017) unveiled that participants expressed higher buying intentions when they were exposed to product descriptions generated by consumers who had already experienced the product. This finding infers that user-generated reviews are a vital source of information during the garment appraisal process.

Moreover, in an attempt to understand consumers’ evaluations of rent the runway garments, McKinney and Shin (2016) found that garment fit was the most discussed criterion in the product reviews. In a similar vein, Hong and Pavlou (2014) argued that product reviews could help consumers to match product attributes, such as fit, to their unique preferences (Hong and Pavlou, 2014). Yet, within existing research, there is limited investigation concerning the role of user-generated fit reviews on the consumer’s online garment fit appraisal process. Consequently, an enquiry into how fit information disseminated in user-generated reviews affects the consumer’s decision-making is necessary.

Despite academics recommending the importance of incorporating reviewers’ comments online (Hazari et al., 2017; Rahman, 2018), several fashion retailers choose not to feature them on their product information pages (Scalefast, 2019). Thus, extant research has failed to address how the presence (vs. absence) of user-generated fit reviews impact the consumer’s garment appraisal process when shopping on a fashion e-commerce site, which this study aims to fill. To date, much of the research has tended to focus predominantly on the quantitative variables of user-generated reviews such as volume and valance, rather than focusing on the individual content disseminated within the review (Jang et al., 2019; Shin et al., 2020). Indeed, Jang et al., (2019) found that product evaluations discussed in user-generated reviews, such as product quality, innovativeness and the product’s ease-of-use, significantly influence the consumer’s purchase decisions. Yet, what remains unresolved is the role of verbal fit information on consumers’ internal garment evaluations and
behavioural responses. Lastly, Shin and Damhorst (2018) demonstrated that consumers understand and appraise fit through a consideration of physical, aesthetic, functional and social fit parameters, which are extremely difficult to communicate online. Yet, this research posits that these fit variables can be communicated through narrative user-generated fit reviews from consumers who have physically tried-on and experienced the fit of a garment. Therefore, this present study strives to make vital academic contributions by examining how the presence (vs. absence) of user-generated fit reviews affect consumers’ decision-making online.

5.6. Organism
As outlined in section 5.3.2, the organism refers to the internal processes that mediate the relationship between the stimulus and the response (Donovon and Rossiter, 1982; Gao and Bai, 2014). It is where the consumer translates environmental stimuli into meaningful information and processes this information before drawing a conclusion (Koo and Ju, 2010). Therefore, as concerns with garment fit online and perceived product fit diagnosticity are part of an individual’s internal states, the researcher investigated these cognitive conditions as part of the organism within the present study, in line with Shin and Baytar (2014) and Wang and Chang (2013).

5.6.1. Cognitive Processes: Fit Stimuli (S) and Product Fit Diagnosticity (O)
Measuring perceived product fit diagnosticity is a vital aim of this study, which is concerned with investigating how different types of fit information affect online garment evaluations and purchasing decisions. Narwal and Nayak (2020) define perceived product diagnosticity as the perceived credibility of information in assisting consumers’ product evaluations (Narwal and Nayak, 2020). Particularly, it is the extent to which a website can communicate relevant and thorough product information to help consumers appraise product criteria accurately (Jiang and Benbasat, 2004; Pavlou and Fygenson, 2006; Pavlou, Liang and Xue, 2007; Mudambi and Schuff, 2010; Yoo, 2020), and believe in the attributes and performance of the garments sold online (Xia et al., 2020). Thus, it is concerned with how helpful certain product information is in ameliorating consumers’ decision-making (Mudambi and Schuff, 2010; Wang and Chang, 2013).

According to signalling theory (Connelly, Certo and Ireland, 2011), when consumers are unable to directly examine a product, they usually turn to available product signals to form
suitable cognitive evaluations (Xia et al., 2020). For instance, when shopping for fashion garments online, consumers are provided with a variety of product information (Lin, Featherman, Brooks and Hajli, 2018), such as product fit, size, drape and other physical specifications. This information aims to aid consumers with their decision-making by providing them with further understanding of the product they are viewing (Lin et al., 2018). Yet, online consumers are currently unable to appraise the fit of a garment online accurately. Therefore, an investigation into which types of fit information can ameliorate perceived product fit diagnosticity is fundamental.

Kempf and Smith (1998) posit that perceived product diagnosticity positively contributes to the cognitive evaluation of product attributes and so, the authors greatly recommend that future research associated with direct product experience should consider measuring this construct. However, the majority of previous studies have explored product information holistically rather than investigating the diagnosticity of specific product attributes. Despite this, prior literature has corroborated that perceived product diagnosticity can alleviate product uncertainty, increase consumer decision-making (Fang, 2012) and reduce product-related information asymmetry (Pavlou et al., 2007). However, despite garment fit being the prominent evaluative criterion before finalising a purchase (Abrahman-Murali and Littrell, 1995; Gupta, 2020), existing research has failed to address how different types of fit information affect consumers’ perceived product fit diagnosticity. To this end, I hypothesise the following:

**H1a.** When exposed to visual fit information in the form of diverse body shapes, females will experience higher perceived product fit diagnosticity compared to the exposure of visual fit information in the form of one body shape.

**H1b.** When exposed to verbal fit information in the form of user-generated fit reviews, females will experience higher perceived product fit diagnosticity compared to the absence of user-generated fit reviews.

**5.6.2. Cognitive Processes: Fit Stimuli (S) and Concerns with Fit Online (O)**

Given that cognition refers to an individual’s internal mental states (Eroglu et al., 2001), concerns with clothing fit online is a vital internal concept that requires further investigation.
(Shin and Baytar, 2014). Concerns with apparel fit are a profuse and critical issue for online fashion retailing, given the lack of direct body-related information online (Kim and Damhorst, 2010) and the scarcity of various female body shape provision (Reid et al., 2020; Gupta, 2020). Kim and Damhorst (2010, p.242) define concerns with garment fit online as, ‘the subjectively determined expectations and amount of risk perceived by a shopper in relation to the fit and size of a garment in contemplating a particular purchase’. Within the online realm, where palpable information is lacking, concerns with clothing fit are magnified due to the inability to physically appraise and evaluate the product before making a purchase (Kim, Kim and Lennon, 2007; Blanco et al., 2010; Kim and Lennon, 2010; Jai et al., 2014; Kim and Krishnan, 2015).

Coupled with this, concerns with garment fit are multifaceted as consumers may experience concerns with the physical, aesthetic, functional and social fit of a garment (Shin and Damhorst, 2018) based on their subjective experiences. Although scarcely measured, prior research that has explored concerns with fit online has only focused on visual information, in particular, the size of a fashion model (Kim and Damhorst, 2010;2013) or VTO avatars (Shin and Baytar, 2014) and have failed to address the impact of body shape and verbal fit information on consumers’ concerns with fit online. Therefore, an investigation into how different types of visual and verbal fit information affect females concerns with clothing fit online is necessary. Accordingly, based on the aforementioned, this study hypothesises the following:

**H2a.** When exposed to visual fit information in the form of diverse body shapes, females will have fewer concerns with fit online compared to the exposure of visual fit information in the form of one body shape.

**H2b.** When exposed to verbal fit information in the form of user-generated fit reviews, females will have fewer concerns with fit online compared to the absence of user-generated fit reviews.

### 5.7. Behavioural Response

The final element of the S-O-R paradigm is the behavioural result of the consumer (Eroglu et al., 2001; Wu et al., 2014). As previously illustrated in Table 5.3 and 5.4, many researchers...
have investigated consumers’ responses to certain stimuli by exploring approach and avoidance behaviours holistically (see: Mehrabian and Russell, 1974; Donovan and Rossiter, 1982; Eroglu et al., 2003; Koo and Park, 2017; Boardman and McCormick, 2019). Whereas, alternative studies have quantitatively tested singular approach or avoidance behaviours by measuring evaluation difficulty (Jai et al., 2014), purchase intentions (Park et al., 2005; Chang and Chen, 2008; Kim and Lennon, 2008; 2010; Yoo and Kim, 2012; Wang and Chang, 2013; Wu et al., 2014; St-Onge et al., 2017; Koo and Park, 2017; Kaur et al., 2017; Gao and Li, 2019; Baytar et al., 2020), online patronage intentions (Kim et al., 2007; Song and Kim, 2012; Sina and Wu, 2019), intention to revisit (Kim and Lennon, 2010) and product choice satisfaction (Friedrich et al., 2020).

Purchase intentions have been tested abundantly within the online retailing and marketing literature, as measuring this construct is believed to provide a useful insight into the effectiveness of marketing (Wang and Chang, 2013) and information retrieval. Purchase intention started to emerge as a measurable construct circa 2000 (Mou et al., 2019) and is the subjective possibility of a consumer to purchase a product (Yi et al., 2018; Rubab, et al., 2018). Plotkina and Saurel (2019) posit that purchase intentions are the consumer response that matters the most to both academics and practitioners. Consequently, within this study, the dependent variable, purchase intention, was used to measure the effectiveness of body shape and user-generated fit reviews in offering increased perceived product fit diagnosticity and reduced concerns with clothing fit online.

5.7.1. Behavioural Response: Fit Stimuli (S) and Purchase Intentions (R)

Existing studies have validated that different types of online product information have varied impact on consumers’ purchase intentions when shopping online. For instance, Kim and Lennon (2008) explored the use of different online verbal and visual product presentations on a consumer’s purchase intentions and found that whilst visual and verbal information affected cognitive states, only verbal information had an impact on purchase intentions. Additionally, McCormick and Livett (2012) measured purchase intentions as a behavioural response to product presentations on ASOS’s website and established that catwalk videos offered consumers with an extended and more in-depth understanding of the product, which increased decision confidence and in turn purchase intentions.
In a more recent study, Gao and Li (2019) validated that social presence on an e-commerce website increased consumers’ purchase intention. Interestingly, St-Onge et al., (2017) investigated the impact of visual product information on consumers’ behavioural outcomes and unveiled that the more attractive the respondent perceived the fashion model to be, the more inclined they were to purchase the outfit. However, what remains unknown is how different types of fit information present on a fashion product page affect consumers’ purchase intention. Therefore, this research will respond to the call by Plotkina and Saurel (2019), who state that future research should test whether displaying the same garment on various models with different body types can help to increase purchase intentions. Additionally, Rodrigues et al., (2017) found that ‘hand on descriptions’, from consumers who have previously touched and experienced the product, led to a greater online purchase of clothes. Similarly, Racherla et al., (2012) demonstrated that the opinion of other consumers, who have previously experienced the product, reduced consumers’ uncertainty when considering their purchase intention. However, prior research has failed to address how the presence (vs. absence) of user-generated fit reviews from consumers who have experienced the fit of a garment, influences a female’s online purchase intention. Thus, based on the aforementioned, this study hypothesises:

**H3a.** When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.

**H3b.** When exposed to verbal information in the form of user-generated fit reviews, females will report higher purchase intentions compared to the absence of user-generated fit reviews.

### 5.7.2. Behavioural Response: Organism (O) and Purchase Intentions (R)

*The impact of concerns with garment fit online on consumers’ purchase intentions*

Prior research has corroborated that product uncertainty and risk are heightened in the online environment as consumers cannot physically test and experience the product until post-consumption (Saarijärvi et al., 2017). Consequently, product risk is the most frequently cited reason as to why people are reluctant to shop online (Dai, Forsythe and Kwon, 2014). For example, Kim and Damhorst (2010) found that concerns with imagining garment fit online
were negatively related to purchase intentions. In a similar vein, Dai et al., (2014) revealed that perceived product risk negatively influenced online purchase intentions. Additionally, Park et al., (2005) found that online product movement decreased shoppers’ perceived risk, which in turn increased their purchase intentions. Hence, based on the aforementioned, it is apparent that perceived concerns with garment fit online can influence a consumer’s willingness to purchase or not purchase a garment. Therefore, in light of the above, I hypothesise that:

**H4a.** Females who have fewer concerns with garment fit online will report increased purchase intentions compared to when they experience high concerns about clothing fit online.

### 5.7.3. Behavioural Response: Organism (O) and Purchase Intentions (R)

*The impact of perceived product fit diagnosticity on consumers’ purchase intentions*

Existing research has found that if information about a product is diagnostic then purchase intentions will increase, as consumers are more knowledgeable about the product attributes (Kempf and Smith, 1998; Jiang and Benbasat, 2007). Wang and Chang (2013) observed that if the consumer considers product information to be diagnostic, they will be more confident about the product’s properties and therefore, will report an increased intention to purchase. Indeed, in an experiment, Wang and Chang (2013) found that for positive product recommendations, higher perceived diagnosticity resulted in higher purchase intentions. In a similar vein, Orus et al., (2017) discovered a strong positive correlation between the ease of imagining a product and the intention to purchase the product. Accordingly, based on these findings, it can be argued that if females can accurately envisage garment fit online, the fit of the garment will be better diagnosed and in turn, purchase intentions will increase. Yet, prior literature has failed to demonstrate a relationship between perceived product fit diagnosticity and online purchase intentions. Therefore, based on a thorough review of the literature, I hypothesise that:

**H4b.** Females who experience higher perceived product fit diagnosticity will report increased purchase intentions compared to when they experience low perceived product fit diagnosticity.
5.8. Summary of Research Framework and Research Hypotheses

Figure 5.13 identifies the conceptual research framework for the present study.

The research framework proposes that when exposed to visual fit information in the form of diverse body shapes (vs. hourglass) and verbal fit information in the form of user-generated fit reviews (vs. absence), females will experience higher perceived product fit diagnosticity, reduced concerns with clothing fit online and in turn higher purchase intentions. The development of the S-O-R model was largely informed by previous research that has also used the paradigm to explore product presentations (Park et al., 2005; Kim and Lennon, 2008; 2010; Shin and Baytar, 2014; Wang et al., 2014; Jai et al., 2014; Kim, 2019; Boardman and McCormick, 2019; Baytar et al., 2020), cognitive influences (Mudambi and Schuff, 2010; Kim and Damhorst, 2010; Wang and Chang, 2013; Kim and Damhorst, 2013; Shin and Baytar, 2014) and purchase intentions as a final behavioural response (Kim and Lennon, 2008; 2009, McCormick and Livett, 2012; Wang and Chang, 2013 Baytar et al., 2020). Table 5.5 provides a summary of the research hypotheses.
Chapter 5. Research Framework

<table>
<thead>
<tr>
<th>No.</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>When exposed to visual fit information in the form of diverse body shapes, females will experience higher perceived product fit diagnosticity compared to the exposure of visual fit information in the form of one body shape.</td>
</tr>
<tr>
<td>H1b</td>
<td>When exposed to verbal fit information in the form of user-generated fit reviews, females will experience higher perceived product fit diagnosticity compared to the absence of user-generated fit reviews.</td>
</tr>
<tr>
<td>H2a</td>
<td>When exposed to visual fit information in the form of diverse body shapes, females will have fewer concerns with fit online compared to the exposure of visual fit information in the form of one body shape.</td>
</tr>
<tr>
<td>H2b</td>
<td>When exposed to verbal fit information in the form of user-generated fit reviews, females will have fewer concerns with fit online compared to the absence of user-generated fit reviews.</td>
</tr>
<tr>
<td>H3a</td>
<td>When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.</td>
</tr>
<tr>
<td>H3b</td>
<td>When exposed to verbal information in the form of user-generated fit reviews, females will report higher purchase intentions compared to the absence of user-generated fit reviews.</td>
</tr>
<tr>
<td>H4a</td>
<td>Females who have fewer concerns with garment fit online will report increased purchase intentions compared to when they experience high concerns about clothing fit online.</td>
</tr>
<tr>
<td>H4b</td>
<td>Females who experience higher perceived product fit diagnosticity will report increased purchase intentions compared to when they experience low perceived product fit diagnosticity.</td>
</tr>
</tbody>
</table>

Table 5.5. Summary of The Research Hypotheses

5.9. Chapter Summary and Identified Gaps

This chapter reviews the previous implementation of academic frameworks within existing online retailing and consumer behaviour studies. The chapter proceeds to define the S-O-R framework and examine its application to the physical retail store environment and more recently, the online store environment. The latter part of this chapter illustrates the application of the S-O-R framework to the present study, as well as justifying the selection of specific stimuli, cognitive states and behavioural measures. From the literature review, several gaps have been identified. For instance, whilst research using the S-O-R paradigm is replete, prior research has not yet used the paradigm to test the effect of garment fit stimuli on consumers’ cognitive and behavioural outcomes. Hence, to bridge this gap, further research concerning the consumer’s garment fit appraisal through the application of the S-O-R framework is necessary, which is what this research aims to establish.

The following chapter will review and justify the methodological techniques that this study seeks to adopt.
Chapter 6. Research Methodology

6.1. Introduction
This chapter will outline the methodological approaches and techniques that the present study seeks to adopt. Methodology refers to, ‘how research should be undertaken’ (Saunders, Lewis and Thornhill, 2019, p.37) and is concerned with obtaining knowledge about the world (Hennink et al., 2020). A research methodology draws on the strategic, theoretical and philosophical perspectives, which in turn form a suitable research approach (Malhotra, Nunan and Birks, 2017).

The beginning of this chapter reviews multiple research perspectives and addresses the advantages and limitations of such approaches. The latter section of the chapter will justify the adopted methodological choices and research strategies to ensure the fulfilment of the aims and objectives of the present research. The selection of a particular research methodology depends on the perspective that has guided the research, such as the belief about reality (ontology), the theory of knowledge that informs the research (epistemology) and how that knowledge is to be acquired (methodology) (Tuli, 2010).

6.2. Research Approach
To make informed judgments about the design of a research project, the researcher must select a suitable research approach (Saunders, Lewis and Thornhill, 2016). There are three main types of research approaches, namely, (1) deductive (2) inductive and (3) abductive. Deduction starts with a universal law or understanding of a situation, tests this accepted knowledge and works back to the details (Gray, 2013). Alternatively, induction moves from fragmentary details to a connected and holistic view of the situation in question (Gray, 2013). Abduction interchanges between theory and data and so, it can be seen as a combination of both deductive and inductive inferences (Saunders et al., 2019). Table 6.1 delineates the advantages and limitations of these three approaches.
Chapter 6. Research Methodology

<table>
<thead>
<tr>
<th>Approach</th>
<th>Understanding</th>
<th>Advantage</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deduction</td>
<td>Begins with what is already asserted about the phenomenon in question and proceeds to deduce hypotheses that are subjected to rigorous and empirical scrutiny (Hennink et al., 2020).</td>
<td>Particular instances are deduced from established research (Ritchie et al., 2013)</td>
<td>Adopts a rigid methodology that does not permit alternative explanations.</td>
</tr>
<tr>
<td>Induction</td>
<td>Concepts are derived from empirical observations of the world (Ritchie et al., 2013). An inductive approach gathers data first and establishes relationships and meanings from the data (Bryman &amp; Bell, 2015).</td>
<td>Provides an insight as to how humans interpret their social world (Saunders et al., 2019).</td>
<td>The approach is based on subjective interpretations, which in turn can lead to bias conclusions.</td>
</tr>
<tr>
<td>Abduction</td>
<td>Interchanges between theory and data and so, it can be seen as a combination of both deductive and inductive inferences (Saunders et al., 2019).</td>
<td>Beneficial if a mixed-methods approach is adopted.</td>
<td>Often there is a dominance of one approach over another.</td>
</tr>
</tbody>
</table>

| Table 6.1. Summary of Research Approaches |

6.2.1. Research Approach Adopted

The present research adopted elements from both inductive and deductive approaches. Phase 1 (online dress survey) and 3 (online shopping experiment) of the research adopted a deductive approach. A deductive approach was suitable because the data collection within these two phases tested the research hypotheses that were developed from a critical review of existing online fashion retailing theory. Additionally, phase 3 (online shopping experiment) of the research was theoretically underpinned by the S-O-R framework, which theorises that environmental stimuli influence cognitive processes which mediate the relationship between environmental stimuli and final behavioural responses. Consequently, as phase 1 and 3 of the research moved from theory to data by testing existing measures and concepts, a deductive approach was deemed appropriate.

Alternatively, as part of the aim for phase 2 (garment try-on) of the research was to develop verbal fit stimuli by capturing participants’ subjective fit evaluations; this phase adopted an inductive research approach. An inductive approach for phase 2 was essential to understand how participants subjectively perceived and evaluated the fit of the three dresses. Thus, an inductive approach was adopted to permit observations to be drawn using thematic analysis. Accordingly, the present study adopted an overarching abductive research approach, as a combination of both inductive (phase 2) and deductive approaches (phase 1 and 2) were used in the same research project in order to fully achieve the research objectives (Saunders et al., 2019).
6.3. Research Philosophies

Research philosophy denotes a system of beliefs and postulations about the creation of knowledge (Saunders et al., 2019). Hence, an understanding of different research philosophies will enable the researcher to identify which research designs are suitable for the given aims and objectives of the study (Gelo, Braakmann and Benetka, 2008; Gary, 2013). Thus, a researcher needs to identify their philosophical stance to formulate assumptions made about the nature of reality (ontology) and knowledge (epistemology) in the research (Bryman, 2012).

6.3.1. Ontology

Ontology derives from the Greek word for ‘thing’ (McManus et al., 2017). Hence, this has led to the understanding of ontology as the study of being, in particular, the nature of existence and what constitutes as reality (McManus et al., 2017; Saunders et al., 2019; Hennink et al., 2020). Saunders et al., (2019) emphasise that a researcher’s ontological assumptions shape how they see the world. Thus, it is paramount for the researcher to declare their ontological stance before undertaking research. Essential ontological perspectives include objectivism, subjectivism and realism. Table 6.2 provides a summary of these perspectives.

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Understanding</th>
<th>Advantage</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectivism</td>
<td>Posits that a true reality exists externally and independently of subjective consciousness (Gray, 2013; Bryman &amp; Bell, 2015; Saunders et al., 2019).</td>
<td>Seeks to generate law-like generalisation.</td>
<td>Reality can only be explored under measurable investigation (McManus et al., 2017).</td>
</tr>
<tr>
<td>Subjectivism</td>
<td>Advocates that reality is socially constructed by individuals who perceive different situations due to their unique world-view (McManus et al., 2017; Saunders et al., 2019).</td>
<td>Examines the actions and perceptions of social actors.</td>
<td>Individuals perceive different situations due to their unique world-view.</td>
</tr>
<tr>
<td>Realism</td>
<td>Asserts that whilst scientific theories give a verified understanding of reality (McManus et al., 2017), people and their behaviours demand subjective understanding.</td>
<td>Overcomes the dichotomies of objectivism and subjectivism.</td>
<td>Derives an ontological framework from common-sense assumptions about the social world.</td>
</tr>
</tbody>
</table>

Table 6.2. Summary of Research Ontological Perspectives

6.3.1.1. Ontological Perspective Adopted

The present study adopted a realist ontological position, which advocates that whilst there exists an objective reality, the way in which individuals comprehend it will be influenced by one’s ‘particular social conditioning’ (Saunders et al., 2016, p.169). Thus, a realist asserts
that although ‘reality cannot be accessed directly’ (Easterby-Smith, Thorpe and Jackson, 2015, p.54), it can be somewhat obtained by conducting quantitative research with a large sample, coupled with elements of rich qualitative data (Easterby-Smith et al., 2015). This ontological perspective was appropriate for the present research as phase 1 and 3 adopted an objectivist ontology by undertaking quantitative data analysis. Notably, phase 3 (online shopping experiment) tested the S-O-R framework by conducting a factorial web-experiment. Yet, before the online experiment (phase 3), phase 2 (garment try-on) employed a subjective ontology to understand how individuals with different body shapes subjectively evaluated garment fit. Therefore, as the present study adopted an overarching mixed-methods research strategy, the exclusive adoption of one ontological position was considered uninformative to the research aims (Saunders et al., 2016).

### 6.3.2. Epistemology
The word ‘epistemology’ originates from the Greek word ‘epistēmē’ meaning knowledge (McManus et al., 2017). Hence, epistemology is concerned with how researchers come to acquire knowledge, understand it and make theoretical contributes with it (Saunders et al., 2019). There are several epistemological perspectives including, positivism, interpretivism and pragmatism. Table 6.3 provides a summary of these perspectives.

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Understanding</th>
<th>Advantage</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivism</td>
<td>Asserts that reality must be measured objectively through a rigorous process of scientific inquiry (Gray, 2013; McManus et al., 2017; Hennink et al., 2020). Thus, it is the foundation of quantitative research.</td>
<td>Generates verified and repeatable data (Burrell &amp; Morgan, 2017).</td>
<td>Overlooks the contextual influences on subjects’ lives (Hennink et al., 2020).</td>
</tr>
<tr>
<td>Interpretivism</td>
<td>Attempts to understand the meanings that people construct through their interactions with other people and things (Tuli, 2010; Saunders et al., 2019).</td>
<td>Attempts to understand reality through complex interpretations.</td>
<td>Relies on the subjectivity of humans (Hennink et al., 2020).</td>
</tr>
<tr>
<td>Pragmatism</td>
<td>Endeavours to reconcile both subjectivism and objectivism by advocating that a combination of quantitative and qualitative research methods is adequate if it permits full exploration of the aims of the research (McManus et al., 2017).</td>
<td>Both qualitative and quantitative research is considered valuable for exploring research aims.</td>
<td>Adopts a utilitarian approach, which only considers the most suitable outcome for the research project.</td>
</tr>
</tbody>
</table>

**Table 6.3. Summary of Research Epistemological Perspectives**

### 6.3.2.1. Epistemological Stance Adopted
The present study used a combination of quantitative and qualitative methods to explore the research aims fully (McManus et al., 2017) and so, the study adopted an overarching
pragmatic epistemological stance. Phase 1 (online dress survey) adopted a positivist stance by quantitatively testing constructs, deduced from existing theory, to select appropriate stimuli for phase 2 and 3 of the research. Additionally, phase 3 (online shopping experiment) of the study empirically tested the research framework and hypotheses through an online web-experiment. In both phase 1 and 3, the researcher remained entirely separate from the subject’s responses (Saunders et al., 2019). Moreover, to discern the different body shapes for phase 3 (online shopping experiment), the subject’s body shapes were objectively categorised to ensure replicability for further research. Thus, in phase 2 (garment try-on) subjects’ body measurements were objectively captured using a Size Stream body scanner (Gill, 2015) and females’ body shapes were identified using the Female Figure Identification Technique (FFIT) (Simmons et al., 2004) mathematical equation. The FFIT method has also been corroborated in prior literature (Lee et al., 2007; Grogan et al., 2013). When determining body shape typologies in phase 2 (garment try-ons), a positivist approach was vital as Grogan et al., (2013) and Seo, and Namwamba (2018) assert that subjective body shape assignment is unreliable.

Alternatively, elements of the interpretivist paradigm were also adopted in phase 2 (garment try-ons), which employed qualitative semi-structured interviews in an attempt to understand how females subjectively evaluated the fit of the three dresses. Indeed, as previously outlined in Chapter 3 of the thesis, garment fit is a multifaceted and consumer-centric attribute (Rieke et al., 2016), which sits between the relationship of social acceptability and subjective consumer preference (Miell et al., 2018). Thus, a subjective understanding of how females evaluate garment fit in relation to their body shape was necessary to fulfil the research aims. Consequently, the adoption of a pragmatic research perspective was advantageous, as the contribution of both qualitative and quantitative research was valuable in exploring the different research objectives.

6.4. Primary and Secondary Data

Data comes in two forms, (1) primary and (2) secondary. Primary data is the original data that has been captured first-hand to explore a new research question (Andrews et al., 2012). Primary data can be obtained through quantitative methods, qualitative or a combination of both. Whilst primary data may solve a specific research problem by providing new insights, it can be costly and time-consuming to obtain. Alternatively, secondary data has already
been gathered and published for other purposes and includes industry reports, journal articles, books and news reports (Myers, 2019). The interpretation of secondary data should be treated with caution, as the findings are limited to the context in which the data was initially obtained.

6.4.1. Adopted Data Sources
The present research collected secondary data to fulfil Research Objective 1: To critically review existing literature concerning online fashion retailing and the consumer’s online decision-making process, garment fit evaluation, body shape and online fashion product presentation, and to evaluate issues in these domains and establish a theoretical gap. Indeed, several secondary data sources, such as journal articles, books and industry reports, were analysed to identify a research problem. The present study also used the S-O-R framework to help formulate the research hypotheses and structure an appropriate research design. Furthermore, the constructs used to measure the dependent variables in phase 1 (online dress survey) and 3 (online shopping survey) were adapted from prior literature. However, this study utilised up-to-date secondary data to ensure credibility. Alternatively, all phases of the research collected primary data using online surveys (phase 1 and 3), 3D body scanning and semi-structured interviews (phase 2). These methods are justified in the following section.

6.5. Data Collection Methods and Approaches
As previously outlined, primary data can be collected through quantitative, qualitative and mixed-method approaches (Harrison and Reilly, 2011). McManus et al., (2017) posit that different research methods sit along a continuum whereby at one end of the spectrum lie purely qualitative research methods and at the other sit merely quantitative research methods. However, some research requires the integration of both qualitative and quantitative approaches to explore the research aims fully (Saunders et al., 2019). This strategy is known as a mixed-methods approach, which, according to McManus et al., (2017), sits in the middle of the continuum. Table 6.4 explores these three types of research approaches in further detail.
Chapter 6. Research Methodology

<table>
<thead>
<tr>
<th>Method</th>
<th>Aim</th>
<th>Advantage</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative</td>
<td>To quantify the relationship between variables by using a range of statistical analysis techniques. The results can be generalised. Quantitative methods include surveys, frequency counts and psychometric tests (Bryman &amp; Bell, 2015; Saunders et al., 2019; Hennink et al., 2020).</td>
<td>Findings can be re-tested for validity and there are less ethical implications (Saunders et al., 2019).</td>
<td>Fails to answer the ‘why’ and ‘how’ of topic under question (McManus et al., 2017).</td>
</tr>
<tr>
<td>Qualitative</td>
<td>Aims to understand the meanings that people attach to certain things. Explores the ‘why’ of the phenomenon in question by conducting focus groups, in-depth interviews and observations of a small number of participants (Hennink et al., 2020).</td>
<td>Provides rich textual data (Ritchie et al., 2013).</td>
<td>It is difficult to generalise the findings to alternative populations.</td>
</tr>
<tr>
<td>Mixed-Methods</td>
<td>Uses a combination of both qualitative and quantitative techniques and is a branch of multiple methods research (Saunders et al., 2019). Thus, this approach offers the researcher complimentary interpretation of the topic in question by expanding the scope of investigation.</td>
<td>Different data techniques are used to answer different research questions (Saunders et al., 2019).</td>
<td>Only successful if the researcher integrates the findings (Bryman &amp; Bell, 2015).</td>
</tr>
</tbody>
</table>

Table 6.4. Summary of Research Epistemological Perspectives

6.5.1. Adopted Data Collection Approaches

The present study adopted a sequential, multi-phase mixed-methods approach to investigate how different fit stimuli (verbal vs. visual) affect a consumer’s decision-making when shopping for dresses online. Specifically, phase 1 (online dress survey) and 3 (online shopping experiment) of the research obtained quantitative data through the use of online surveys and the implementation of a between-subjects factorial web-experiment. Indeed, phase 3 (online shopping experiment) of the research quantitatively measured subjects’ behavioural responses to different fit stimuli, which is the final element of the S-O-R framework that underpinned the present research.

However, to inform the design of the visual and verbal fit stimuli for phase 3 of the research, phase 2 (garment try-ons) gathered qualitative data through an exploratory post-purchase fit evaluation of different styles of dresses. Notably, phase 2 used semi-structured interviews to explore all garment fit parameters from the consumer’s perspective. Therefore, the present research adopted a sequential-multi phase mixed-methods approach to achieve the objectives of the current research. Table 6.5 provides a summary of the data collection approaches adopted in each phase of the study.
Chapter 6. Research Methodology

6.6. Research Design

A research design is an overarching plan of how to approach answering a specific research question (Saunders et al., 2019). Malhotra et al., (2017) assert that a research design incorporates exact details of the procedures needed to address a research problem effectively. Research designs are either exploratory or conclusive, as demonstrated in Figure 6.1.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Objective</th>
<th>Approach</th>
<th>Philosophy</th>
<th>Method</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: (online dress survey)</td>
<td>To identify suitable stimuli (dresses) for phase 2 and 3 of the research.</td>
<td>Deductive</td>
<td>Realist ontology and positivist epistemology</td>
<td>Quantitative survey</td>
<td>Vital to ensure that appropriate dress styles were selected from a representative population.</td>
</tr>
<tr>
<td>Phase 2: (garment try-ons)</td>
<td>To develop visual (body shapes) and verbal (reviews) fit stimuli for phase 3.</td>
<td>Inductive</td>
<td>Realist ontology and interpretivist epistemology</td>
<td>Qualitative semi-structured interviews</td>
<td>Essential to fully explore fit parameters from a consumer’s perspective and to develop fit reviews for the websites.</td>
</tr>
<tr>
<td>Phase 3: (online shopping experiment)</td>
<td>To test the theorised model in a web-experiment.</td>
<td>Deductive</td>
<td>Realist ontology and positivist epistemology</td>
<td>Quantitative online factorial experiment</td>
<td>Vital to test the effect of the independent variables on the measurable dependent variables.</td>
</tr>
</tbody>
</table>

Table 6.5. Methodology Summary of Present Research

Figure 6.1. A Classification of Marketing Research Designs

Source: Malhotra et al., (2017, p.70)
6.6.1. Exploratory and Conclusive Research

An exploratory research design attempts to understand the nature of certain circumstances (Malhotra et al., 2017). Exploratory studies seek to explore the ‘why’ or ‘how’ of a research question. Methods associated with exploratory research include pilot surveys, unstructured observations, qualitative interviews (Malhotra et al., 2017) and focus group interviews (Saunders et al., 2019). Otherwise, a conclusive research design focuses on the testing of hypotheses to investigate the relationship between certain variables (Malhotra et al., 2017). The objective of conclusive research is to measure, and so, the research process is rigorous and structured. The methods associated with conclusive research include experiments, surveys and structured observations; hence, the data analysis is inherently quantitative.

Within the present study, phase 1 (online dress survey) and 3 (shopping experiment) adopted a conclusive research design. In particular, the main experiment in phase 3 tested the research hypotheses that had been deduced from existing research. Alternatively, phase 2 (garment try-on) adopted an exploratory research design to explore ‘how’ consumers appraised the fit of the three dresses and ‘why’ females with certain body shapes were (dis)satisfied with the fit of the dresses.

6.6.2. Experimental Research (Phase 3)

Experimental research aims to establish causal relationships (Malhotra et al., 2017) and so, it is a type of conclusive research design. Within an experiment, an independent variable (cause) is manipulated to establish whether it affects a variable of interest (Field and Hole, 2003; Bryman and Bell, 2015). A true experimental research design requires (1) the random assignment of subjects to different experimental groups (Field, 2009) and (2) the direct manipulation of one or more independent variables to establish the effects of this manipulation (Field and Hole, 2003). The most common true-experiment identified within online retailing and web-design literature is a factorial design, which is ‘a statistical experimental design used to measure the effects of two or more independent variables at various levels’ (Malhotra et al., 2017, p.322). Factorial designs can be either between-subjects or within-subjects. Table 6.6 provides a summary of these two approaches.
Chapter 6. Research Methodology

Investigating How Product Page Design Affects Clothing Fit Appraisal Online

6.6.3. Experimental Design Adopted for Phase 3

The research design for the main experiment (phase 3) adopted a conclusive, between-subject factorial design. This research design was deemed appropriate as it permitted the researcher to directly manipulate the level of the independent variable (visual vs. verbal fit information) and to establish the varied effects of this manipulation on a female’s online garment appraisal process.

A between-subjects factorial design was chosen over a with-subjects design as it ensured complete independence by randomly assigning different subjects to different treatment conditions (Field and Hole, 2003; Lazar et al., 2017). This requirement was vital as not only did it minimise fatigue effects and risks concerning cross-contamination of treatments (Saunders et al., 2019), but it also permitted a larger sample size which further enhanced the validity and reliability of the study (Field and Hole, 2003; Lazar et al., 2017). An online web-experiment also ensured that the researcher was absent during the completion of the post-experimental survey, which permitted the shopping task to emulate a real-life online interaction (Hantula, 2005) and in turn, enhanced the ecological validity of the study (Bryman and Bell, 2015). Between-subjects factorial designs have also been corroborated in prior literature and have proven useful when testing the influence of online product information (cause) on consumers’ behavioural responses (effect), as demonstrated in Table 6.7.

<table>
<thead>
<tr>
<th>Design</th>
<th>Aim</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between-Subjects Design</td>
<td>Different subjects are randomly assigned to either the control group or the experimental group (Field &amp; Hole, 2003; Lazar et al., 2017; Saunders et al., 2019). Useful if the aim of the research is to test the different responses between genders, e.g., male and female.</td>
<td>- Elevates the risk of fatigue effects - Simple as subjects are assigned to different conditions - Researcher can isolate the cause and effect</td>
<td>- Higher sample size is required. - Difficult to obtain equal sample sizes in each group. - Time consuming.</td>
</tr>
<tr>
<td>Within-Subjects Design</td>
<td>Every subject is exposed to all conditions of the experiment (Saunders et al., 2019). Suitable if the researcher desires the subjects to produce a response for every condition (Field &amp; Hole, 2003).</td>
<td>- Requires fewer subjects - Less resources (i.e., time, money) are required - Can control external factors (i.e., age)</td>
<td>- Imposes the risk of cross-contamination - Impacts the validity as non-parametric tests must be undertaken.</td>
</tr>
</tbody>
</table>

Table 6.6. Summary of Between-Subjects and Within-Subjects Designs

Source: Adapted from Field and Hole (2003); Lazar et al., (2017); Saunders et al., (2019)
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Table 6.7. Summary of Key Factorial Experimental Designs

<table>
<thead>
<tr>
<th>Author</th>
<th>Design</th>
<th>IV</th>
<th>DV</th>
<th>Sample</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park et al. (2005)</td>
<td>Between-subjects</td>
<td>Product movement (motion vs. still) and image (small vs. large)</td>
<td>Mood, perceived risk and purchase intentions. <strong>Scale: Likert</strong></td>
<td>244 females</td>
<td>MANCOVA, ANOVA, regression.</td>
</tr>
<tr>
<td>Kim &amp; Lennon (2008)</td>
<td>Within-subjects</td>
<td>Visual (large vs. small) and verbal (high vs. low) product information</td>
<td>Attitude measures, purchase intentions. <strong>Scale: Likert</strong></td>
<td>160 females</td>
<td>MAOVA, ANOVA</td>
</tr>
<tr>
<td>Blanco et al. (2010)</td>
<td>Between-subjects</td>
<td>Product image (presence vs. absence) and text (paragraph vs. schema)</td>
<td>Recall and quality of product information <strong>Scale: Likert</strong></td>
<td>108 male and females</td>
<td>MANOVA</td>
</tr>
<tr>
<td>Yoo &amp; Kim (2012)</td>
<td>Between-subjects</td>
<td>Product presentation (coordinated vs. uncoordinated) and model’s face (presence vs absence)</td>
<td>Affective, perceived amount of information and purchase intentions <strong>Scale: Likert</strong></td>
<td>243 females</td>
<td>MANOVA, ANOVA, regression.</td>
</tr>
<tr>
<td>Wang &amp; Chang (2013)</td>
<td>Between-subjects</td>
<td>Tie strength (strong vs. weak) and product related risk (high vs. low)</td>
<td>Diagnosticity and purchase intentions. <strong>Scale: Likert</strong></td>
<td>420 male and females</td>
<td>ANOVA</td>
</tr>
<tr>
<td>Shin &amp; Baytar (2014)</td>
<td>Between-subjects</td>
<td>Model’s bodies (ideal vs. virtual) and body satisfaction (high vs. low)</td>
<td>Concerns with fit online and VTO intention. <strong>Scale: Likert</strong></td>
<td>249 females</td>
<td>ANOVA, SEM.</td>
</tr>
<tr>
<td>Kim (2019)</td>
<td>Between-subjects</td>
<td>Visual (large vs. small) and verbal (concrete vs. abstract)</td>
<td>Imagery and discursive processing and intent. <strong>Scale: Likert</strong></td>
<td>169 females</td>
<td>MANOVA, ANOVA. Regression.</td>
</tr>
<tr>
<td>Fan et al. (2020)</td>
<td>Between-subjects</td>
<td>Environmental embedding x Stimulated physical control x product type</td>
<td>Cognitive fluency, attitude, purchase intention <strong>Scale: Likert</strong></td>
<td>493 male and females</td>
<td>ANOVA.</td>
</tr>
<tr>
<td>Diwanji &amp; Cortese (2020)</td>
<td>Between-subjects</td>
<td>Source of brand related video (user-generated video vs. brand generated video)</td>
<td>Perceived usefulness, attitude, purchase intention <strong>Scale: Likert</strong></td>
<td>177 male and females</td>
<td>T-test, ANCOVA</td>
</tr>
</tbody>
</table>

The majority of the studies outlined in Table 6.7 have tested the influence of different product presentations on behavioural intentions (Park et al., 2005; Kim and Lennon, 2008; 2010; Wang and Chang, 2013; Kim, 2019; Fan et al., 2020). However, there is a lack of research that has investigated the influence of different types of online fashion fit information on a consumer’s cognitive and behavioural responses, emphasising a gap within the existing literature. Therefore, to achieve Research Objective 5: To test the theorised model and provide future recommendations on how product information pages can enhance the design of fit provision online, this research carried out a factorial design (illustrated in Table 6.8).
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### 6.6.3.1. Experimental Procedure

The shopping experiment (phase 3) was conducted online using Qualtrics, an online consumer panel, which ensured the random assignment of respondents to one of the four treatments. Qualtrics was deemed an appropriate platform to design and disseminate the experiment, as not only have prior experimental studies validated the effectiveness of the platform (Furner, Zinko and Zhu, 2016; Beck and Crie, 2018; Smink et al., 2019; Wu, 2019; Liang et al., 2020; Friedrich et al., 2020; Tang and Zhang, 2020), but it also enabled the obtainment of real-life consumer responses.

Adhering to prior experimental procedures, the research adopted a scenario-based technique to capture authentic responses from subjects and to emulate a real-life shopping experience by providing females with a familiar task context (Park et al., 2005; Yoo and Kim, 2014; Furner et al., 2016; Xu et al., 2015; Flavian et al., 2016; Flavian et al., 2017; St-Onge et al., 2017; Craciun and Moore, 2018; Narwal and Nayak, 2020; Guo et al., 2020; Diwanji and Cortese, 2020; Zhu et al., 2020). Thus, once the subject had consented to take part in the experiment, they were presented with the following scenario:

*You will be presented with a link to a fashion website called MYSTYLE. Please click on this web link and browse all three styles of dresses by clicking on each product, as you usually would, with the intention to purchase a dress for an evening occasion. Please ensure that you read all the product information thoroughly, as well as viewing all pictures available on each of the product information pages.*

Once the subjects had read the above scenario, they were randomly assigned to one of the four treatment conditions. After each subject had browsed their assigned website condition, they were asked to complete a post-experimental survey (conclusive) which measured

<table>
<thead>
<tr>
<th>Visual fit information</th>
<th>Verbal fit information: Reviews (absent)</th>
<th>Verbal fit information: Reviews (present)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourglass body shape</td>
<td>Control condition: visual information (hourglass body shape) x user-generated fit review (absent)</td>
<td>Experimental condition: visual information (hourglass body shape) x user-generated fit review (present)</td>
</tr>
<tr>
<td>Diverse body shapes</td>
<td>Experimental condition: visual information (diverse body shapes) x user-generated fit review (absent)</td>
<td>Experimental condition: visual information (diverse body shapes) x user-generated fit review (present)</td>
</tr>
</tbody>
</table>

Table 6.8. Between-Subjects Factorial Design Adopted in The Study
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several constructs such as perceived product fit diagnosticity, concerns with clothing fit online and purchase intentions. A post-experiment survey was suitable as not only did it sensitively measure the effects of the researcher’s manipulations (Field and Hole, 2003), but it permitted the analysis of variance between subjects’ behavioural responses when exposed to different fit stimuli.

6.6.3.2. Experimental Design: Development of Mock Websites

Four mock websites were designed for the between-subjects web-experiment, which permitted the researcher to manipulate the level of verbal and visual information to assess their varied influences on consumers’ cognitive evaluations and behavioural responses (Tang and Zhang, 2020). The websites were developed on Wix, an online commercial website builder, which was appropriate as not only did it permit the researcher to control the treatment levels of the experimental variables fully, but also it is a suitable platform to design a mock website that emulated a realistic apparel website (Tang and Zhang, 2020).

Prior studies that have undertaken an online shopping experiment have often used static webpages rather than an interactive website (Plotkina and Saurel, 2019; Hong and Pittman, 2020), which imposes validity concerns. Therefore, mock websites that emulated real e-commerce web-designs were created to improve the realism of the experiment (Farace et al., 2020). Besides the manipulation of the visual (hourglass vs. diverse body shapes) and verbal (presence vs. absence of user-generated fit reviews) information, all other variables on the websites were held constant.

To increase the external validity of the study, the layout of each product page emulated existing leading fashion e-commerce designs, and the selection of information features was based on the design of prior web-experiments (Biswas and Biswas, 2004; Castagnos and Pu, 2010; Blanco et al., 2010; Wang et al., 2014; Kim, 2019; Guo et al., 2020; Friedrich et al., 2020; Tang and Zhang, 2020). This information included product descriptions, fibre construction, price, item care, sizing, handle and price (Kim and Lennon, 2010; Shin et al., 2018; Tang and Zhang, 2020) and remained constant in each condition. To ensure internal validity, the researcher performed an information inventory checklist to confirm the same information appeared on each web page, in line with Blanco et al., (2010), with the only manipulation being the design of the verbal and visual fit information. Each of the four
websites offered the three identical styles of dresses identified in phase 1 (online dress survey) to ensure respondents’ product preferences did not impede on their browsing experience. Although online retailers would offer a larger product assortment, only three dresses featured on the mock websites to avoid information overload and product agnosia, in line with Maier (2019). Moreover, to avoid the influence of brand choice and perceptions, a fictitious brand name, ‘MYSTYLE’, was used adhering to previous research recommendations (Ahmed et al., 2002; Wang et al., 2014; Shin and Baytar, 2014; Flavian et al., 2016; Flavian et al., 2017; Rodrigues et al., 2017; Collander and Marder, 2018; Kim, 2019; Guo et al., 2020; Diwanji and Cortese, 2020; Friedrich et al., 2020; Kim et al., 2020).

6.7. Justification of Data Collection Methods (Phase 1 and 3)

The proceeding section will justify the choice of quantitative data collection methods employed in phase 1 (online dress survey) and 3 (online shopping experiment) of the research.

6.7.1. Surveys (Phase 1 and 3)

Survey research is concerned with collecting information from a sizeable sample by disseminating structured questionnaires, which relate to the research topic under investigation (Malhotra et al., 2017). Two online surveys were distributed in the present study, an online dress survey (phase 1) and a post-experiment survey (phase 3).

6.7.2. Online Dress Survey (Phase 1)

A quantitative online survey was distributed via social media platforms (Facebook, LinkedIn and Twitter) to disclose the most popular styles of dresses that UK females, aged 18-34, usually purchase online (Research Objective 2). Dresses were chosen for fit evaluation as this type of garment follows the shape of the body (Hernández et al., 2019) and prior studies have explored alternative clothing items such as shapewear (Zhang et al., 2019), trousers (Kim and LaBat, 2013) and shirts (Hernández et al., 2019). Despite the UK womenswear market seeing an increase in dress purchases (Mintel, 2020), Bug and Helwig (2020) found that dresses are the most challenging apparel item to appraise online (Bug and Helwig, 2020). Thus, nine different styles of black dresses were obtained from ASOS’s website (Appendix I). Adhering to Lee and Lee (2020) only black dresses were selected to minimise the effect of clothing attractiveness, personal preference and recent fashion trends. The chosen dresses needed to be representative of the styling preferences of UK females, aged
18-34, to minimise variance due to consumer preferences (Kim and Lennon, 2010). The selection of dress styles was further informed by Fiore and Kimle (1997, p.144) who characterised five key dress styles; A-line, Bell, Tubular, Wedge and Hourglass. The use of an online survey was deemed appropriate as it allowed the researcher to obtain a quick snapshot of relevant styling preferences about the target sample (Lazar et al., 2017), which in turn, provided appropriate stimuli for phases 2 (garment try-ons) and 3 (online shopping experiment) of the research. Online surveys are extremely beneficial as they ensure the anonymity of the respondent and can reduce response bias (Wang et al., 2019). Furthermore, prior studies have predominantly used online surveys for stimuli sampling (see: Kim and Lennon, 2008; 2010; Song and Kim, 2012; Kim, 2019; Baytar et al. 2020), corroborating the use of survey implementation within this research phase.

6.7.3. Post-Experimental Survey (Phase 3)
A post-experimental survey was administered to all subjects in phase 3 (online shopping experiment) to measure the variances between subjects’ cognitive and behavioural responses (dependent variable) when exposed to different types of online fit stimuli (independent variable) (Research Objective 5). The selection of a post-experiment survey was line with previous methodologies that have also undertaken a between-subjects web-experiment to test the proposed research hypotheses and framework (Kim and Lennon, 2008; Shin and Baytar, 2014; Beck and Crie, 2018; Craciun and Moore, 2019; Smink et al., 2019; Guo et al., 2020; Baytar et al., 2020). The following section rationalises the development and application of the surveys in the present study.

6.7.4. Inclusion Criteria for Phase 1 and 3
The surveys in phase 1 and 3 needed to contain certain inclusion criteria to identify which respondents can and cannot take part in the study (Lazar et al., 2017). Table 6.9 and Table 6.10 outlines the inclusion criteria for phase 1 (online dress survey) and 3 (online shopping experiment).
### Table 6.9. Inclusion Criteria for Phase 1 (Dress Survey).

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Adapted from</th>
<th>Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Information</td>
<td>1. Do you shop for clothes online?</td>
<td>Goldsmith &amp; Goldsmith (2002)</td>
<td>Accept: Yes&lt;br&gt;Reject: No</td>
</tr>
<tr>
<td></td>
<td>4. Do you live in the UK?</td>
<td>NA</td>
<td>Accept: Yes&lt;br&gt;Reject: No</td>
</tr>
<tr>
<td></td>
<td>4. What is your ethnicity?</td>
<td>NA</td>
<td>Accept: White/ Black or African American/ American Indian or Alaska Native/ Asian/ Native Hawaiian or pacific Islander/ Other</td>
</tr>
</tbody>
</table>

### Table 6.10. Inclusion Criteria for Phase 3 (Online Shopping Experiment).

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Adapted from</th>
<th>Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3. Do you live in the UK?</td>
<td>NA</td>
<td>Accept: Yes&lt;br&gt;Reject: No</td>
</tr>
<tr>
<td></td>
<td>4. What is your ethnicity?</td>
<td>NA</td>
<td>Accept: White/ Black or African American/ American Indian or Alaska Native/ Asian/ Native Hawaiian or pacific Islander/ Other</td>
</tr>
<tr>
<td></td>
<td>5. Do you shop for fast fashion clothing online?</td>
<td>Goldsmith &amp; Goldsmith (2002)</td>
<td>Accept: Yes&lt;br&gt;Reject: No</td>
</tr>
<tr>
<td></td>
<td>5. How frequently do you browse for clothes online?</td>
<td>Rose et al., (2012)</td>
<td>Accept: Every day/ Several times a week/ Once a week/ Once a month/ Every couple of months/ Couple of times a year&lt;br&gt;Reject: Never.</td>
</tr>
<tr>
<td></td>
<td>8. When shopping for clothing online, what garment size do you usually buy? UK 6-10/12-16/18+</td>
<td>Otieno et al., (2007).</td>
<td>Accept: 6-10/12-16&lt;br&gt;Reject: 18+</td>
</tr>
</tbody>
</table>

Both surveys contained specific demographic questions relating to age, gender and nationality to confirm that the desired sample was achieved (Lazar et al., 2017). Additionally, adhering to prior research, respondents were asked about their previous online
shopping experiences to ensure the respondents were familiar with shopping online context (Song and Kim, 2012; Lin et al., 2018; Smink et al., 2019; Guo et al., 2020). In phase 3, Qualtrics recruited the subjects and employed a filtering system, which screened the subjects to ensure that they met the inclusion criteria before taking part in the shopping task. Incomplete data or non-responses were not used in the data analysis to ensure that only useable data was collected. The proceeding section will discuss the questions and constructs of both surveys.

### 6.7.5. Development of Survey

Before the researcher could distribute the surveys, questions needed to be carefully developed to successfully measure the outcome variable (Field and Hole, 2003). Both phase 1 and 3 adopted measures that have been tested and validated in prior online retailing literature. In phase 1 (online dress survey), the constructs: likeability, attractiveness and similarity of the dresses were adopted from Cox and Cox (2002); Kim and Lennon (2008); Kim (2019) and Baytar et al., (2020), as illustrated in Table 6.11.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Adapted From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likeability</td>
<td>On a scale of 1-5, please rate each style of dress in regards to likeability:</td>
<td>Cox &amp; Cox (2002); Kim &amp; Lennon (2008); Kim (2019)</td>
</tr>
<tr>
<td></td>
<td><em>Not likeable- Likeable</em></td>
<td></td>
</tr>
<tr>
<td>Attractiveness</td>
<td>On a scale of 1-5, please rate each style of dress in regards to how flattering you perceive the dress to be:</td>
<td>Cox &amp; Cox (2002); Kim &amp; Lennon (2008); Kim (2019)</td>
</tr>
<tr>
<td></td>
<td><em>Not Flattening- Flattering</em></td>
<td></td>
</tr>
<tr>
<td>Similarity</td>
<td>On a scale of 1-5, please rate each style of dress in regards to how similar it is to what you would usually wear:</td>
<td>Kim &amp; Lennon (2008)</td>
</tr>
<tr>
<td></td>
<td><em>Not Similar to what I wear- Similar to what I would usually wear.</em></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.11. Phase 1: Online Dress Survey

In phase 3 (online shopping experiment), perceived fit diagnosticity (adapted from Kempf and Smith, 1998; Jiang and Benbasat, 2004; 2007; Pavlou and Fygenson, 2006; Wang and Chang, 2013; Filieri, 2015; Lin et al., 2018; Huang et al., 2018 and Smink et al., 2019), concerns clothing with fit online (adapted from Kim and Damhorst, 2010; 2013; Shin and Baytar, 2014) and purchase intentions (adopted from Kim and Lennon, 2008; 2010 and Wu et al., 2014) were refined and adapted according to the specific research objectives of this study (Racherla et al., 2012; Gao and Li, 2019). All measures that were taken from prior literature had reliability scores exceeding the recommended threshold (Cronbach’s $\alpha$ exceeding .93), as outlined in Table 6.12.
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**Construct**

**Item**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Adapted From</th>
<th>Reported Reliability/ Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10. Helped me to understand whether I would like/dislike the fit of each dress on me</td>
<td>Jiang &amp; Benbasat (2004); Huang, Li, Wu &amp; Lin (2018)</td>
<td>Huang, Li, Wu &amp; Lin (2018): Alpha: exceeded .7 Loading: exceeded .70</td>
</tr>
<tr>
<td>Concerns About Fit Online (7)</td>
<td>15. I am concerned that the dresses I have seen may not fit well</td>
<td>Kim (2008); Kim &amp; Damhorst (2013); Shin &amp; Baytar (2014)</td>
<td>Kim &amp; Damhorst (2013): Alpha: .90, Loading: .73</td>
</tr>
<tr>
<td></td>
<td>17. I am concerned the fit of the dresses may be different if I were to try them on at home</td>
<td>Kim (2008); Kim &amp; Damhorst (2013); Shin &amp; Baytar (2014)</td>
<td>Kim &amp; Damhorst (2013): Alpha: .88, Loading: .75</td>
</tr>
</tbody>
</table>

From the product images and descriptions provided on each of the three product information pages...
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18. I am concerned the fit of the dress may be different from what I have seen on the website
   Strongly disagree (1)/ Strongly agree (7)  
Kim (2008); Kim & Damhorst (2013); Shin & Baytar (2014)  
Kim & Damhorst (2013): Alpha: .79, Loading .67

19. I am concerned that the dresses may not fit all body types
   Strongly disagree (1)/ Strongly agree (7)  
Kim (2008); Kim & Damhorst (2013); Shin & Baytar (2014)  
Kim & Damhorst (2013): Alpha: .79, Loading .69

20. I am concerned that my guess about the fit of the dresses may not be correct when shopping on the website
   Strongly disagree (1)/ Strongly agree (7)  
Kim (2008); Kim & Damhorst (2013); Shin & Baytar (2014)  
Kim & Damhorst (2013): Alpha: .79, Loading .60

21. I am concerned that the dresses will fit me differently to how they fit on the model
   Strongly disagree (1)/ Strongly agree (7)  
Kim (2008); Kim & Damhorst (2013); Shin & Baytar (2014)  
Kim & Damhorst (2013): Alpha: .79, Loading .66

Based on the product images and descriptions you have seen on the website today…

<table>
<thead>
<tr>
<th>Purchase Intentions (4)</th>
<th>22. How likely is it that you would seek out dresses from a website, similar to the one that you have viewed today, in order to purchase them? Not likely (1)/ extremely likely (7)</th>
<th>Kim &amp; Lennon (2010)</th>
<th>Kim &amp; Lennon (2010): Alpha: .94, Loading: .79</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24. How likely is it that you would purchase a dress from a website, similar to what you have viewed today, for yourself? Not likely (1)/ extremely likely (7)</td>
<td>Kim &amp; Lennon (2010)</td>
<td>Kim &amp; Lennon (2010): Alpha: .94, Loading: .92</td>
</tr>
<tr>
<td></td>
<td>25. How likely is it that you would consider purchasing from a website similar to what you have viewed today, in the near future? Not likely (1)/ extremely likely (7)</td>
<td>Wu et al., (2014)</td>
<td>Wu et al., (2014): Alpha: .95, Loading: NA</td>
</tr>
</tbody>
</table>

Table 6.12. Post Experimental Survey (Phase 3)
6.7.5.1. Primary Measurement Scales

Experimental research is concerned with how variables alter and what causes them to change (Field and Hole, 2003). Thus, to make significant conclusions about the relationship between variables, researchers have to measure them (Field and Hole, 2003). Variables are either categorical and thus, cannot be measured numerically (Saunders et al., 2019) or continuous in that each question requires different levels of measurement (Field 2009). A categorical variable comprises of binary categories such as female or male (Field, 2009). Alternatively, a continuous variable provides a score for each respondent (Field, 2009). Whereas a categorical variable can be measured using nominal or ordinal scales, continuous variables are measured using interval and ratio response scales. Table 6.13 outlines these four primary scales of measurement.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Key Characteristic</th>
<th>Descriptive</th>
<th>Inferential</th>
<th>Advantages &amp; Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>Numbers are used to identify objects</td>
<td>Percentages, mode</td>
<td>Chi square, binominal test</td>
<td>Only used to consider frequencies</td>
</tr>
<tr>
<td>Ordinal</td>
<td>Numbers are used to indicate the ordering/positioning of objects</td>
<td>Percentile and medium</td>
<td>Correlation, Friedman ANOVA.</td>
<td>The magnitude of differences between objects is unknown.</td>
</tr>
<tr>
<td>Interval</td>
<td>Differences between objects are comparable</td>
<td>Range, mean, standard deviation</td>
<td>ANOVA, Regression, factor analysis.</td>
<td>Point zero is arbitrary; however, it is a useful scale to measure consumers’ attitudes.</td>
</tr>
<tr>
<td>Ratio</td>
<td>Possess all the characteristics of nominal, ordinal and interval but zero point is fixed</td>
<td>Geometric or harmonic mean</td>
<td>Confidence of variance.</td>
<td>Considered the highest scale. All statistical tests can be applied to ratio data.</td>
</tr>
</tbody>
</table>

Table 6.13. Primary Scales of Measurement
Source: Malhotra et al., (2017, p. 338)

6.7.5.2. Scaling Methods: Likert-Scales and Semantic Scales

Several scaling methods are used within research, including rank-ordering scaling, constant sum scaling, continuous rating and q-sort (Malhotra et al., 2017). However, as this study only utilises Likert-scales and semantic differential scales, this section will only investigate these two scales in detail. A Likert-scale, initially created by Rensis Likert, is a type of close-ended question, whereby subjects can rate on a scale of 1-5 or 1-7 their agreement or disagreement towards a particular question (Lazar et al., 2017; Gravetter and Forzano, 2018). Likert-scales are a beneficial scaling method to use, as they are easy to construct (Malhotra et al., 2017) and can be analysed using standard statistical tests (Gravetter and Forzano, 2018).
Moreover, Likert-scales have been heavily applied in prior online retailing literature (see: Kim and Lennon, 2010; Gao and Li, 2019; Narwal and Nayak, 2020).

Alternatively, with semantic differential scales, respondents are asked to rate stimuli on a series of bipolar rating scales, e.g., ‘value for money’ vs. ‘overpriced’ (Saunders et al., 2019, p.559). Semantic differential scales are used in consumer behaviour research to (1) identify underlying opinions (Saunders et al., 2019) and (2) identify appropriate stimuli for experiments (see: Cox and Cox, 2002; Kim and Lennon, 2008; Kim, 2019). Responses to both Likert-scales and semantic differential scales can be either binary (i.e., Yes/No) (Field, 2009) or numerical (1=strongly disagree/ 7= strongly agree) (Gravetter and Forzano, 2018).

### 6.7.5.3. Adopted Measurement Scales (Phase 1 and 3)

Semantic differential scales were adopted in phase 1 (online dress survey) to measure subjects’ opinions towards different dress styles. Each dress style was measured by averaging 3, 5-point unipolar semantic scales developed by Cox and Cox (2002) (Cronbach’s $\alpha= .93$) and further adopted by Kim and Lennon (2008; 2012) (Cronbach’s $\alpha= .90$) and Kim (2019). The semantic differential scales were anchored by, likeable-not likeable/ flattering-not flattering/ similar to what I wear- not similar to what I wear. This strategy was appropriate, as the semantic scales have been corroborated by prior experimental research, which has also required the appropriate selection of garment styles (Kim and Lennon, 2008; 2010; Kim, 2019; Baytar et al., 2020).

Alternatively, as phase 3 (online shopping experiment) employed a factorial web-experiment, the questionnaire was comprised of Likert-scales to measure respondents’ cognitive and behavioural responses towards the different treatment conditions. Accordingly, aside from the demographic questions, all other constructs were measured on a 7-point Likert-scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). A criticism of Likert-scales is that they are vague to interpret (Malhotra et al., 2017). Hence, to overcome this limitation, the research selected a 7-point Likert-scale, as 5-point Likert-scales are not sensitive enough to capture subjects’ true evaluations fully (Finstad, 2010).
6.7.5.4. Fatigue and Order Effects

A potential risk that can occur within experimental research is survey fatigue, as subjects are required to undertake a task and then complete a post-experiment survey (Lazar et al., 2017). Hence, the duration of the experiment may become tedious for the subject. Fatigue is problematic as it may inhibit the accuracy of responses (Gravetter and Forzano, 2018). Thus, in an attempt to overcome this issue, the constructs measured in phase 3 (online shopping experiment) adopted both positively and negatively worded items, ensuring the engagement of the respondents throughout the survey.

6.8. Phase 2: Garment Try-On

To achieve Research Objective 3: To develop website stimuli (visual and verbal fit information) for phase 3 (online shopping experiment), phase 2 of the research employed a mixed-method approach. Indeed, 30 UK females aged 18-34 were body scanned using a Size-Stream body scanner and objectively categorised into a body shape using the FFIT method outlined by Lee et al., (2007). Upon completion of the body scans, participants tried on each style of dress identified in phase 1 (online dress survey). Photographs were taken of each female participant wearing each of the dresses (visual fit stimuli). To ensure consistency between the pictures, the researcher photographed each participant under identical lighting conditions, against a white backdrop and striking the same pose in line with (Aagerup and Scharf, 2018). This procedure was vital to eliminate all potential influencing factors of the photographs beside the participant’s body shape.

To gain a deeper understanding of individuals learned fit preferences, participants verbalised their fit experiences with each of the three dresses, whilst wearing each style, through semi-structured interviews. This stage of the research not only allowed participants to disclose their first-hand experiences with the fit of the dress (Benbunan-Fich, 2001), but it also facilitated the development of the verbal stimuli (user-generated fit reviews) for the online shopping experiment (phase 3). Figure 6.2 illustrates a summary of the research procedure undertaken in phase 2.
6.8.1. Research Approach: Phase 2 (Garment Try-On)

As previously highlighted in Chapter 3 of the thesis, garment fit comprises of objective criteria, as well as consumers’ subjective perceptions of fit (Ashdown and Loker, 2010; Wang, 2014; Reid et al., 2020). The understanding of fit deviates for researchers who study fit, industry who finalise fit and consumers who subjectively experience fit (Gupta, 2020). Yet, existing research fails to explore these perspectives collectively. Indeed, Seo and Namwamba (2018) argue that, whilst objective body shape categorisation methods are vital for identifying standardised body shapes based on human data, an understanding of consumers self-perceived body shape is also paramount for understanding how the consumer psychologically desires to look when wearing a garment.

Accordingly, it was imperative that phase 2 (garment try-ons) adopted a mixed-method approach to fully explore both subjective (qualitative) and objective (quantitative) fit parameters. To this end, the complimentary use of quantitative and qualitative research methods permitted the researcher to fully explore garment fit (Saunders et al., 2019) and develop the independent variables for phase 3.

6.8.2. Justification of Methods for Phase 2 (Garment Try-On)

The proceeding section will justify the methods utilised within phase 2.
6.8.2.1. Body Scanning

To achieve Research Objective 3a: To develop visual fit stimuli for the online shopping experiment, 30 UK females were body scanned using a Size Stream body scanner. Body scanning is a process that can accurately produce objective bodily measurements and generate a complete 3D image of the figure (Grogan et al., 2019). Body scanning is exceptionally beneficial as it can extract over 100 bodily measurements in a matter of seconds (Yin and Annett-Hitchcock, 2019; Gupta, 2020). Table 6.14 identifies the advantages and disadvantages of 3D body scanning.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can extract over 100 bodily measurements in seconds (Gupta, 2020).</td>
<td>Only measures a fixed posture (Gill, 2015).</td>
</tr>
<tr>
<td>Produces reliable and reproducible data (Apeagyei, 2010; Reid et al., 2020).</td>
<td>Subjective fit evaluations are not considered (Gill, 2015; Reid et al. 2020).</td>
</tr>
<tr>
<td>No physical contact is required (Power et al., 2011).</td>
<td>Women may feel vulnerable when seeing their body scan, leading to increased body dissatisfaction (Grogan et al., 2016).</td>
</tr>
<tr>
<td>Overcomes the limitations associated with taking manual measurements, such as, time and human error (Yin &amp; Annett-Hitchcock, 2019).</td>
<td>Not all scans may be usable, due to excess noise or postural issues (Gill, 2015).</td>
</tr>
<tr>
<td>Allows for the attainment of bodily measurements that are often difficult to capture manually (Gill, 2018).</td>
<td>There are issues with landmarking in particular at the waist (Gill, 2018).</td>
</tr>
</tbody>
</table>

Table 6.14. Advantages and Disadvantages of 3D Body Scanning

In phase 2 of the research (garment try-on), body scanning was used to overcome the subjective limitations of manual measurement methods and to ensure that bodily measurements of the participants were reliable and reproducible (Apeagyei, 2010; Reid et al., 2020). Despite the advantages of 3D body scanning, determining the total accuracy of scan data and landmarking is problematic. Indeed, occlusions may occur in a 3D body image whereby areas of the body surface are obstructed (Apeagyei, 2010; Gill, 2015), leading to unreliable measurements. Consequently, adhering to Grogan et al., (2019) all body scans were visually assessed for accuracy before extracting the measurements.

6.8.2.2. Body Shape Categorisation: FFIT

The exploration of body shape as a factor in the online product experience is limited (Yu and Damhorst, 2015; Mulgrew et al., 2020) and so, the development of objective body shape stimuli was paramount. Consequently, once the 30 UK females had been body scanned, they were objectively categorised into a body shape using the FFIT (Female Figure Identification...
Technique) mathematical formula outlined by Lee et al., (2007). This body shape categorisation method is advantageous in its ability to quantitatively discern females body shapes using proportional measurements of the key body circumferences (bust, waist, hip and high hip), rather than relying on visual body shape analysis which is limited to subjectivity (Grogan et al., 2013). Additionally, this method is validated within the body shape and garment fit literature (Simmons et al., 2004; Lee et al. 2007; Grogan et al., 2013; Brownbridge et al., 2016; Zhang et al., 2017; Ridgway et al., 2017; Seo and Namwamba, 2018; Yin and Annett-Hitchcock, 2019), deducing that it is the most accessible approach for body shape classification (Gill, 2018). However, despite being a practical approach, it has only been used in small-scale research in the UK market (Grogan et al., 2013). Therefore, a further application is required. It was paramount that an objective body shape categorisation method was adopted in phase 2 to ensure that the replication of the process in future studies.

6.8.3. Qualitative Interviews
Interviews are a form of qualitative data collection method, whereby the researcher asks the interviewee a set of questions relating to the research topic under investigation (Christensen et al., 2015). There are two main types of interviews, namely (1) structured interviews and (2) semi-structured interviews. Whereas structured interviews adopt a quantitative approach by asking identical questions to different participants, semi-structured interviews start with a set of pre-determined themes to guide interview discussions (Saunders et al., 2019).

6.8.3.1. Adoption of Semi-Structure Interviews
To develop verbal stimuli for phase 3 (online shopping experiment), semi-structured interviews were undertaken to understand the subjective garment fit evaluations of 30 UK females, aged 18-34 (Research Objective 3b). Semi-structured interviews enabled the researcher to gain insight into how participants, with different body shapes, experienced dress fit. Participants were asked a series of demographic questions before they participated in the semi-structured interview, to ensure that they fulfilled the inclusion criteria (UK females, aged 18-34). Adhering to prior methodologies, whilst wearing the dresses, females were asked some predetermined questions relating to garment fit to capture participants’ first-hand clothing fit appraisals (Grogan et al., 2013; Rodrigues et al., 2017). Additionally, this method also adheres to practices exhibited by the fashion industry, whereby fit is...
assessed using a fit model and professional fit experts in an attempt to combine both subjective and objective evaluations of garment fit (Gupta, 2020).

To explore all fit themes, questions and further probes, which were developed from the existing literature on garment fit evaluation (Eckman et al., 1990; Grogan et al., 2013; McKinney and Shin, 2016; Shin and Damhorst, 2018), were asked. Table 6.15 demonstrates the interview guide based on Rubin and Rubin (2012) and Boardman and McCormick (2018). A final question was added to ensure that the participants did not have any additional comments (Lipson, Stewart and Griffiths, 2020).

<table>
<thead>
<tr>
<th>Construct Explored</th>
<th>Probing questions</th>
<th>Follow-up Questions</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How would you review the fit of the dress? Construct: Overall fit</td>
<td>1a. Does it feel tight or loose anywhere? 1b. How do specific features of the garment feel?</td>
<td>That’s interesting, please can you tell me a bit more about that?</td>
<td>Eckman et al., (1990); McKinney &amp; Shin (2016).</td>
</tr>
<tr>
<td>2. What problems if any do you experience with the fit of the dress? Construct: Physical fit</td>
<td>2a. In relation to the key areas of your body (bust, hips, waist) how do you find the fit?</td>
<td>That’s interesting, please can you tell me a bit more about that?</td>
<td>Grogan et al., (2013); McKinney &amp; Shin, 2016.</td>
</tr>
<tr>
<td>3. What body shape do you perceive to have? Construct: Aesthetic fit</td>
<td>3a. Do you think that dress flatters your body shape? 3b. Does the dress show off areas that you like/ dislike about yourself?</td>
<td>That is interesting, please can you tell me a bit more about that?</td>
<td>Eckman et al., (1990); Grogan et al., (2013);</td>
</tr>
<tr>
<td>4. What size did you go for in that dress? Construct: Social fit</td>
<td>4a. Would you stick to that size dress? 4b. If you bought that dress would you keep that size or return it?</td>
<td>That is interesting, can you tell me a bit more about that?</td>
<td>N.A.</td>
</tr>
<tr>
<td>5. How do you find the length of that dress? Construct: Functional Fit</td>
<td>5a. Do you feel comfortable in that dress? 5b. Do you feel like you can move in the dress?</td>
<td>That is interesting, can you tell me a bit more about that?</td>
<td>Eckman et al., (1990); McKinney &amp; Shin, 2016.</td>
</tr>
</tbody>
</table>

Table 6.15. Interview Guide Featuring Probing Questions

Source: based on Rubin and Rubin (2012) and Boardman and McCormick (2018)

In line with Boardman and McCormick (2019), all interviews followed the same structure and questions so that comparisons within the data could be made. The use of a semi-structured interview guide allowed for further probing questions to be explored. Probing questions facilitated the further elaboration of a particular question to ensure the detail of the answer was sufficient for full insight into the participant’s mind-set (Taylor, Bogdan and DeVault, 2015). Thus, the adoption of a semi-structured interview was favourable as it allowed the researcher to compare participant responses (Saunders et al., 2019) and develop comprehensive user-generated fit reviews that were to be tested in phase 3.
6.9. Sampling Techniques

Devising a sampling strategy is a paramount for any research project (Bryman, 2016). A sample that is meticulously chosen can draw conclusions and has the ability to make inferences about the wider population (Saunders et al., 2019). In other words, a sample should be a microcosm of the population, yet should reflect all aspects and characteristics of the wider population precisely (Bryman, 2016). Sampling techniques can be grouped into two categories, (1) non-probability sampling and (2) probability sampling, as displayed in Figure 6.3.

![Figure 6.3. Sampling Techniques](source)

**Source:** Saunders et al., (2019, p. 297)

### 6.9.1. Probability and Non-Probability Sampling

Probability sampling is a strategy whereby every subject has an equal chance of being selected at random and so, is often referred to a random sampling (Christensen et al., 2015). Probability sampling is ideal if the researcher aims to generalise the statistical inferences of the study to a wider population (Christensen et al., 2015). Alternatively, non-probability sampling is concerned with selecting participants who possess particular characteristics or express certain behaviours, which are appropriate for the research question (Gray, 2013). Hence, non-probability sampling, also referred to as non-random sampling, is often associated with qualitative research as the selection of participants is based on subjective judgements (Saunders et al., 2019). Table 6.16 outlines a summary of the advantages and limitations of the different types of sampling strategies.
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### Non-Probability

<table>
<thead>
<tr>
<th>Technique</th>
<th>Characteristic</th>
<th>Advantages/ Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience Sampling</td>
<td>Suitable to use when the sample is easy to access. Sample is chosen from a population that is convenient and readily available.</td>
<td>-The chance of the sample being representative is low.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Selection bias.</td>
</tr>
<tr>
<td>Judgemental (purposive)</td>
<td>Purposive sampling identifies what needs to be known and sets out to find participants who will meet the research objectives.</td>
<td>-Answers research questions thoroughly.</td>
</tr>
<tr>
<td>Sampling</td>
<td></td>
<td>-Cannot make generalisations.</td>
</tr>
<tr>
<td>Quota</td>
<td>A type of stratified sampling in which the selection of cases is randomly selected based on certain criteria.</td>
<td>-Suffers from selection bias.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Quick response rate.</td>
</tr>
<tr>
<td>Snowball</td>
<td>Researcher makes initial contact with participants who are relevant to the topic and uses them to establish contact with others who are also relevant to the research.</td>
<td>-Time consuming.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Sample has a low chance of being representative of target population.</td>
</tr>
</tbody>
</table>

### Probability

<table>
<thead>
<tr>
<th>Technique</th>
<th>Characteristic</th>
<th>Advantages/ Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Random Sampling</td>
<td>Each subject has a complete equal chance of inclusion. Cases are chosen using randomised number allocations until sample size is achieved.</td>
<td>-Results can be generalised to the target population.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Time consuming and costly.</td>
</tr>
<tr>
<td>Systematic Sampling</td>
<td>Subjects are selected at regular intervals, e.g., every kth subject. N/n is the sampling ratio, whereby N (sampling frame) n (desired sample)</td>
<td>-Easier to implement than random sampling.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Requires large sample.</td>
</tr>
<tr>
<td>Stratified Sampling</td>
<td>Population is segregated into mutually exclusive groups and subjects are selected randomly from each stratum.</td>
<td>-Prone to sampling error.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Enhances precision without increasing cost.</td>
</tr>
<tr>
<td>Cluster Sampling</td>
<td>Population is divided into groups and samples of sub-populations are randomly chosen. Clusters usually comprise of geographical areas.</td>
<td>-Less accurate than stratified sampling.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-It is imperative that all clusters are homogenous.</td>
</tr>
</tbody>
</table>

Table 6.16. Summary of Sampling Techniques

Source: Christensen et al., (2015); Malhotra et al., (2017); Saunders et al., (2019)

6.9.2. Sampling Strategy Adopted in the Present Study

All phases of the present research adopted a non-probability, convenience sampling technique, which permitted subjects to be targeted on certain criteria such as, age (18-34), gender (female), nationality (UK) and prior online experience. However, adhering to Grogan et al., (2013) snowball sampling was also used for phase 2 (garment try-on) due to the limited access of the Size Stream body scanner (Hernández et al., 2019).

An all-female sample was used in all 3 phases of the research as females experience more difficulties when appraising garment fit online compared to males (Kim and Damhorst, 2013; Shin and Baytar, 2014). This claim is further supported by Mintel (2019c) who found that the UK womenswear market sees a more significant number of product returns compared to the menswear sector, suggesting a further investigation into this population is necessary. Additionally, females were chosen for this study as the product that was used in each of the research phases were gender-specific (dresses) (Rahman, 2018). Lastly, the FFIT body shape categorisation method used in phase 2 categorises females body shapes alone;
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thus, it was paramount that an all-female sample was used in all phases of the present study. Additionally, females aged 18-34 were specifically targeted to overcome validity problems associated with a purely student sample (Hong and Pittman, 2020). Indeed, numerous studies have predominantly used student samples (Xu et al., 2015; Luan et al., 2016; Hazari et al., 2017; Yim and Park, 2019; Guo et al., 2020) resulting in generalisability issues.

Despite probability sampling being more aligned to conclusive research (Saunders et al., 2019), Hong and Pittman (2020) acknowledged that in consumer research, experimental studies are less vulnerable to issues caused by a non-representative sample. In addition, prior online retailing studies have validated the use of convenience sampling for experimental research (see: Yoo and Kim, 2012; Song and Kim, 2012; Overmars and Poels, 2015; Johnson and Potocki, 2019; Sina and Wu, 2019; Fan et al., 2020; Diwanji and Cortese, 2020). Thus, convenience sampling was deemed appropriate to meet the aims and objectives of the present study.

6.9.2.1. Sample Size for Phase 1 (Online Dress Survey)

The online dress survey was distributed to a convenience sample of 343 UK females, aged 18-34, via social media platforms (i.e., Facebook, LinkedIn and Twitter). This strategy was appropriate as not only did it permit effective reach of the target sample, but it is also allowed individuals to show their desire or reluctance to take part in the study (Saunders et al., 2019).

For survey research, Field (2013) advocates that a sample size less than 100 is inadequate, yet a sample size above 1,000 is excellent. Alternatively, Saunders et al., (2019) highlight that statisticians recommend that a sample size of 30+ is advantageous as it is more likely to result in a normal distribution. Thus, within phase 1, a sample size of 343 was considered to be satisfactory as not only did it supersede the recommended sample size of Saunders et al., (2019), but it also adhered to the sample sizes used in prior literature that have also undertaken survey research to identify suitable research stimuli (exhibited in Table 6.17).
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6.9.2.2. Sample Size for Phase 2 (Garment Try-On)

The objective of phase 2 was to develop website stimuli (visual and verbal fit information) for phase 3 of the research. Hence, given the exploratory nature of the semi-structured interviews, a smaller sample size was required. Saunders et al., (2019) suggest that the number of participants who should partake within the interview is dependent upon data saturation, that is until no new themes or ideas emerge from the interviews. However, as this phase also involved body scanning participants, the sample size for phase 2 was further influenced by prior body scanning research. Therefore, 30 UK females, aged 18-34, were recruited to take part in phase 2 of the research. This sample size was deemed appropriate as not only is it larger than the average sample size used in prior body scanning research (see Table 6.18), but it is also in line with previous studies that have undertaken semi-structured interviews (Dennis et al., 2010; Kerviler et al., 2017; Rahman, 2018; Nash, 2019; Lipson et al., 2020).

<table>
<thead>
<tr>
<th>Author</th>
<th>Aim</th>
<th>Sample N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dai et al., (2014)</td>
<td>Investigated the impact of online shopping experience.</td>
<td>336</td>
</tr>
<tr>
<td>Peng et al., (2016)</td>
<td>Investigated factors affecting information adoption on fashion websites</td>
<td>351</td>
</tr>
<tr>
<td>Hazari et al., (2017)</td>
<td>Investigated the hedonic and utilitarian use of user-generated reviews.</td>
<td>234</td>
</tr>
<tr>
<td>Zhang et al., (2019)</td>
<td>Investigated the role of virtual try-on from a consumers’ perspective.</td>
<td>208</td>
</tr>
<tr>
<td>Liang et al., (2020)</td>
<td>To examine consumers’ attitudes towards artificial intelligence.</td>
<td>313</td>
</tr>
</tbody>
</table>

Table 6.17. Sample Sizes Used in Prior Survey Research

<table>
<thead>
<tr>
<th>Author</th>
<th>Aim</th>
<th>Sample N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dai et al., (2014)</td>
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</tr>
<tr>
<td>Zhang et al., (2019)</td>
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<td>208</td>
</tr>
<tr>
<td>Liang et al., (2020)</td>
<td>To examine consumers’ attitudes towards artificial intelligence.</td>
<td>313</td>
</tr>
</tbody>
</table>

Table 6.18. Sample Sizes Used in Prior 3D Body Scanning Research
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6.9.2.3. Sample Size for Phase 3 (Online Shopping Experiment)

As previously mentioned, a between-subjects factorial design requires a larger sample size compared to a within-group experimental design (Lazar et al., 2017), as different subjects are randomly assigned to different conditions (Field and Hole, 2003). Field and Hole (2003) recommend that with factorial research design, there should be at least 15 subjects in each condition. Lazar et al., (2017) further supports the aforementioned suggestion. Alternatively, Hair et al., (2010) advocate that the bare minimum sample size must be greater than the number of dependent variables. However, this sampling strategy is urged against as it places constraints on data collection. Hence, Hair et al., (2010) recommend that a more practical parameter is to ensure that there are at least 20 observations in each cell. Despite this discrepancy, the sample size for each cell should not be less than 15. Consequently, a sample size of 400 in phase 3 is satisfactory as not only does it advance the guidelines mentioned above, but it is also in line with the sample sizes obtained in previous online experimental research, illustrated in Table 6.19.

<table>
<thead>
<tr>
<th>Author</th>
<th>Data Collection Method</th>
<th>Sample N</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park et al., (2005)</td>
<td>2x2 between-subjects design</td>
<td>244</td>
<td>61</td>
</tr>
<tr>
<td>Park et al., (2008)</td>
<td>2x2x2 between-subjects design</td>
<td>352</td>
<td>44</td>
</tr>
<tr>
<td>Jiang &amp; Benbasat (2007)</td>
<td>4x2 between-subjects design</td>
<td>176</td>
<td>22</td>
</tr>
<tr>
<td>Kim &amp; Lennon (2010)</td>
<td>2x2x2 between-subjects design</td>
<td>230</td>
<td>28</td>
</tr>
<tr>
<td>Blanco et al., (2010)</td>
<td>2x2 between-subjects design</td>
<td>108</td>
<td>27</td>
</tr>
<tr>
<td>Benliam et al., (2012)</td>
<td>2x2 between-subjects design</td>
<td>396</td>
<td>103-96</td>
</tr>
<tr>
<td>Wang &amp; Chang (2013)</td>
<td>2x2 between-subjects design</td>
<td>420</td>
<td>105</td>
</tr>
<tr>
<td>Shin &amp; Baytar (2014)</td>
<td>2x2 between-subjects design</td>
<td>249</td>
<td>62</td>
</tr>
<tr>
<td>Kim (2019)</td>
<td>2x2 between-subjects design</td>
<td>169</td>
<td>42</td>
</tr>
<tr>
<td>Plotkina &amp; Saurel (2019)</td>
<td>2x3 between-subjects design</td>
<td>415</td>
<td>69</td>
</tr>
<tr>
<td>Sina &amp; Wu (2019)</td>
<td>2x3 between-subjects design</td>
<td>144</td>
<td>24</td>
</tr>
<tr>
<td>Grogan et al., (2019)</td>
<td>2x2 between-subjects design</td>
<td>70</td>
<td>35</td>
</tr>
<tr>
<td>Fan et al., (2020)</td>
<td>2x2x2 between-subjects design</td>
<td>493</td>
<td>61</td>
</tr>
<tr>
<td>Hong &amp; Pittman (2020)</td>
<td>2x2x2 mixed-subjects design</td>
<td>105</td>
<td>7</td>
</tr>
<tr>
<td>Narwal &amp; Nayak (2020)</td>
<td>2x2x2 between-subjects design</td>
<td>181</td>
<td>21-25</td>
</tr>
</tbody>
</table>

Table 6.19. Sample Sizes Used in Prior Experimental Research

6.10. Pilot Tests

Pilot tests were undertaken to ensure that the adopted research methods and questions were reliable and suitable (Ridgway et al., 2017). In line with Dai et al., (2014) for each phase of the research, pilot respondents were recruited to confirm the clarity of the questions asked in both the surveys (phase 1 and 3) and the semi-structured interviews (phase 2). The following section outlines how many participants/respondents were recruited for each phase and outlines the changes that were made based on the subject’s recommendations.
6.10.1. Pilot Study for Phase 1 (Online Dress Survey)

Before the distribution of the main dress survey, a pilot study was undertaken to ensure the reliability and validity of the research design for phase 1. To ensure that all types of dress styles were captured within the online survey, a focus group that comprised of six participants from the same demographic, UK females 18-34, was undertaken. Six participants were selected for the focus group in line with sample size recommendations (Malhotra et al., 2017) and previous studies that have also undertaken a pilot study to ensure the suitability of stimuli before the main experiment (Yu et al., 2012).

A focus group was appropriate for the pilot study as it permitted the participants to ‘feed off’ each other and identify different styles of dresses that the researcher may have overlooked (Malhotra et al., 2017, p.184). Thus, nine static images of the different dress styles (Appendix I) were distributed amongst the focus group members in paper form. The participants disclosed whether they felt a particular style of dress had been overlooked during the initial dress selection process. It was apparent from the focus group that all the key styles were captured within the survey, and so, the nine dresses that were initially selected were taken forward for the main survey (phase 1). It is important to note that the participants who were included in the pilot studies and prior phases were omitted from the proceeding phases of the research to circumvent the risk of contamination (Leon, Davis and Kraemer, 2011).

6.10.2. Pilot Study for Phase 2 (Garment Try-on)

Four additional participants representative of the target population (UK females aged 18-34) were recruited using a non-probability convenience sampling strategy. The pilot study enabled the researcher to evaluate participants’ reactions to the interview questions, body scanning and garment try-on process. From the pilot study, it was apparent that participants felt uncomfortable with the initial design of phase 2. Originally, participants were asked to try-on the three styles of dresses and then undertaken the body scanning process, however this seemed to enhance the participant’s body dissatisfaction. Alternatively, body scanning participants first and then asking them to undertake the garment try-on after appeared to reduce body dissatisfaction considerably. Therefore, to ensure that the participants were fully comfortable, the structure of phase 2 was revised. Moreover, suggestions put forward by participants on how the wording of the questions could be improved were adhered to. Finally, this phase of the research captured objective body measurements using a Size
Stream body scanner and a body shape categorisation method outlined by Lee et al., (2007), which have been further corroborated in prior literature (Grogan et al., 2013) and so, reliability and validity of this phase can be assumed.

6.10.3. Pilot Study for Phase 3 (Online Shopping Experiment)

Finally, a pilot study was undertaken before the main experiment to test the feasibility of the experimental stimuli (Xu et al., 2015) and the design of the websites. 100 UK female subjects, aged 18-34, were randomly assigned to one of the four website conditions (N=25 subjects per condition). The sample size was in line with existing experimental pilot studies (Lo and Hsieh, 2011; Yoo and Kim, 2014). Once the respondents had undertaken the experiment, subjects reported any issues with website design, website navigation, questionnaire clarity, page loading speed and time, in line with previous pilot experiments (Hong, Thong and Tam, 2004; Yu et al., 2012; Xu et al., 2015). Based on the subject’s suggestions, any issues were revised. An experimental pre-test was essential to ensure that the independent variables (body shape and user-generated fit reviews) were successfully manipulated (Narwal and Nayak, 2020). It was apparent from the pilot study that the respondents (N=100) successfully detected a significant difference in body shape (hourglass vs. diverse) and the presence vs. absence of user-generated reviews. Although the sample size was smaller than the recommended experimental sample size, the responses provided a snapshot of how the questionnaire would work and offered an indication of the direction of travel.

6.11. Data Analysis Used in the Present Study

The following section will delineate the data analysis techniques used within each of the phases of the present research.

6.11.1. Quantitative Data Analysis (Phase 1 and 2)

There are two types of statistical analysis, (1) descriptive statistics and (2) inferential statistics. Whereas descriptive statistics focus on summarising a set of data, inferential statistics is concerned with making inferences about populations based on the data obtained from a specific sample (Christensen et al., 2015). The most common descriptive analysis methods that are used to summarise data are medians, modes, means and standard deviations. The data from phase 1 (online dress survey) was analysed using descriptive statistics to discern the most/least popular dress styles for UK females, aged 18-34. Indeed, the scores
from the three constructs were averaged, and the three dress styles with the most neutral responses on those dimensions were selected. Similarly, descriptive statistics were used in phase 2 (garment try-on) and phase 3 (online shopping experiment) of the research to ensure that the intended sample had been obtained.

Alternatively, inferential statistics are valuable as they test whether or not experimental hypotheses are likely to be true and so, statistical tests can help confirm or reject experimental predictions (Field and Hole, 2003). Hypothesis testing is a branch of inferential statistics whereby the researcher formulates a null hypothesis and alternative hypothesis based on existing theory (Christensen et al., 2015). A null hypothesis posits that there are no variances between means amongst groups, whereas an alternative hypothesis states that there is a difference (Christensen et al., 2015). The null hypothesis is rejected when the *p*-value is less than or equal to the alpha (also known as the significance) level (Christensen et al., 2015). The level of significance in quantitative research is paramount as it denotes the probability that the variance in means has been, ‘erroneously declared to be significant’, (Boniface, 1995, p.21). Statisticians suggest that the appropriate values for significance levels are (.05 or .01) which extrapolates that there is a 1% or 5% chance of error (Boniface, 1995; Field and Hole, 2003; Stevens, 2009), or in other words, there is a less than 5% chance that the null hypothesis is true. There are two types of errors that can occur; Type I error occurs when a researcher rejects a true null hypothesis, whereas Type II refers to the non-rejection a false null hypothesis when the alternative hypothesis is true (Stevens, 2009).

Phase 3 (online shopping experiment) performed factorial ANOVAs (analysis of variance) to test the null hypothesis that the mean of the dependent variable is equal across all groups (Malhotra et al., 2017). ANOVA can be used in experimental research designs when there is one dependent variable and one independent variable (Christensen et al., 2015). However, as the present study had two independent variables at two levels (i.e., visual x verbal information), factorial ANOVAs were undertaken. As there were three dependent variables in this study, a MANOVA (multivariate analysis of variance) was also considered. However, the dependent variables were not moderately correlated (further discussed in Chapter 8 of the thesis) and so, separate 2-way ANOVAs were undertaken. As the subjects in phase 3 were randomly assigned to one of the four treatment conditions, independent factorial
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ANOVA measured the variance between-subjects (Field, 2009). Table 6.20 provides a summary of the critical characteristics of ANOVA.

<table>
<thead>
<tr>
<th>Characteristics of An Independent Factorial ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The test statistic used in ANOVA follows the F distribution, which is usually skewed, to the right.</td>
</tr>
<tr>
<td>2. Factorial ANOVA has two or more independent variables (factors)</td>
</tr>
<tr>
<td>3. Independent variable must be categorical and the dependent variable must be continuous.</td>
</tr>
<tr>
<td>4. Tests the null hypothesis that the mean is equal across all groups.</td>
</tr>
<tr>
<td>5. Independent ANOVA measures the variance between-subjects; hence, randomisation of subjects is vital.</td>
</tr>
</tbody>
</table>

Table 6.20. Summary of the Key Characteristics of Factorial ANOVA.

ANOVA calculates the total sum of squares errors (SST), which is the overall variability and splits this variance into (1) variance that is explained by the experiment (SSm) and (2) variance that is not explained by the experiment (SSR) (Field, 2009). However, in a factorial ANOVA, the variance explained by the experiment (SSm) is composed of the two independent factors. Thus, the model sum of squares (SSm) is divided into the variance explained by the first independent variable (SSA), variance explained by the second independent variable (SSB) and finally, the variance explained by the interaction of the first and second independent variable (SSA*B) (Field, 2009). Figure 6.4 depicts a visual outline of this calculation.

![Figure 6.4. Breaking Down Variance in 2-way ANOVA](source: Field (2009, p.425))
However, before factorial ANOVAs can be undertaken, several assumptions must be met. Table 6.21 delineates the assumptions of ANOVA, as well as outline how they were achieved in the present study.

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Explanation</th>
<th>Application to Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables. Field (2009)</td>
<td>Independent variable must be categorical and dependent variable must be metric.</td>
<td>Independent variables were categorical (e.g., body shape vs. user-generated review) and dependent variables were metric.</td>
</tr>
<tr>
<td>Sample. Hair et al., (2010)</td>
<td>Respondents must be independent in their responses across the dependent variable</td>
<td>Subjects were randomly assigned to different conditions in the experiment.</td>
</tr>
<tr>
<td>Outliers. Hair et al., (2010)</td>
<td>Outliers must be removed, as ANOVA is extremely sensitive to outliers.</td>
<td>The dataset was screened and outliers were removed before undertaking the statistical test, outlined in Chapter 8.</td>
</tr>
<tr>
<td>Normality. Field (2009)</td>
<td>Data must be normally distributed.</td>
<td>Large sample size was obtained (N=400) and normality checks were performed in Chapter 8.</td>
</tr>
<tr>
<td>Homogeneity of Variance. Field (2009)</td>
<td>Within group variances of the DV must be the same across groups.</td>
<td>Levene’s test was performed in SPSS to ensure there were no violations to this assumption.</td>
</tr>
<tr>
<td>Sample size. Field (2009)</td>
<td>Number of subjects within each group must be equal.</td>
<td>Qualtrics ensured that an equal number of subjects were allocated in each group.</td>
</tr>
</tbody>
</table>

Table 6.21. Summary of the Key Characteristics of Factorial ANOVA.

To this end, phase 3 of the research will use inferential statistical techniques such as factorial ANOVAs to test the null hypothesis that there are no differences in means of the dependent variables across the four groups. The use of ANOVAs has also been supported in prior online experimental research which has investigated how online stimuli affect consumers’ online behavioural responses (Park et al., 2005; Shin and Baytar, 2014; Overmars and Poels, 2015; Tang and Zhang, 2018; Yim and Park, 2019; Craciun and Moore, 2019; Fan et al., 2020). Additionally, to further test the relationship between the dependent variables, perceived product fit diagnosticity, concerns with clothing fit online (organism) and purchase intentions (behavioural response), bivariate correlations will also be undertaken. To examine the statistical reliability and validity of the constructs used in phase 3, Cronbach’s alpha and an exploratory factor analysis (EFA) was also undertaken.

6.11.2. Reliability

Reliability is concerned with the quality of a measurement scale to produce consistent and stable results if undertaken under the same condition (Field and Hole, 2003; Malhotra et al., 2017; Babbie et al., 2019; Zhu and Li, 2020). Reliability can be assessed in many ways, including the test-retest, split-half method and coefficient alpha (Field, 2009). Table 6.22 provides a summary of these reliability tests.
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Investigating How Product Page Design Affects Clothing Fit Appraisal Online

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Explanation</th>
<th>Limitations</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test-Retest</td>
<td>The same set of subjects are assigned the identical measurement items twice but at different times. A correlation coefficient is then employed to establish the degree of similarity between the two measurements.</td>
<td>Practice effects may influence results as the same subjects are used.</td>
<td>Field (2009); Malhotra et al., (2017)</td>
</tr>
<tr>
<td>Split-Half</td>
<td>The questionnaire items are randomly assigned to two groups. This method can be used in order to assess the reliability of measurement items.</td>
<td>The way in which the measurement items are split may influence the results.</td>
<td>Field &amp; Hole (2003).</td>
</tr>
<tr>
<td>Coefficient</td>
<td>A measurement of internal consistency of a set of items which are grouped together and summarised in order to formulate a total score for the scale. Divides the data in every possible way and finds the correlation coefficient for each divide.</td>
<td>There is a debate as to what constitutes an acceptable Cronbach’s alpha.</td>
<td>Field &amp; Hole (2003); Malhotra et al., (2017).</td>
</tr>
</tbody>
</table>

Table 6.22. Summary of Reliability Assessments

It is evident from Table 6.22 that the test-retest and split-half are limited in their assessment of reliability in that external factors can influence the results. Thus, academics have suggested that the coefficient alpha can overcome these limitations (Field, 2009). However, there is disparity as to what is an acceptable value of Cronbach’s alpha. For example, Field and Hole (2003) state that a value of .8 is acceptable, whereas Nunnally et al., (1967) state that a Cronbach’s alpha of .7 is sufficient. However, prior experimental research studies have adopted a Cronbach’s alpha threshold of between .7-.9 as their criterion for internal consistency (Park et al., 2005; Pavlou and Fygenson 2006; Jiang and Benbasat, 2007; Pavlou et al., 2007; Wang and Chang, 2013; Shin and Baytar, 2014; Cano et al., 2017; Kim, 2019). Hence, the reliability of the scales used in phase 3 (online shopping experiment) was assessed using Cronbach’s alpha statistic. Additionally, pilot studies were undertaken for all 3 phases of the research to increase the reliability of the study.

6.11.3. Validity

Validity is concerned with measuring a concept that the study intends to measure (Babbie et al., 2019). Experimental validity is concerned with ensuring all factors in the experiment are controlled (internal validity), and that results from the study are generalisable to the broader population (external validity) (Christensen et al., 2015). Alternatively, construct validity refers to the extent to which a construct is adequately represented by the measures (Christensen et al., 2015). Table 6.23 demonstrates how validity was ensured in the present study.
Investigating How Product Page Design Affects Clothing Fit Appraisal Online

<table>
<thead>
<tr>
<th>Validity</th>
<th>Definition</th>
<th>How it was Achieved in the Present Research</th>
</tr>
</thead>
</table>
| **Experimental Validity** | **Internal Validity:** ensures that all extraneous factors within an experiment are controlled and there are no cross contaminations. | 1. All extraneous factors were controlled for and remained constant. Only the independent variables (body shape and user-generated reviews) were manipulated.  
2. Subjects were randomly assigned to 1 of the 4 website conditions, allowing causal relationships to be concluded (Barabas and Jerit, 2010) |
|                           | **External Validity:** concerns the degree to which the results from a study are generalisable to alternate samples. | 1. An external consumer panel, Qualtrics, randomly selected subjects which were representative of the larger population.  
2. Measures which were used in the post experimental questionnaire can be generalised to other samples that undertaken the experiment. |
|                           | **Ecological Validity:** The influence of the presence of the researcher. | 1. Surveys were undertaken online to ensure that the presence of researcher did not influence the subject’s responses.  
2. All 4 mock websites were designed to emulate the design of existing e-commerce websites. |
| **Construct Validity**    | **Face Validity:** subjective assessment of a measures (Nunnally and Bernstein, 1994) | 1. The measures and questions that were used in all phases of the research were agreed on by experts in the subject field (supervisors of the research project).  
2. Pilot studies were undertaken to ensure subjects fully understood questions (phase 1, 2 & 3) and scenarios. |
|                           | **Content Validity:** ensures that the measures sufficiently cover the topic area. | 1. Adhering to the recommendations by Zhu and Li (2020), an in-depth analysis of the literature was undertaken to ensure that all the scales and questions adopted in the 3 phases of the research sufficiently cover all topic areas. |
|                           | **Convergent Validity:** scores on the measure are related to other measures of the same construct. | 1. An exploratory factor analysis was undertaken to examine the average variance extracted on items within a construct. Hair et al. (2014) posits that an AVE or (factor loading) higher than .5 indicates good convergence. Whereas, Steves (2002) and Field (2009) agree that a factor loading greater than .4 is acceptable. |
|                           | **Divergent/discriminant validity:** concerned with how distinct one construct is from other constructs | 1. Cross loadings were examined in the factor analysis. If cross loadings are present within the analysis this would infer that the item represents more than one construct (Hair et al., 2010). It is recommended that if there are cross loadings present then there should at least be a difference of .20 between loadings. |

Table 6.23. Validity Checks in Present Study.

It is apparent from Table 6.23 that construct validity in the present study was examined by undertaking an exploratory factor analysis (EFA). Indeed, EFA not only ensured that the items in a construct were related (convergent validity), but it also discerned the extent to which similar concepts were distinct from each other (discriminant validity). Experimental validity was ensured within the present study by controlling all extraneous factors (e.g., the size of models, information of webpage and design of websites). Furthermore, the FFIT body shape categorisation method used in phase 2 has not only been corroborated in prior literature, but it can also be replicated and applied in future studies to investigate the body shapes of different female populations.
6.11.4. Qualitative Data Analysis (Phase 2: Dress Try-On)

Data from the semi-structured interviews were audio-recorded and transcribed verbatim by the researcher. The qualitative data was obtained through physical garment try-ons in which the objective was to critically understand the fit preferences of 30 UK females through face-to-face post-purchase evaluations (Research Objective 3b). There are many ways in which a researcher can undertake qualitative data analysis, such as through thematic analysis, template analysis, grounded theory and thematic narrative analysis, demonstrated in Table 6.24.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Explanation</th>
<th>Advantages and Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thematic Analysis</td>
<td>Aims to identify themes and patterns that emerged from the data. Involves coding data to categorise data with similar meanings (Saunders et al., 2019). Codes can be a-priori (driven from literature) or data driven.</td>
<td>Provides a flexible approach and does not align itself to a pre-existing theory (Lipson et al., 2020). Not prescriptive.</td>
</tr>
<tr>
<td>Template Analysis</td>
<td>Type of thematic analysis, which uses a template to identify prior themes (Saunders et al., 2019). Subsequent themes are then coded and organised by the researcher in a meaningful manner.</td>
<td>Provides a flexible approach to data analysis. Researchers may feel restricted following a template (Saunders et al., 2019).</td>
</tr>
<tr>
<td>Grounded Theory</td>
<td>Focus is to generate and develop a theory that is grounded in empirical data (Christensen et al., 2015). Aim is to inductively generate an understanding of a certain process or phenomena.</td>
<td>Suitable if existing theories are insufficient (Vollstedt and Rezat, 2019). Vital for fully understanding why things happen.</td>
</tr>
<tr>
<td>Discourse Analysis</td>
<td>Aims to identify the social effects of the use of language (Saunders et al., 2019). Examines the way in which people use language to explain their socially constructed reality.</td>
<td>Beneficial is the research involves examining participants interaction with a certain social setting (Saunders et al., 2019).</td>
</tr>
</tbody>
</table>

Table 6.24. Examples of Qualitative Data Analysis Techniques

6.11.4.1. Data Analysis Technique Adopted (Phase 2)

Qualitative data captured in phase 2 (garment try-on) were analysed adhering to the stages of thematic analysis outlined by Braun and Clarke (2006), which include the researcher familiarising themselves with the dataset, generating initial codes, searching for critical themes, reviewing themes and finally refining the themes (Silverman, 2011). Indeed, thematic analysis aims to identify themes and further sub-themes that emerge from the data (Saunders et al., 2019). Thus, it enables the essential analysis of dimensions to develop from patterns discovered in the data (Lipson et al., 2020). Thematic analysis requires undertaking an inductive coding technique, whereby data and themes are grouped together (Saunders et al., 2019) to generate meanings (Boardman and McCormick, 2019). Coding allows the researcher to effectively manage their findings by aggregating and grouping data into...
principal categories that express similar meanings (Saunders et al., 2019). Thus, in the present study, the researcher undertook a line-by-line coding technique to identify initial themes and subthemes and then coded interview transcripts to highlight the relationship between these themes (Grogan et al., 2013; Saunders et al., 2019).

Adhering to Nash (2019), all research transcripts were coded, and fit (dis)satisfaction themes were chosen based on the relevance and frequency of occurrence. This strategy was vital as it permitted the researcher to understand the different fit parameters from a consumer’s perspective (Objective 3b). Thematic analysis was deemed beneficial as it provided a flexible approach to gain rich, subjective accounts of participants’ experiences with the fit of the dresses (Saunders et al., 2019; Nash, 2019). Moreover, to reduce bias within the data analysis and enhance the reliability of the qualitative data findings, the researcher maintained detailed records of the research process and the themes and sub-themes were further corroborated by the supervisors to enhance transparency and reflexivity, in line with Lipson et al., (2020). Additionally, to mitigate the risk of bias further, the researcher asked participants to confirm that the interpretation of their fit appraisal was accurate.

6.11.4.2. Participant Coding
Qualitative research methods such as semi-structured interviews enable researchers to gather in-depth findings; however, ethical dilemmas concerning the dissemination of this rich data must be considered (Kaiser, 2009). Indeed, it is vital that the identity of the participants remains confidential and so, the process of anonymising data is paramount. Consequently, adhering to Boardman and McCormick (2018), participants who took part within phase 2 of this research were coded through the identification of their age and body shape, for example, P.12(order of recruitment), 21(age), R (body shape), to ensure participation confidentiality.

6.12. Ethical Considerations and Incentives
Body scanning can lead to several ethical implications, including the protection of personal data and the psychological repercussions of being body scanned. Indeed, Grogan et al., (2016) discovered that participants might feel vulnerable when seeing their body scan, leading to feelings of enhanced body dissatisfaction. Although a more recent finding by Grogan et al., (2019) challenges this, ethical implications concerning body scan data and consent with collecting personal details are paramount (Gill et al., 2014). Hence, adhering
to Hernández et al., (2019) participants in phase 2 were asked to fill out three consent forms to confirm full agreement and understanding of their participation. Moreover, in line with the findings from the pilot study of phase 2, the structure of the research process was altered to ensure that the participant was entirely comfortable with the procedure. Indeed, originally, participants were asked to undertake the garment try-on first and then undertake the body scanning process, however this seemed to enhance participant’s body dissatisfaction, making them feel uncomfortable. Alternatively, re-arranging the process and body scanning participants first appeared to reduce body dissatisfaction considerably. Therefore, to ensure that the participants were fully comfortable, the structure of phase 2 was revised.

Finally, all materials and phases of the research, including interview questions, survey questions and body scanning procedures, were subjected for review by the University of Manchester’s ethical approval board. Ethical approval for the study was obtained (Ethics Reference: 2019-4879-11493). For phase 3 of the research (online shopping experiment) subjects were incentivised separately by Qualtrics who offered financial rewards to subjects who took part within the survey. Participants were not incentivised by the researcher for phases 1 and 2 of the research.

6.13. Chapter Summary

This chapter has provided an in-depth justification of the methods and approaches that were used in the present research. Figure 6.5 provides a visual summary of the research methodology for the present study.
The present research adopted an overarching sequential-multi phase mixed-methods approach to explore how different fit stimuli (verbal vs. visual) on a retailer’s product page affect consumers’ online garment fit appraisals. Specifically, phase 1 (online dress survey) and 3 (online shopping experiment) of the research deductively obtained quantitative data through the use of online surveys and the implementation of a between-subjects factorial web-experiment. Phase 3 (online shopping experiment) of the research quantitatively measured subjects’ behavioural responses to different fit stimuli. Hence, phase 1 and 3 adopted a positivist approach. However, to inform the design of the visual and verbal fit stimuli for phase 3, phase 2 (garment try-ons) captured inductive qualitative data through an exploratory post-purchase fit evaluation of different styles of RTW dresses. Notably, phase 2 used semi-structured interviews to explore fit parameters from a consumer’s perspective. The next chapter will disseminate the findings from phase 1 and 2.
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

7.1. Introduction
This chapter outlines the quantitative (phase 1: online dress survey) and mixed-method (phase 2: body scanning and semi-structured interviews) data analyses and results as denoted in Chapter 6 of the thesis. The aim of phase 1 of the research (online dress survey) was to select appropriate stimuli (dress styles) that could be further utilised in phase 2 (physical garment try-ons) and phase 3 (online shopping experiment). Using descriptive statistics, the dress styles that were considered the most/least flattering, likeable and similar to what the respondent would usually wear, were identified and taken forward to phase 2 and 3 of the research.

The aim for phase 2 of the study was to develop the visual and verbal fit stimuli for phase 3 of the study. The visual fit stimuli were obtained by undertaking 30 body scanning sessions and using the measurement outputs from the Size Stream body scanner to discern the most popular body shapes amongst the target population. The verbal fit stimuli were developed by completing 30 physical dress try-ons whereby each participant was required to try-on each of the three styles of dresses identified in phase 1, and to verbally appraise the fit of each dress through semi-structured interviews. Themes were established from the transcripts through thematic analysis to determine the vital (dis)satisfaction themes and to demonstrate the multifaceted nature of garment fit from the consumer’s perspective. The key themes that emerged from the physical garment try-ons and semi-structured interviews will be used as user-generated fit reviews for phase 3 of the research.

7.2. Dissemination of Findings (Phase 1: Online Dress Survey)
Research Objective 2: To identify suitable stimuli (dresses) for phase 2 (garment try-on) and phase 3 (online shopping experiment) of the research through a quantitative online dress survey.

7.2.1. Sample Characteristics
During a period of just over one month (October 10th -November 13th, 2018), 343 responses were obtained from the online survey; however, 262 (76.38%) of those responses were usable and fulfilled the inclusion criteria. All respondents were UK females, with the average
age group being 18-25-year-olds (N=191, 72.9%), followed by 26-34-year-olds (N=71, 27.1%). Of the respondents, 49.2% (N=130) reported that they shopped for clothing online once a month, with only 5.34% (N=14) disclosing that they shopped for clothing online a couple of times a year. Despite being a convenience sample, the online shopping characteristics of the respondents within this study are not that different from the wider UK females’ online shopping habits, with Mintel (2019b) reporting that 68% of 957 UK females, who were Internet users, aged 16+, shopped for clothing online in the last year.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample Results (N=262)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>18-34 (N=191, 72.9%)</td>
</tr>
<tr>
<td></td>
<td>26-34 (N=71, 27.1%)</td>
</tr>
<tr>
<td>Gender</td>
<td>Female (N=262, 100%)</td>
</tr>
<tr>
<td>Have you shopped online in the last 6 months?</td>
<td>Yes (N=262, 100%)</td>
</tr>
<tr>
<td>Online Shopping Frequency</td>
<td>Once a week (N=38, 14.5%)</td>
</tr>
<tr>
<td></td>
<td>Once a month (N=130, 49.62%)</td>
</tr>
<tr>
<td></td>
<td>Every couple of months (N=76, 29.01%)</td>
</tr>
<tr>
<td></td>
<td>Couple of times a year (N=14, 5.34%)</td>
</tr>
<tr>
<td>Do you live in the UK?</td>
<td>Yes (N=262, 100%)</td>
</tr>
</tbody>
</table>

Table 7.1. Summary of Sample Characteristics for Phase 1

7.2.2. Findings from the Online Dress Survey

Descriptive statistics such as frequencies, central tendencies and dispersions identified which styles of dresses were considered the most/least flattering, likeable and similar to what the respondent would usually wear. All of the responses for each of the three constructs were summed and averaged in line with Kim and Lennon (2008; 2010), Kim, (2019) and Baytar et al., (2020). Figure 7.1, 7.2 and 7.3 demonstrate the findings.
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

<table>
<thead>
<tr>
<th>Least Likeable</th>
<th>Most Likeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skater (M=3.20)</td>
<td>Wrap (M=4.34)</td>
</tr>
<tr>
<td>Body Con (M=3.36)</td>
<td>Maxi (M=4.03)</td>
</tr>
<tr>
<td>Pencil (M=3.44)</td>
<td>Smock (M=3.81)</td>
</tr>
<tr>
<td>Jumper (M=3.67)</td>
<td>Slip (M=3.50)</td>
</tr>
<tr>
<td>Midi Body Con (M=3.69)</td>
<td>Midi Body Con (M=3.43)</td>
</tr>
<tr>
<td>SD= 1.1</td>
<td>SD= 1.1</td>
</tr>
</tbody>
</table>

**Figure 7.1. Likeability of The Dresses**

<table>
<thead>
<tr>
<th>Least Flattering</th>
<th>Most Flattering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumper (M=3.02)</td>
<td>Skater (M=3.58)</td>
</tr>
<tr>
<td>Body Con (M=3.14)</td>
<td>Wrap (M=4.17)</td>
</tr>
<tr>
<td>Smock (M=3.20)</td>
<td>Maxi (M=3.50)</td>
</tr>
<tr>
<td>Midi Body Con (M=3.35)</td>
<td>Slip (M=3.30)</td>
</tr>
<tr>
<td>Pencil (M=3.37)</td>
<td>Midi Body Con (M=3.43)</td>
</tr>
<tr>
<td>SD= 1.3</td>
<td>SD= 1.1</td>
</tr>
</tbody>
</table>

**Figure 7.2. Flatterability of The Dresses**

<table>
<thead>
<tr>
<th>Least similar to what I would usually wear</th>
<th>Most similar to what I would usually wear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Con (M=2.45)</td>
<td>Maxi (M=2.87)</td>
</tr>
<tr>
<td>Pencil (M=2.46)</td>
<td>SD= 1.4</td>
</tr>
<tr>
<td>Midi Body Con (M=2.70)</td>
<td>Jumper (M=3.10)</td>
</tr>
<tr>
<td>Skater (M=2.78)</td>
<td>Slap (M=3.24)</td>
</tr>
<tr>
<td>Midi Body Con (M=2.78)</td>
<td>Maxi (M=2.87)</td>
</tr>
<tr>
<td>SD= 1.4</td>
<td>SD= 1.4</td>
</tr>
</tbody>
</table>

**Figure 7.3. Similarity of The Dresses**

7.2.2.1. Discussion and Summary of Phase 1

It is apparent from Figures 7.1, 7.2 and 7.3 that the mean scores of the nine dress styles ranged from 2.45 to 4.34, and so, the three dress styles with the medium scores between 2.87 and 3.69 were chosen. As demonstrated above, the three dress styles that received the most neutral ratings were the midi body con dress (M=3.69, SD=1.1), the pencil dress (M=3.37, SD=1.3) and the maxi dress (M=2.87, SD=1.4). Consequently, these styles (evidenced in Figure 7.4) were ordered from ASOS and taken forward for phase 2 and 3 of the research.
Dissemination of Findings (Phase 2)

7.3. Phase 2: Body Scanning Session and Garment Try-On

It is apparent from Chapter 4 of the thesis that currently, retailers do not permit consumers to appraise a garment on different body shapes. Additionally, an investigation into the role of user-generated fit reviews on consumers’ online fit appraisal process is limited. Consequently, phase 2 of the research involved a mixed-methods study to achieve Research Objective 3: To develop website stimuli (visual and verbal fit information) for phase 3 (online shopping experiment) through a mixed-methods enquiry.

7.3.1. Sample Characteristics and Procedure

During a period of nearly 5 months (January 08th - May 31st, 2019), 30 body scan sessions were undertaken individually in a private room at The University of Manchester following the University’s ethical guidelines. On arrival, participants were informed of the body scanning process and were made aware that two scanning personnel would be present throughout the process. Adhering to Hernández et al., (2019), participants were asked to fill out three consent forms to ensure agreement and understanding of the participation.

The researcher captured some manual measurements that could not be obtained by the Size Stream scanner (i.e., height, weight, head circumference, minimum hand circumference and
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

The participants then entered the private body scanning cubical whereby they undressed leaving on their underwear, tied back their hair and removed any jewellery, in line with previous body scanning protocols (Ridgway, 2018; Hernández et al., 2019; Grogan et al., 2019). The Size Stream body scanner captured 3D computer images of the body, which were then generated as point cloud data, and an extensive list of bodily measurements was extracted. To overcome the limitations of 3D body scanning, such as occlusion in body scan data (Apeagyei, 2010), all body scans were visually inspected, and participants were rescanned if any issues were present to ensure the validity of the scans, in line with Grogan et al., (2019). The total duration of the procedure above was approximately 10 minutes. Once the body scan was completed, participants were instructed to redress, exit the private body scanning cubical and were provided with a print out of their data (Grogan et al., 2019).

7.3.2. Body Shape Findings and Discussions

To achieve Research Objective 3a, the key measurement outputs from the 30 body scans (chest/bust circumference tape measure, opt small of the back-waist tape measure, hip circumference tape measure and an average of the three high hip measurements) were fed through an excel spreadsheet to classify females body shapes using the FFIT System (Simmons et al., 2004). Appendix II provides a comprehensive list of participant codes and body shapes. From the 30 body scans, five body shapes typologies were unveiled including; triangle (N=1, 3.3%), bottom hourglass (N=13, 43.3%), hourglass (N=2, 6.7%), rectangle (N=10, 33.3%) and spoon (N=4, 13.3%), illustrated in Figure 7.5.
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Body Shape Typologies: Phase 2

Figure 7.5. Body Shape Typologies in The Present Study

It is indicative from Figure 7.5 that the prominent body shape category discovered within this study was the bottom hourglass (N=13, 43.3%) followed by the rectangle (N=10, 33.3%). This finding partially challenges Grogan et al., (2013) who found the hourglass to be the most prevalent body shape amongst UK females, aged 18-45, followed by the rectangle. Yet, the findings concur with Yin and Annett-Hitchcock (2019) who found that the bottom hourglass body shape was the most noticeable amongst US females, aged 18-35.

Interestingly, the inverted triangle and top hourglass were not discovered within this study, nor did Grogan et al., (2013) find them. Similarly, Lee et al., (2007) found that the inverted triangle and the top hourglass were the two least popular body shapes found amongst both US and Korean females. Indeed, Lee et al., (2007) found that the inverted triangle body shape only emerged in the 46-55-year-old age group of Korean women. Collectively, both the primary and secondary findings extrapolate that the top hourglass and the inverted triangle are not representative of the body shapes for UK females aged 18-34. Consequently, these two body shapes were omitted from the present study.

It is also apparent from Figure 7.5 that the third most popular body shape category was the spoon (N=4, 13.3%). Lee et al., (2007), who found the spoon body shape to be the second-largest shape category of US females and the third-largest shape typology of Korean females, further sustain this finding. Whilst Grogan et al., (2013) did not find any UK female
participants to exhibit a spoon body shape, a more recent study by Yin and Annett-Hitchcock, (2019) found that the spoon body shape was prevalent amongst both Chinese and US females aged 18-35, a finding further corroborated by Ridgway et al., (2017). Similarly, Zhang et al., (2017) found that the dominant body shape identified amongst 24 European, American and Asian Americans was the spoon body shape. Hence, in light of the aforementioned, the spoon body shape will be utilised in the experiment (Phase 3).

Interestingly, the least popular body shape categories were the hourglass (N=2, 6.7%) and the triangle (N=1, 3.3%). Indeed, only 2 participants had an hourglass body shape. Whilst this finding challenges Shin and Baytar (2014) who found that from 592 online models 60% of them had an Hourglass or (X) body shape, prior body shape literature has also found the hourglass to be the least popular body shape typology (Connell et al., 2006; Simmons et al., 2004). For example, Zhang et al., (2017) discovered that only 1 participant (out of 24 females) had an hourglass body shape. Similarly, Seo and Namwamba (2018) found that from 72 African-American females, only 4.2% had an hourglass body shape. These findings, which support the subordination of the hourglass body shape amongst female populations, is further validated by Lee et al., (2007) who found that only 11% of US females and 0.5% of Korean females had an hourglass body shape. The outcome of Research Objective 3a demonstrates the prevalent disparity in body shapes amongst UK females aged 18-34. Hence, it is apparent that showing garment fit on one body shape is not an adequate source of online fit provision.

### 7.3.2.1. Body Shape Selection for Phase 3

Given the lack of conformity to the hourglass body shape in the findings of the present study, alongside the support from secondary research findings, the hourglass body shape will not feature within the experimental, diverse body shape treatments (phase 3). Furthermore, adhering to the conclusions from Shin and Baytar (2014), there is reason to believe that the body shape of the professional model in the control condition (one body shape) is an hourglass, and so, the hourglass body shape will not feature in the experimental treatments (diverse body shapes).

Moreover, although only 1 participant had triangular body shape, prior research has validated the presence of the triangular body shape amongst UK (Grogan et al., 2013),
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

Caucasian (Makhanya et al., 2014; Makhanya and Mabuza, 2020), African (Makhanya et al., 2014; Makhanya and Mabuza, 2020), Korean (Lee et al., 2007) and US females (Lee et al., 2007; Pisut and Connell, 2007). Consequently, the four body shapes that featured in the diverse body shape website treatments were the bottom hourglass, rectangle, spoon and triangle.

To ensure that clothing size was not a confounding factor within the experiment, the clothing size of the participants that featured in the body shape treatment conditions was similar to the size of the fashion model used in the control condition. As the model in the control condition was a size 8, only participants who disclosed that they were either a size 8/10 featured on the diverse body shape website conditions. Additionally, size 8/10 was an appropriate size to feature, as prior research has verified that female consumers are not satisfied with the current binary presentation of females’ bodies online (i.e., ultra-thin size 4 or plus-size 18) and alternatively desire to see women who better reflect society (Pounder and Mabry-Flynn 2019).

7.3.2.2. Body Shape and Age

It is important to note that the body shapes of the 34 female participants (including the 4 participants from the pilot study) were not dictated by age. Table 7.2 demonstrates the different body shapes of participants across the 18-34 sample age range.

<table>
<thead>
<tr>
<th>Younger end of the sample age range (&lt;25) (N=20)</th>
<th>Older end of the sample age range (&gt;25) (N=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rectangle (N=7)</td>
<td>• Rectangle (N=5)</td>
</tr>
<tr>
<td>• Bottom Hourglass (N=7)</td>
<td>• Bottom Hourglass (N=6)</td>
</tr>
<tr>
<td>• Spoon (N=3)</td>
<td>• Spoon (N=2)</td>
</tr>
<tr>
<td>• Hourglass (N=2)</td>
<td>• Hourglass (N=1)</td>
</tr>
<tr>
<td>• Triangle (N=1)</td>
<td>• Triangle (N=0)</td>
</tr>
</tbody>
</table>

Table 7.2. Body Shapes Typologies Across the Sample Age Range

All body shape typologies, besides the triangle, were found at both the younger and older end of the sample age range. For example, P.0830SP (age 30) and P.2021SP (age 21) were both categorised as having a spoon body shape, despite having a 9-year age difference. This finding infers that there is no correlation between age and body shape within the age range tested in this study. Additionally, the bottom hourglass, rectangle and spoon were the three most prevalent body shapes despite the variance in age across the sample, a finding that contradicts Lee et al., (2009). Hence, this infers that the body shapes unveiled within phase
2 of this research are a true reflection of the wider UK female, aged 18-34, population, which further justifies their suitability to feature in phase 3 of the study, which also investigates a UK female sample, aged 18-34.

7.3.2.3. Discrepancies between Perceived and Actual Body Shape

Before participants were made aware of their actual body shape, they self-reported their perceived body shape. Table 7.3 demonstrates the discrepancy between the participant's self-perceived body shape and their actual body shape.

<table>
<thead>
<tr>
<th>Perceived</th>
<th>Actual shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1521R: “[…] it’s kind of Hourglass”</td>
<td>Rectangle</td>
</tr>
<tr>
<td>P.1731R: “like an Hourglass shape”</td>
<td>Rectangle</td>
</tr>
<tr>
<td>P.1323SP: “I would say I’m larger in the hips and bum area and I have a small waist”</td>
<td>Spoon</td>
</tr>
<tr>
<td>P.1925BHGG: “an Hourglass”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.1221R: “I’m pretty straight up and down […] I don’t know how to describe it”</td>
<td>Rectangle</td>
</tr>
<tr>
<td>P.2021SP: “I have quite wide hips”</td>
<td>Spoon</td>
</tr>
<tr>
<td>P.0323HG: “I’m a bit more of a rectangle”</td>
<td>Hourglass</td>
</tr>
<tr>
<td>P.0122BHGG: “[…] like an hourglass, but a little bit wider on the bottom”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.2622BHGG: “athletic shape rather than curvy, […] just straight all the way down”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.2922BHGG: “I’m not particularly curvy […] so just straight down”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.2221SP: “I’m definitely wider at the bottom than I am at the top but I don’t really know what you’d really classify that as”</td>
<td>Spoon</td>
</tr>
<tr>
<td>P.1121R: “I’d say a bit wide on the hips and then quite wide around the bust area”</td>
<td>Rectangle</td>
</tr>
<tr>
<td>P.1422BHGG: “probably like an hourglass shape.”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.0722BHGG: “I think I’m probably maybe a pear”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.0231BHGG: “I’m top heavy […] I feel like maybe like a lollipop”</td>
<td>Bottom Hourglass</td>
</tr>
<tr>
<td>P.2523R: “[…] literally straight down. I don’t know what that’s called but like a box”</td>
<td>Rectangle</td>
</tr>
</tbody>
</table>

Table 7.3. Discrepancy between Perceived and Actual Body Shape

Grogan et al., (2013) and Ridgway et al., (2017) further corroborate the discrepancy between participants perceived and actual body shape. Indeed, when participants disclosed their perceived body shape, they either stated that they did not know, exemplified by the following quote, “I don’t know, I don’t know my body shape” (P.2321R), or they inaccurately described it.

Similar to the findings of Pisut and Connell (2007); Manuel et al., (2010); Newcomb and Istook (2011) and Seo and Namwamba (2018), the majority of participants incorrectly assumed to have an hourglass body shape over any other shape category. For example, a participant perceived that she had a, “[…] kind of hourglass” (P.1521R) body shape, yet from the FFIT output, she had a rectangular body shape. The findings of Otieno et al., (2007)
provide a potential reason for this being that, when females summarise their body shape, they like to perceive it as average or normal, an issue further highlighted by Newcomb and Istock (2011). This inference was further validated by a participant in this study who, when asked to describe her body shape, replied, “Oh, I don’t know! That’s a difficult question, a normal one?” (P.2420R). Hence, given that the hourglass body shape is considered to be the most attractive (Aghekyan et al., 2012; Manuel et al., 2010; Makhanya and Mabuza, 2020) and is the predominant body shape currently used within the fashion industry (Gribbin, 2014; Brownbridge et al., 2016), participants may not want to diverge away from that body shape. Additionally, due to the lack of body shape understanding, females may not be aware of alternative body shape categories.

Although several participants defined their body shape incorrectly, it appeared from the discourse that females seemed to be aware of their “problem zones” (P.2133BHG). For example, participants who had a spoon body shape affirmed to have “[...] quite wide hips” (P.2021SP) and perceived that they were, “definitely wider at the bottom than at the top” (P.2221SP). Similarly, participants who had rectangle body shape described their body as “[...] just straight up and down” (P.1221R) or “[...] like a box” (P.2523R). These findings suggest that consumers are aware of certain areas of their body and consequently will consider these during their garment fit appraisal process. This awareness corroborates the affirmation by Seo and Namwamba (2018) that perceived body shape is just as important as objective body shape categorisation during the consumer’s garment fit appraisal process.

However, from Table 7.3, it seems that body shape terminology further complicates the garment fit appraisal process. For instance, when asked to describe their body shape, participants used a variety of terms, demonstrated by the following quotes, “a pear” (P.0722BHG), “maybe like a lollipop?” (P.0231BHG), “an athletic shape” (P.22BHG), “a box” (P.2523R) and “like a boy” (P.0522R). These findings seem to infer that body shape terminology further confuses the garment appraisal process and that a standardised set of body shape categories is vital, a suggestion also advocated by Gill (2015) and Januszkiewicz et al., (2017).
7.4. Findings from the Semi-Structured Interviews (Physical Garment Try-On)

Research Objective 3b (critically understand the learned fit preferences of 30 UK females through face-to-face post-purchase evaluations) responds to the suggestion by Newcomb and Istook (2011) that future research should investigate individual fit preferences amongst a range of different body shapes and sizes. Thus, once participants were body scanned, they tried on each of the three dress styles in their usual clothing size (UK 6-16). Given that a critical aim of phase 2 of the research was to develop verbal fit stimuli for the online shopping experiment (phase 3) in the form of user-generated reviews, this stage of the study investigated consumers’ fit evaluations of the three dresses identified in phase 1 (online dress survey). Physical try-ons were suitable, as not only is it the standard method to examine apparel fit from both an industry and academic perspective (Kim, 2016), but Hernández et al., (2019) argue that it is the most reliable evaluation method of garment fit. Academics have acknowledged that whilst garment fit satisfaction is dependent on objective criteria, the only real judge of garment satisfaction is the consumer (Gribbin, 2014; Ashdown and Loker, 2010) and so, a comprehensive understanding of individuals’ evaluations of dress fit was necessary.

Prior studies that have investigated fit evaluation from the consumer’s perspective have also asked participants to try-on the garment physically (Grogan et al., 2013; Zhang et al., 2017; Hernández et al., 2019) to understand consumers’ fit appraisals. Accordingly, whilst wearing each of the three dresses, participants were asked questions, adapted from existing literature, regarding the fit of the dress. Themes were established via transcription, a priori coding and analysis of sub-themes. The try-on and interview process lasted for approximately 20-40 minutes. Adhering to the recommended interview duration by Robson (2007), the procedure lasted less than an hour to exploit adequate concentration levels. Saturation point was reached after conducting 25 interviews; however, adhering to the recommendation of Lipson et al., (2020) a further five interviews were undertaken to ensure that no new themes emerged.

It was apparent from the semi-structured interviews that participants subjectively evaluated the (dis)satisfaction of the fit of the dresses through four key variables, namely: (1) aesthetic fit, (2) functional fit, (3) physical fit and (4) social fit, corroborating prior studies that have also explored garment fit from a consumer’s perspective (Shin, 2013; McKinney and Shin, 2010).
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

2016; Shin and Damhorst, 2018). Similar to the findings of Shin and Damhorst (2018), the participants in this study did not refer to any of the five objective fit criteria when evaluating the fit of each dress (e.g., ease, grain, balance, line and set).

Whilst the (dis)satisfaction of dress fit differed amongst participants, the four key fit variables used to evaluate the fit of each dress did not. This finding provides further empirical verification that all four fit variables are vital evaluative criteria during the consumer’s garment fit appraisal. Indeed, given that a consumer determines on an individual basis what constitutes as satisfactory garment fit (LaBat and DeLong, 1990), the communication of these four fit variables is vital for consumers when shopping online. To this end, the main themes that emerged from participants fit evaluations were (1) aesthetic fit, (2) functional fit, (3) physical fit and (4) social fit. Summaries of these themes and sub-themes, with example quotes from the interviews, are disseminated in the proceeding section.

7.4.1. Aesthetic Fit of the Dresses
Fiore and Kimle (1997) found that a consumer’s satisfaction with the fit of a garment is highly contingent on the aesthetic interaction between the body and apparel. Aesthetic fit refers to how a garment visually appears on the body (Eckman et al., 1990; Shin and Damhorst, 2018). Currently, consumers attempt to appraise the aesthetic fit of a garment online by visually investigating how the item looks on a fashion model. Images of fashion models on a product page provide helpful information regarding the fit of the garment (Boardman and McCormick, 2019). However, currently, consumers are unable to see the garment on a model with a similar body shape to their own. Hence, this infers that the current communication of aesthetic fit online is problematic. Yet, it is apparent from the findings of this study that aesthetic fit is an essential consideration during the consumer’s garment fit appraisal process.

From the physical garment try-ons, it was clear that, despite the style of dress, participants acknowledged that they were (dis)satisfied with the aesthetic fit of the dress. The following section will outline the themes and sub-themes that emerged when discussing the aesthetic fit of the dresses.

Investigating How Product Page Design Affects Clothing Fit Appraisal Online
7.4.1.1. Aesthetic Fit Theme 1: Emphasised Bodily Areas

Sub-Theme 1a: The Dresses Emphasised Liked Areas of the Body (Satisfaction)

Participants revealed that they were satisfied with the fit of a dress when it emphasised areas of their body that they liked about themselves, exhibited in the quotes below. This satisfaction theme emerged for all three dress styles.

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>Aesthetic</td>
<td>Emphasised Liked Areas of The Body</td>
<td>“I like it at the waist, I think it emphasises that I have quite a slim waist and I like my waist, so I’m happy that it emphasises that” (P.0830SP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[…] it emphasises my hips and legs a bit more because I think that […] area for me is really important just to sort of show off because they are my favourite parts of my body” (P.1521R)</td>
</tr>
<tr>
<td>Midi</td>
<td>Body Con</td>
<td></td>
<td>“It fits quite well and you can see like all the curves and everything, so that’s quite nice […] it definitely shows off my waist […]” (P.3023BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It makes it more flattering I think because it pulls in at the waist” (P.2523R)</td>
</tr>
<tr>
<td>Pencil Dress</td>
<td>Aesthetic</td>
<td>Emphasised Liked Areas of The Body</td>
<td>“I do like that the dress comes in here [waist], you can see where it goes in […] it gives me more shape than I thought it would do” (P.2726R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[…] it does sort of accentuate the waist before it goes out” (P.1121R)</td>
</tr>
</tbody>
</table>

It is apparent from the thematic analysis that participants were satisfied with the fit of a dress when it emphasised areas of their body that they liked about themselves, with one participant acknowledging that the midi body con dress, “[…] emphasises my hips which is obviously nice, I think it's a flattering thing” (P.2221SP). This finding corroborates with the results of prior studies that have also confirmed that females are content with clothing that either accentuates or flatters areas of their body that they like (Firth and Gleeson, 2008; Grogan et al., 2013).

However, dissimilar to Grogan et al., (2013) participants in this study preferred it when the dress revealed areas of the body such as their thighs, bum and bust area, with P.0830SP stating “[…] to have a tiny line there [bust area] that’s flattering”. Alexander et al., (2005) found that participants, who used clothing to enhance their sex appeal, preferred a tight clothing fit, as they liked to emphasise certain areas of their body. This finding was also found to be true within the context of this study, with one participant indicating that the fit of the midi body con dress is, “a little bit tighter on the bum […] I like it!” (P.2622BHG).
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

Tiggeman and Lacey (2009) found that the predominant reason for clothing selection was choosing garments that flattered certain areas of one’s figure, a finding that was allured to within this study. Thus, the results suggest that, during the garment fit appraisal process, a consumer’s consideration of how the fit of a garment will flatter their body is a salient factor.

Proceeding on this track, during the garment try-ons, participants revealed that they were satisfied with the fit of a dress when it emphasised their waist, as it created the illusion of having an ‘ideal’ body shape:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Satisfaction</td>
<td>Midi Body Con</td>
<td>Aesthetic</td>
<td>Emphasised the Waist</td>
</tr>
<tr>
<td>Pencil Dress</td>
<td>Aesthetic</td>
<td>Emphasised the Waist</td>
<td>“The whole point of the dress is to make you look smallest in your smallest place and for me, that’s my waist” (P.0122BHG) “It gives me more of a sort of hourglass figure” (P.2523R)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td>Aesthetic</td>
<td>Emphasised the Waist</td>
<td>“[…] it does sort of accentuate the waist before it goes out” (P.1121R)</td>
</tr>
</tbody>
</table>

Waist definition is often synonymous with the hourglass body shape, which is defined as a figure that appears larger at the bust and hip area but is proportionally very small at the waist (Rasband and Liechty, 2006). Previous studies have demonstrated that females are more satisfied with clothing that allows them to create the illusion of having an hourglass body shape (Grogan et al., 2013; Ridgway et al., 2017; Seo and Namwamba, 2018), as this brings females’ bodies closer to perceptions of the norm (Markee et al., 1990). This finding was further corroborated within this study, with P.2523R acknowledging that she was satisfied with the fit of the pencil dress as “it gives me more of a sort of hourglass figure”. This finding offers further evidence that females, during their garment fit evaluation process, consider how the fit of a garment can bring them closer to the temporary achievement of an hourglass body shape (Zhang et al., 2017). Indeed, Fiore and Kimle (1997, p.144) recommended how different dress styles could be ‘clinched’ in at the waist to create the illusion of an hourglass figure. Thus, it is apparent that a consumer’s personal preference of aesthetic fit is a vital consideration during the garment fit appraisal process.

Sub-Theme 1b: The Dresses Emphasised Disliked Bodily Areas (Dissatisfaction)
Equally, participants acknowledged that they were dissatisfied with the fit of the dresses when they emphasised disliked areas of the body. This dissatisfaction theme also emerged for all three dresses, exhibited in the quotes below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Dissatisfaction</td>
<td>Aesthetic</td>
<td>Emphasised disliked areas of the body</td>
<td>“The fact that it shows up every lump and bump is my biggest problem with it […] I have saddle bags here [thighs] […] the body con dress really emphasises that” (P.0830SP)</td>
</tr>
<tr>
<td>Midi Body Con</td>
<td>Aesthetic</td>
<td>Emphasised disliked areas of the body</td>
<td>“It just shows all my lumps and bumps […] it shows everything I dislike about myself, so my belly and my hips” (P.1925BHG)</td>
</tr>
<tr>
<td>Pencil Dress</td>
<td>Aesthetic</td>
<td>Emphasised disliked areas of the body</td>
<td>“I dislike my stomach area and my hips and it does slightly emphasise them” (P.1925BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It’s pulled at the front so across my hips […] which doesn’t make me feel like I look brilliant” (P.0122BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It makes me feel self-conscious […] it’s just tight around the stomach and hips” (P.0522R)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td>Aesthetic</td>
<td>Emphasised disliked areas of the body</td>
<td>“[…] I think because of my wide hips sometimes if I wear a long skirt I feel that sometimes it just makes me look broad all the way down” (P.1323SP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Like also my body proportions, because I have a larger bottom half I think it like draws attention to that in an unflattering way and sort of makes me look very large” (P.0722BHG)</td>
</tr>
</tbody>
</table>

Whilst wearing the dresses, participants reported feeling self-conscious about particular areas of their body. For example, during the physical appraisal of the midi body con dress, a participant stated, “I suppose it makes my already enormous hips look enormous” (P.1633R). Similarly, a participant who had a spoon body shape reported that “[…] I have saddlebags here [thighs] […] the body con dress really emphasises that” (P.0830SP). These findings extrapolate that a female’s perceptions of garment fit are closely linked to their perceived body satisfaction, an outcome also discovered by Grogan et al., (2013), Firth, and Gleeson (2007). One participant, in particular, stated that she would not wear the body con dress as “it reveals the areas that I’m most self-conscious of which [is] my stomach area basically” (P.2523R). Hence, this demonstrates that the perception of certain bodily areas plays an influential role in the garment fit evaluation process, inferring that the provision of such variables online is necessary.

7.4.1.2. Aesthetic Fit Theme 2: Balance

Sub-Theme 2a: The Dress Made One’s Body Shape Appear Balanced (Satisfaction)
Using garments to balance the body was a significant result from the study and aligned with the findings of Ridgway et al., (2017). This finding was particularly salient for the pencil dress demonstrated by the following quotes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Satisfaction</td>
<td>Aesthetic</td>
<td>Balances the Shape of the Body</td>
<td>“It’s also got stuff going on around the shoulders at the top half so it kind of balances my whole shape out […]” (P.0628BH)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[...] because there’s more distracting at the top I think it’s [saddlebags] less obvious” (P.0830SP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Because I think I don’t have a massively flat stomach [the material at the stomach area] helps me sort of have a bit of detail that does actually flatter my figure” (P.1521R).</td>
</tr>
</tbody>
</table>

Several participants disclosed that they were satisfied with the fit of the pencil dress as it created a sense of balance to their overall shape. Participants who had a spoon or bottom hourglass body shape stated that they were satisfied with the pencil dress, as the top of the dress diverted attention away from the lower areas of their body, a finding further corroborated by Ridgway et al., (2017). Whereas, participants who had a rectangular body shape were concerned about balancing out their body shape by creating more definition at the waist, exhibited through the following quote, “[…] it gives me more of a sort of hourglass figure than I would normally see in clothes” (P.2523R). Hence, this suggests that during the fit evaluation process, consumers seek out dress fits that will enable them to balance their body shape. Therefore, based on this finding, it appears that the consideration of one’s body shape is an influential factor during the fit appraisal process.

**Sub-Theme 2b: The Dress Made One’s Body Shape Appear Unbalanced (Dissatisfaction)**

On the other hand, participants also revealed that they were dissatisfied with the pencil dress, as it appeared to unbalance their body shape:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Dissatisfaction</td>
<td>Aesthetic</td>
<td>Unbalances the Shape of the Body</td>
<td>“I feel like wearing something that is tight at the bottom than it is on the top makes me look even more unbalanced” (P.0231BH)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I don’t know what it’s trying to flatter, it’s just asymmetrical […]” (P.0522R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I think the proportions [of the dress] are wrong and because of that […] it doesn’t go in at the right point” (P.2922BH)</td>
</tr>
</tbody>
</table>
Some participants disclosed how they disliked the fit of the pencil dress as it made them look “even more unbalanced” (P.0231BHG) and “asymmetrical” (P.0522R). Interestingly, when discussing the fit of the pencil dress, participants often made negative evaluations of the dress based on their expectations of the fit of the garment. For instance, one participant reported that the pencil dress “doesn’t go in at the right point” (P.2922BHG) inferring that individuals, based on the knowledge of previously worn garments, have an idea of how garments should appear on the body. Hence, this finding seems to infer that learned fit preferences are also a key consideration during the garment fit appraisal process.

7.4.2. Functional Fit of the Dresses
During the garment try-ons, participants revealed that their (dis)satisfaction with the fit of the dresses was contingent upon the perceived comfort and how well they could move in the dress. Hence, corroborating with Shin and Damhorst (2018) this study also demonstrates that functional fit is a crucial variable during the garment fit evaluation process. Functional fit is perceived when the clothed body is moving and concerns variables such as restriction or freedom of movements (Shin, 2013; McKinney and Shin, 2016; Shin and Damhorst, 2018). Currently, online retailers attempt to convey the functional fit of a garment through VTO and catwalk videos. Yet, an essential criticism of VTO is that the technology is unable to demonstrate the fit of the garment when the dress is in motion (Bougourd, 2007). The functional fit of a garment can only be fully appraised from first-hand evaluations of the garment, making the communication of this variable hugely challenging for online retailers.

7.4.2.1. Functional Fit Theme 1: Movement
Sub-Theme 1a: The Dress Permits Movement (Satisfaction)
Participants indicated that they were satisfied with the fit of the maxi dress and the midi body con dress in particular, as these dress fits made the wearer feel unconstrained:
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In particular, some participants reported that they were satisfied with the functional fit of the midi body con dress as they found it to be “forgiving” and it enabled them to, “[…] move around in it quite comfortably” (P.3023BHG). One participant disclosed, “because it’s a jersey fabric, and it’s quite stretchy […] it does allow me to move” (P.1521R). This quote suggests that participants were satisfied with the fit of the midi body con dress as they felt that the jersey fabric could compensate for some regions of the body that were larger than others. The following quote further supports this finding, “I’d say because of the stretch […] it would fit an arrange of sizes” (P.2922BHG). A further theme that emerged when exploring the fit of the midi body con dress was the satisfaction with the location of the slit of the dress on movement. Hence, these findings suggest that clothing fit satisfaction is primarily dictated by personal preference; therefore, an understanding of functional fit satisfaction from the consumer’s perspective is essential (LaBat and DeLong, 1990). Consequently, phase 3 of this study will test whether the communication of functional fit through user-generated reviews, can help ameliorate the consumer’s online garment fit appraisal.

Sub-Theme 1b: Uncomfortable and Restrictive (Dissatisfaction)

Alternatively, some participants unveiled that they were dissatisfied with the fit of the midi body con dress and the pencil dress as these styles restricted movement:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Dissatisfaction</td>
<td>Maxi Dress</td>
<td>Functional</td>
<td>Permits Movement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I feel comfortable sitting down and moving around in it” (P.0522R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“In terms of comfort and sitting down, I feel like it’s very comfortable […] I wouldn’t feel constricted” (P.0722BHG)</td>
</tr>
<tr>
<td></td>
<td>Midi Body Con</td>
<td>Functional</td>
<td>Permits Movement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I feel like I can move around in it quite comfortably erm, there’s nowhere where it feels restrictive or like I can’t move […]” (P.3023BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“The slit in the side makes it much easier to […] walk around in” (P.2021SP)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Dissatisfaction</td>
<td>Pencil Dress</td>
<td>Functional and physical</td>
<td>Restricted Movement due to tightness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I think it’s a bit tight and not very breathable […] I could probably move in it, but not very freely” (P.1731R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Because it doesn’t have such a deep slit it is more restricting […] I tend to have large strides and I wouldn’t be able to walk like that in this dress […]” (P.1323SP)</td>
</tr>
</tbody>
</table>
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This functional fit dissatisfaction theme was a particular concern for the pencil dress, with (N=21, 70%) of participants acknowledging that they disliked how restrictive they perceived the fit to be. What is interesting to note is that when participants reported being dissatisfied with the functional fit of the body con dress, they blamed areas of their body. This finding was particularly pertinent for participants who had a bottom hourglass or spoon body shape:

“[…] maybe sitting down it’s not as comfortable because it is tighter on my bum and hips” (P.1422BHG).

“In terms of around my hips it is a bit tight, and around my upper thigh, like sitting down it’s like quite, you know, tight and it like kind of ruches up a bit” (P.2221SP)

Indeed, for some participants, the tightness of the dresses seemed to affect the functional aspects of garment fit, a finding further supported by Shin and Damhorst (2018). For example, participants perceived that because they were wider at certain areas of their body, when they moved around in the body cont dress the fit at these areas became tighter, which in turn resulted in negative garment fit evaluations. Hence, it would seem that the functional comfort of a garment is not only dictated by the ability to move in the garment, but also through an awareness of one’s body dimensions and shape. This finding appears to infer that the communication of the functional fit of a garment, with specific reference to certain bodily areas, is vital to the consumer during their fit evaluation process.

7.4.3. Physical Fit of the Dresses
As participants sought to articulate their (dis)satisfaction with the fit of the three dresses, all females referred to the physical fit of the dresses. The physical fit of a garment is the tangibly perceived relationship between clothing and the body and includes parameters such as the tightness of a product (Shin, 2013).

7.4.3.1. Physical Fit Theme 1: Tightness and Looseness
The physical fit of the three dresses was the most discussed fit characteristic, with all participants acknowledging that either the overall fit or certain areas of the dresses were “tight” or “loose”.

Sub-Theme 1a: Tightness of the Dress (Satisfaction)
Some participants inferred that they were satisfied with the physical tightness of the midi body con dress:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>Physical</td>
<td>Tightness</td>
<td>“With it being tight obviously it sort of accentuates your curves” (P.1422BHG)</td>
</tr>
<tr>
<td>Body Con Dress</td>
<td></td>
<td></td>
<td>“Because it’s supposed to be tight it feels like it maybe elevates your bum a little bit” (P.0231BHG).</td>
</tr>
</tbody>
</table>

A possible reason as to why participants were satisfied with the tightness of the midi body con dress is that, given the name of the dress ‘body con dress’, which is an abbreviation of body-conscious, participants may have developed an expectation of the fit of the dress and so, anticipated it to be tight. This idea relates to the notion of consumers learned fit preferences. Indeed, one participant acknowledged that the body con dress is “supposed to be tight” (P.0231BHG). Hence, this indicates that participants were satisfied with the tightness of the body con dress as they expected this fit, with one participant stating that, “because it’s a body con dress I think I’d rather have it tighter than slack […]” (P.0122BHG). As such, participants implied that it was the “figure hugging” design of the dress that made it feel tight, rather than their body, with one participant recognising, “It does feel very tight around my thighs and hips, but I don’t think it’s because it’s too small, it’s just very figure hugging” (P.1029BHG).

**Sub-Theme 1b: Tightness of the Dress (Dissatisfaction)**

Alternatively, other participants revealed that they were dissatisfied with the tightness of the pencil dress and, unlike the body con dress, blamed their bodies as the reason for it being too tight:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>Functional and physical</td>
<td>Restricted Movement due to Tightness</td>
<td>“It’s just too tight everywhere, even when I sit down it’s just too tight!” (P.0522R)</td>
</tr>
<tr>
<td>Pencil Dress</td>
<td></td>
<td></td>
<td>“I think it’s a bit tight and not very breathable […]” (P.1731R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It can be a bit restricting though because it is quite tight on the shoulder […]” (P.1925BHG)</td>
</tr>
</tbody>
</table>

Interestingly, when comparing participants responses towards the tightness of the midi body con dress and the tightness of the pencil dress, it appeared that participants who were dissatisfied with the physical fit of the pencil dress blamed their body for the dress being too tight, demonstrated in the following quotes, “It’s a bit restrictive over the shoulders, but I’m...”
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quite broad [...]” (P.1121R) and “[...] it’s a bit too tight on my waist because I’ve not lost last summer’s weight [...]” (P.0231BHG). This finding suggests that, unlike the body con dress, participants did not assume that the pencil dress would be tight and, consequently they perceived the tightness of the dress to be a result of their body. This finding is similar to previous studies which have also found that if a garment does not fit correctly, females blame their bodies rather than the construction of the garment (Apeagyei, 2008; Park et al., 2009; Kim and Damhorst, 2010; Gribbin, 2014; Rieke et al., 2016). Hence, having user-generated reviews that acknowledge the discrepancies between the expected and actual fit of the garment may improve the provision of physical clothing fit online.

Furthermore, when participants examined the physical fit of the dresses, they often concurrently discussed the aesthetic fit of the dress. This finding was predominant for the midi body con dress whereby, one participant stated that she would not wear the dress as, “It’s a bit tight over my tummy and stuff [...] just the places that aren’t perfectly flat” (P.0122BHG), whilst another participant stated that the dress complimented her body shape as, “It sort of comes in at the bum, it’s nice and tight there [...] so it shows off [...] my body shape better” (P.0323HG). These quotes seem to support the idea that physical fit preference will depend on how satisfied/dissatisfied a person is with their body. This finding is similar to that of Yoo (2003), who found that a participant’s preference for looser fitted garments increased when the participant had a diamond shape figure. Hence, these conclusions align with LaBat and DeLong’s (1990) findings that a consumer determines on an individual basis what comprises of a good fit. Consequently, phase 3 of this research will test whether the communication of physical fit, through first-hand user-generated reviews, enhances consumers’ online fit appraisals.

It appeared from the discourse that participants’ evaluation of the physical fit of the body con dress seemed to vary based on body shapes, delineated in Table 7.4.
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Table 7.4. Areas of Concern

<table>
<thead>
<tr>
<th>Body Shape</th>
<th>Findings</th>
<th>Areas of concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangle</td>
<td>“[…] like the bust, hips and waist fit well” (P.1221R)</td>
<td>Fits well at all key bodily dimensions.</td>
</tr>
<tr>
<td></td>
<td>“[the dress] is very tight […] around my stomach area” (P.1731R)</td>
<td>Tight around the Stomach Area</td>
</tr>
<tr>
<td></td>
<td>“[the fit] around the bust is a bit constrictive […] the waist is just a bit constrictive […] the bum area, again it feels a tiny bit constrictive” (P.1521R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“It’s just too tight around my stomach area but the rest is ok” (P.0522R)</td>
<td></td>
</tr>
<tr>
<td>Bottom Hourglass</td>
<td>“Just around the waist, hip area it was a little bit tight and the bum area” (P.0628BHG)</td>
<td>Loose at the top half of the body but tighter at the hips and bum.</td>
</tr>
<tr>
<td></td>
<td>“It’s definitely tight across my hips and bum […] you can see it pulling slightly at the front” (P.0122BHG)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Sitting down, it’s not as comfortable because it is tighter on my bum and hips” (P.1422BHG)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“The fit around my waist and hips feels fine, it’s quite tight but it’s like as you would expect” (P.3023BHG)</td>
<td></td>
</tr>
<tr>
<td>Spoon</td>
<td>“[it’s] tighter around my bum and hips, but everywhere else fits well” (P.1323SP)</td>
<td>-Bum and hips and thigh.</td>
</tr>
<tr>
<td></td>
<td>“I think it’s around my stomach, hips and thighs […] it’s just not flattering being this tight” (P.0830SP)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“In terms of around my hips it is a bit tight and around my upper thigh, like sitting down it’s like quiet, you know, tight” (P.2221SP)</td>
<td></td>
</tr>
<tr>
<td>Triangle</td>
<td>“[…] the stomach area feels a bit tight” (P.0924TRI)</td>
<td>-Stomach area</td>
</tr>
<tr>
<td>Hourglass</td>
<td>“It’s nicely fitted on the top and on my legs and on my waist area, […] but at my stomach area it’s a bit baggy […] it doesn’t fit as well around my stomach” (P.0323HG)</td>
<td>-Fits fine at the bust and the hips but loose on the waist.</td>
</tr>
<tr>
<td></td>
<td>“[…] it does fit quite nicely on all the parts. But it was a bit baggy [on the stomach]” (P.2821HG)</td>
<td></td>
</tr>
</tbody>
</table>

From the verbatim reported in Table 7.4, it appears that females with different body shapes, despite being the same clothing size, experienced various physical fit problems with the midi body con dress. For example, participants who had a rectangular body shape predominantly reported tightness issues at the stomach area, demonstrated by the following quote, “[…] it’s just too tight around my stomach area” (P.0522R). Alternatively, participants who had a bottom hourglass body shape reported tightness issues at the hips and bum, for example, “it’s definitely tight across my hips and bum, you can see it pulling slightly at the front” (P.0122BHG).

Interestingly, whilst participants who had a spoon body shape reported similar tightness issues to participants who had a bottom hourglass figure (i.e., bum and hips), they found further tightness issues at their thighs, exemplified through the following quote, “around my hips it is a bit tight and around my upper thigh […]” (P.2221SP). Given the similar
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characteristics of the spoon and bottom hourglass body shapes, i.e., larger hip circumferences (Lee et al., 2007), this finding is not surprising. However, a potential reason as to why participants with a spoon body shape reported further fit issues at the thigh, is highlighted by Simmons et al., (2004, p.12) who reported that females with a spoon body shape would feel like they, ‘have a shelf at their hips’.

Participants who had an hourglass figure reported looseness issues at the waist area, for example, “[...] it doesn’t fit as well around my stomach” (P.0323HG). Whilst this finding sustains that of Alexander et al., (2005), who found that hourglass body types were more likely to experience fit issues at the waist, it also challenges Chen (2007) who unveiled that hourglass body shapes exhibit fit issues around the bust area.

The findings above not only seem to support the proposition that females with different body shapes will experience fit problems at different areas of the body (Alexander et al., 2005; Chen, 2007; Pisut and Connell, 2007; Makhanya et al., 2014), but they also extend the body shape literature by investigating a UK demographic. Indeed, although Grogan et al., (2013) examined garment fit in relation to females’ body image, the authors did not report how different body shapes experienced various clothing fit issues. Furthermore, previous studies that have examined the relationship between garment fit and body shape have used a survey alone, rather than a physical try-on evaluation. Hence, these findings seem to suggest that body shape is a crucial moderator during the garment fit appraisal process. Thus, an investigation of the provision of body shape online is necessary, which phase 3 of this research aims to test.

Sub-Theme 1c: Looseness of the Dresses (Satisfaction)

When participants were describing the physical fit of the dresses (i.e., looseness), they often simultaneously referred to the aesthetic fit of the dresses. Given that an individual’s perceptions of fit are closely linked to their body satisfaction (Grogan et al., 2013), it was no surprise that participants in this study articulated their appreciation with the loose fit of the maxi dress as it concealed areas of the body that they disliked about themselves. This finding aligned with that of Chattaraman and Rudd (2006) who established that participants with a lower-body cathexis preferred to wear garments with greater body coverage. Within this study, participants made particular reference to the maxi dress when discussing this fit satisfaction theme:
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Satisfaction</td>
<td>Physical</td>
<td>Looseness</td>
<td>“[…] it hides my stomach and my hips which is good!” (P.0522R)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td></td>
<td></td>
<td>“It’s buggy over the tummy area, so I wouldn’t mind going out in it” (P.1221R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It’s good for my figure as well because I’ve got a relatively small waist but a huge arse, so it covers all the problem zones […] it nicely goes over my bum, so you can’t really see how big it is” (P.2133BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[…] because it floaty it completely hides not only my tummy but also my big thighs and the saddle bags” (P.0830SP)</td>
</tr>
</tbody>
</table>

From the discourse, it seems that females who were self-conscious about their body were satisfied with the looseness of the maxi dress, as it concealed their “problem zones” (P.2133BHG). For example, some participants who had a rectangular body shape were satisfied with the looseness of the maxi dress as they felt that it concealed their stomach area, “it’s hiding all the unflattering areas I have […] like my stomach area” (P.1731R). This finding is somewhat similar to that of Pisut and Connell (2007) who found that females who had a rectangular body shape, had a much lower body cathexis and as a result were satisfied with garments that had a looser fit.

Whereas, other participants who had a bottom hourglass or a spoon body shape, disclosed that they were satisfied with the fit of the maxi dress as it concealed the lower areas of their body. For instance, one participant acknowledged that she liked the looseness of the maxi dress at the bottom as she felt that it is, “what she needs”, (P.0423BHG) to hide or conceal her perceived wider hips. Hence, these findings seem to allude to the idea that physical fit evaluation is closely related to a consumer’s self-perceived body shape (Park et al., 2009), body cathexis and learned fit preferences. Yet, the provision of these variables online is absent, and so, further investigation of the communication of subjective fit preferences and body shape online is essential.

**Sub-Theme 1d: Looseness of the Dresses (Dissatisfaction)**

Alternatively, several participants articulated that they were dissatisfied with the looseness of the maxi dress as they felt that it (1) negatively changed the way they perceived their body shape or (2) made them look bigger than were. Indeed, the former issue appeared to be a particular concern for participants who had a bottom hourglass or hourglass body shape, demonstrated in the following quotes:

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Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>Physical</td>
<td>Looseness</td>
<td>“I just look like I have no figure at all […] I look for something that at least gives me the illusion of having a figure because [this dress] literally just drowns me, it’s not very flattering” (P.2922BHG)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td></td>
<td></td>
<td>“[…] because [the dress] literally just drops, it does nothing for me […] It doesn’t show of my figure or body shape” (P.0323HG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I feel like it just goes out everywhere and you can’t see any shape at all to my body […] it doesn’t emphasise anything at all” (P.1925BHG)</td>
</tr>
</tbody>
</table>

Given that the hourglass and bottom hourglass shape are both characterised as having a defined waist (Rasband and Liechty, 2006; Makhanya and Mabuza, 2020), it appears from the discourse that these two body shape categories were dissatisfied when the loose fit of the maxi dress camouflaged their defined waist, a finding similar to that of Ridgway et al., (2017). This finding is somewhat related to the psychological theory of clothing benefits sought, which posits that products can provide consumers with certain benefits, such as self-improvement, figure flaw compensation and role identification (Shim and Bickle, 1994). Hence, the findings of this study seem to infer that some females are dissatisfied with the fit of the garment when it results in the concealment of one’s body shape and areas of their body that they like about themselves.

Additionally, it was clear from the discourse that many participants, when wearing the maxi dress, disclosed that they were dissatisfied with the looseness of the maxi dress as it made them feel bigger:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit</td>
<td>Physical</td>
<td>Looseness of dress made them appear bigger</td>
<td>“[…] because I’ve got quite big boobs I don’t like anything that’s too flowy because it sort of hangs off them” (P.1422BHG)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td></td>
<td></td>
<td>“It’s a bit baggy on the top, so I wouldn’t feel great […]” (P.3023BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[…] I think that makes me look bigger than I am” (P.2523R)</td>
</tr>
</tbody>
</table>

This issue appeared to be prominent for participants with a bottom hourglass body shape, with one participant stating, “[…] because I have a larger bottom half, I think it like draws attention to that in an unflattering way and sort of makes me look very large” (P.0722BHG). The above verbatim seems to infer that females often avoid looser dress fits that make areas of their body appear larger, a finding similar to that of Grogan et al., (2013). Additionally, females described the looseness of the maxi dress as, “saclike” (P.1633R), “drowning of your shape” (P.2523R) and “like a potato sack” (P.2133BHG), which aids in further

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explaining why the participants were dissatisfied with the physical fit of the maxi dress. Thus, it would seem from the aforementioned that the physical fit of a garment is a vital evaluative criterion during the garment appraisal process. However, it appears from the discourse that (dis)satisfaction with the looseness/ tightness of the dress heavily depends on the awareness of one’s perceived body shape and body satisfaction.

7.4.3.2. Physical Fit Theme 2: Looseness of Dress Features

Finally, participants, whilst evaluating the physical fit of the dresses, also sought to disclose their dissatisfaction with the “looseness” of certain features of the dresses. This finding was a particular issue for the dress straps of the maxi dress and the body con dress:

<table>
<thead>
<tr>
<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Dissatisfaction</td>
<td>Physical</td>
<td>Straps were Loose</td>
<td>“The straps are potentially a bit too long as well, so I feel like they’re going to fall off” (P.1422BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“The straps are a bit too long, I think they need to be taken in like an inch” (P.0522R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I think the straps are possibly a little bit too big on my shoulder” (P.2021SP)</td>
</tr>
<tr>
<td>Midi Body Con Dress</td>
<td>Physical</td>
<td>Straps were Loose</td>
<td>“The straps are maybe a bit too long, I feel like they’re going to fall off the shoulders” (P.1422BHG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“The straps are a bit too long for me […] it’s drooping a little bit on the back” (P.2021SP)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td>Physical</td>
<td>Straps were Loose</td>
<td>“The straps are too big they fall off my shoulders […] I feel like when I move the straps will fall down” (P.2321R)</td>
</tr>
</tbody>
</table>

Participants indicated that they were dissatisfied with the physical fit of the dress when certain features, such as the dress straps, were loose. This dissatisfaction was often related to the height of the participant, with one participant claiming, “[…] I think that because I have a short body, the straps are a bit too long for me” (P.0830SP). Hence, this finding supports Shin and Damhorst (2018) that participants tend to discuss their height when evaluating the physical fit of a garment.

7.4.4. Social Fit of the Dress

Shin and Damhorst (2018) found that when considering fit variables, young females are also concerned about social feedback or what others think about the fit of a garment. On this premise, it can be argued that social fit is a crucial consideration when understanding females’ fit preferences. Given that participants within this study were asked to review the fit of each of the three dresses, several females disclosed that they would recommend to
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

others, based on the garment try-on sessions, to either size up or size down. Furthermore, when appraising the fit of the dresses, participants appeared to identify specific social situations where they would feel comfortable to wear a particular type of fit. Accordingly, the sub-themes that emerged within this discourse comprised of (1) whether participants were (dis)satisfied with the size of the garment and (2) the identification of an appropriate social situation in which they would wear a certain fit.

7.4.4.1. Social Fit Theme 1: Sizing

Sub-Theme 1a: True to Size (Satisfaction)

Participants indicated that they were satisfied with the fit of the body con dress because the stretch of the fabric allowed the dress to be true to size:

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<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit Satisfaction</td>
<td>Social</td>
<td>True to size</td>
<td>“I’d say because of the stretch it kind of allows it to be [true to size], it would fit a range of sizes” (P.2922BHG)</td>
</tr>
<tr>
<td>Body Con Dress</td>
<td></td>
<td></td>
<td>“I wouldn’t go up a size and if I did go down a size I think it would be very, very tight, it probably wouldn’t go over my hips, so this [size] seems to work” (P.1633R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I have elements of my body which are probably a 10 and elements which are an 8 so the fact that it is accommodating is quite unusual” (P.0722BHG)</td>
</tr>
</tbody>
</table>

Due to the jersey fabric, participants revealed that the sizing of the body con dress was either perceived to be, “true to size” (P.2922BH) or “accommodating” (P.0722BH) and that the dress could fit “a range of sizes” (P.2922BH). Hence, due to the stretchiness of the jersey fabric, it appears that some participants were satisfied with the fit of the body con dress and stated that they would recommend to others to stick to their usual clothing size.

Sub-Theme 1b: Inaccurate Sizing (Dissatisfaction)

However, sizing dissatisfaction was a common social theme found for all three of the dresses:
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

<table>
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<th>Code</th>
<th>Theme</th>
<th>Sub-Theme</th>
<th>Quotes</th>
</tr>
</thead>
</table>
| Fit Dissatisfaction| Social| Inaccurate Sizing  | “It’s mostly [true to size] apart from the stomach area, I think the stomach is more of a size 8” (P.0522R)  
“I went for a 10 but I should have got of a 12” (P.1731R)  
“No [I wouldn’t stick with size 8] I would order the 10 but I do think that it may be a bit too tight as a 10 as well” (P.1925BHG) |
| Midi Body Con Dress| Social| Inaccurate Sizing  | “I think it could be improved, size wise […] the bottom half is a 10 and the top is a 12 […]” (P.0231BHG)  
“I thought it would be tighter in certain areas for an 8 […] I would probably go for a size 6 but then I don’t know” (P.0323HG)  
“No [it is not true to size], I think there are sizing issues anyway like in areas of the dress” (P.2221SP) |
| Pencil Dress       | Social| Inaccurate Sizing  | “I went for a size 8 […] I am usually a 10 in everything so that would suggest that this dress is too big” (P.0522R)  
“I would almost say that you don’t need the whole full range of sizes because it’s so oversized it wouldn’t be much difference in getting the size up or down […] I would go for a smaller size ” (P.2922BHG)  
“This is where you need a size 9 isn’t it? Somewhere in the middle” (P.1633R) |
| Maxi Dress         | Social| Inaccurate Sizing  |                                                                                                                                              |

The majority of participants reported that they were dissatisfied with the sizing of all three dresses, suggesting an overall dissatisfaction with RTW sizing systems, a finding also sustained in prior research (Alexander et al., 2005; Otieno et al., 2007; Grogan et al., 2013; Hernández et al., 2019). Whilst evaluating the size of the dresses, participants often synonymously discussed the overall physical fit of the dress. Indeed, several females stated that they were dissatisfied with the sizing of the body con dress, as it was tighter than they expected and recommended sizing up. This finding challenges Hernández et al., (2019) who discovered that sizing selection based on retailers sizing table often tends to a larger size than desired.

Conversely, for the maxi dress, females indicated that the sizing was larger than they imagined, with one participant acknowledging, “[…] but I think the 6 might even be too big” (P.1925BHG). Furthermore, participants indicated that the looseness of the maxi dress permitted it to be in-between sizes. This finding supports Saarijärvi et al., (2017) who found that sizing charts drive product returns, as consumers are inclined to buy multiple sizes and return the sizes that do not fit. Consequently, social fit recommendations in the form of user-generated reviews that indicate whether a garment is “true to size” or not, may aid the online garment appraisal process and decision-making, which phase 3 aims to test.
Interestingly, when participants appraised the size of the pencil dress, they indicated that the sizing was inconsistent at different areas of the body. This finding appeared to be a particular issue for participants who had a spoon or a bottom hourglass body shape, for example, “the bottom half is a 10 and the top is a 12 […]” (P.0231BHG). Whereas, the participants who had an hourglass body shape, found that the dress was looser at the waist area and indicated that they, “would probably like to size down for the body aspect” (P.2821HG). This finding infers that females with different body shapes, despite being the same clothing size, will experience various fit issues. Thus, given that sizing provision is exceptionally problematic during the consumer’s decision-making (Kim and Damhorst, 2013), the communication of size based on the first-hand experiences and recommendations of others online is warranted.

7.4.4.2. Social Fit Theme 2: Social Situations

A final theme that emerged from the thematic analysis is that the fit of a dress appeared to dictate the type of social situation that a participant envisioned wearing the dress. For example, for the maxi dress, many participants stated that because of the looseness of the dress, they would only feel comfortable wearing it in a particular context, such as on holiday:

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<th>Quotes</th>
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<tr>
<td>Fit</td>
<td>Social</td>
<td>Social Situation</td>
<td>“[…] with it being more flowy I kind of think it’s more summery to wear, it would make me feel like I am going on holiday in it” (P.1422BHG)</td>
</tr>
<tr>
<td>Maxi Dress</td>
<td>Social</td>
<td></td>
<td>“[…] it’s good for sort of if I wanted to go to the beach [but] it’s a dress that I wouldn’t want to wear if it wasn’t [for] that” (P.1521R)</td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td></td>
<td>“In this I can just relax and be comfortable so I would say definitely for that it’s really good for holiday […]” (P.0830SP)</td>
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</tbody>
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It is apparent from the verbatim above that females described the fit of the maxi dress as being “relaxed”, “comfortable” and “flowy” and indicated that they would only feel comfortable wearing this type of fit on holiday. Alternatively, when participants sought to describe the social fit of the pencil dress and the body con dress, they often imagined wearing these dress fits, “on a night out” (P.0231BH). Indeed, one participant quoted: “[…] because of its nature, as being a body con dress […] I would be happy to wear it for like going out for drinks” (P.0722BH). This finding is further supported by Kinley (2010), who discovered that women who sought to gain sexy and fashion-forward benefits from clothing preferred the fit of their garments to be tight. Hence, it would appear from this discourse that the fit of a garment and its suitability for social situations plays an influential role during the consumer’s garment fit appraisal process.
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7.5. Summary of Themes
Figure 7.6 provides a summary of the dress fit (dis)satisfaction themes for each of the three dresses.

![Figure 7.6. Fit (Dis)Satisfaction Themes](image)

7.6. Selection of Reviews for Phase 3
The fit reviews that were chosen to feature on the experimental webpages (phase 3) were selected by the researcher and experts at the University of Manchester to ensure content validity. The reviews were chosen based on the following criteria:
Chapter 7. Findings and Discussion of Phase 1 and 2 of The Research

1. The review had to encapsulate all fit parameters, Social Fit, Physical Fit, Aesthetic Fit and Functional Fit, in line with Shin (2013), McKinney and Shin (2016) and Shin and Damhorst (2018), outlined in Figure 7.6.

2. The reviews had to exhibit the fit (dis)satisfaction themes that were established via the thematic coding of the 30 semi-structured interviews, outlined in Figure 7.6.

3. There must be two positive reviews, two negative reviews and one moderate review present on each product information page to control for review valence (Shin et al., 2020).

4. Each review was limited to 100 +/- 20 characters long, in line with Zhu et al., (2020).

The presence of positive, negative and neutral reviews was essential to control for review valence, in line with previous experimental methodologies (Benlian et al., 2012). Indeed, Ahmad and Laroche (2015), in a study which investigated how emotions affected the helpfulness of a review, found that both happiness (positive) and disgust (negative) had a positive impact on the helpfulness of a review. Additionally, fit review valence has already been investigated in prior literature (Shin et al., 2018; Shin et al., 2020) and so, it was not a topic of enquiry for this research. Moreover, five reviews were considered an appropriate number to feature as Tata et al., (2020) discovered that the majority of participants (N=144, 35.3%) claimed to read 4-6 reviews online before finalising their purchase decision. Five reviews were selected to ensure that participants who were exposed to treatments with user-generated fit reviews present did not experience information overload. Appendix III depicts the reviews that featured on the websites.

7.7. Chapter Summary

This chapter disseminates the findings from both phase 1 (online dress survey) and 2 (garment try-on) of the research. The aim of phase 1 was to identify appropriate dress styles for phase 2 and 3 of the research (Research Objective 2). This aim was achieved through the distribution of an online dress survey via social media platforms to 343 UK females, aged 18-34. The dresses that yielded neutral responses in terms of likeability, similar to what one would usually wear and how flattering the dress was perceived to be, were the maxi dress, the midi body con dress and the pencil dress.

Phase 2 of the research involved a body scanning session and physical garment try-on of 30 UK females aged 18-34. The objective of phase 2 was to develop the website stimuli (visual...
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and verbal fit information) for phase 3 (Research Objective 3). Body scanning 30 UK females and categorising their body shapes using the FFIT method outlined by Lee et al., (2007), produced the visual fit information for the website treatments (phase 3). The four prevalent body shapes discovered within this study were: rectangle, bottom hourglass, spoon and triangle. Images were taken of the females, who exhibited these four body shapes, whilst wearing the dresses.

The verbal fit information was captured using semi-structured interviews concerning the fit evaluation of each of the three dresses, whilst the participants were wearing each of the dresses. In line with Rodrigues et al., (2017), the interviews were audio-recorded, transcribed, thematically coded and were condensed into fit reviews. It was apparent from phase 2 of the research that a consumer’s garment fit appraisal is hugely complex. The findings also corroborate that consumers assess garment fit through several variables namely: aesthetic, functional, social and physical fit (Shin, 2013; McKinney and Shin, 2016; Shin and Damhorst, 2018). Yet, currently, these fit variables are difficult to communicate when shopping online. Consequently, phase 3 of the research undertook an online shopping experiment to test how visual (body shape: hourglass vs. diverse) and verbal fit stimuli (user-generated fit review: absence vs. presence) affects consumers’ perceived product fit diagnosticity, concerns with clothing fit online and in turn, purchase intentions. The following chapter will disseminate the findings from the online shopping experiment (phase 3).
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

8.1. Introduction

This chapter outlines the quantitative data analysis, results, and discussions found from the online shopping experiment (phase 3). To test the theorised research model, which posits that different combinations of visual (body shape: hourglass vs. diverse) and verbal (user-generated reviews: presence vs. absence) fit stimuli, will affect consumers’ internal states leading to varied behavioural responses (Research Objective 5), an online questionnaire was designed on Qualtrics and distributed to 400 UK female subjects, aged 18-34, using a convenience sampling strategy.

The outline of the chapter is as follows; firstly, the data were screened, ensuring that outliers, missing data and unengaged responses were not incorporated into the final data analysis. Parametric assumptions, such as normality checks, were undertaken to ensure the conclusions found within this chapter are generalisable to the wider population. Manipulation checks were performed before continuing to analyse the data through factorial ANOVAs and bivariate correlations. Throughout the chapter, further justifications are provided in regards to the choice of statistical test, reliability and validity of the items adapted in the questionnaire and sample size suitability.
8.2. Experimental Procedure

As previously outlined in Chapter 6 of the Thesis, four mock websites were developed for the between-subjects web-experiment, which permitted the researcher to manipulate the level of verbal and visual information to assess their varied influences on consumers’ cognitive evaluations and behavioural responses (Tang and Zhang, 2020). Each of the four websites offered the three identical styles of dresses identified in phase 1 (online dress survey). Additionally, the diverse body shape website treatments contained images of the four different female body shapes (rectangle, bottom hourglass, spoon and triangle) identified in phase 2 (grament try-on), demonstrated in Figures 8.2, 8.3, 8.4 and 8.5.

![Design for Control Treatment](image)

**Figure 8.2. Control Treatment (Hourglass Body Shape x No Review)**

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Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Investigating How Product Page Design Affects Clothing Fit Appraisal Online

Figure 8.3. Website Treatment 2 (Diverse Body Shapes x No Review)

Figure 8.4. Website Treatment 3 (Hourglass Body Shape x Reviews)
8.3. Statistical Package for the Social Science (SPSS)

IBM SPSS Statistics, version 25, was employed to explicate the quantitative data obtained in phase 3 of the research. Within SPSS, data is organised in two primary windows, (1) the data editor and (2) the viewer. The data editor is where statistical functions are executed on the input data (Field, 2013). Indeed, in the data editor window, variables are listed in columns, and case responses are exhibited in rows (Wagner, 2020). The SPSS viewer window, on the other hand, produces the outputs from the analysis, which are often displayed as graphs, charts and tables (Wagner, 2020). SPSS has been proven to be useful for reliability and validity testing (Poushneh, 2018), exploratory factor analysis (Hair et al., 2010) and has been utilised to assess the statistical variance between groups upon exposure to different stimuli (Plotkina and Saurel, 2019). Consequently, it was deemed an appropriate statistical package to use in this present research.
8.3. Screening the Data

Before undertaking any statistical analysis, the researcher must screen the raw dataset for any inaccuracies or irregularities (Pallant, 2011). Indeed, an inspection of the dataset is vital to identify errors such as missing values, outliers and unengaged responses (Hair et al., 2010).

8.3.1. Missing Data

Missing data refers to information that is absent within a dataset (Hair et al., 2010). Missing data can occur due to respondents accidentally overlooking questions or exerting their right not to answer the question (Field, 2013). However, missing data can severely weaken analysis (Cronk, 2019). Thus, it is paramount to identify absent responses before undertaking any statistical procedures. Within this study, descriptive statistics permitted the researcher to establish whether there were any missing values from the dataset. Obtaining frequencies enabled a count of the total responses and non-responses to a question (Malhotra et al., 2017).

<table>
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<tr>
<th>Case Processing Summary</th>
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<td>group</td>
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<td>MEAN_PD</td>
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<tr>
<td>MEAN_PI</td>
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<td>4</td>
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</table>

Figure 8.6. Screening the Data for Missing Cases

It is clear from the frequency counts illustrated in Figure 8.6, that there were no missing cases within the dataset and that Qualtrics successfully obtained 400 full responses.

8.3.2. Outlier Detection

Outliers are results within the dataset that are distinctly dissimilar from other responses (Field, 2013). Outliers cannot be categorically deemed as problematic or advantageous, and so, the researcher should examine outliers in relation to the analysis (Hair et al., 2010).
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Whilst outliers may provide intriguing insights about a population (Hair et al., 2010), some statistical tests are extremely sensitive to outliers (Pallant, 2011). Outliers can be identified in several ways, with the most common detection being through boxplots (Hair et al., 2010). SPSS categorises points as outliers if they extend more than 1.5 box-lengths from the edge of the box (Denis, 2019). If there are outliers within a dataset, there are many approaches that should be considered, such as data transformation (Denis, 2019), removing the outlier cases (Field, 2009; Hair et al., 2010) or changing the value of the outlier to the next highest score +1 (Field, 2009). In the present study, boxplots identified outliers in line with Zhu et al., (2020). It was apparent from the output that 7 outliers were visible; 2 in Group 2, 4 in Group 3 and 1 in Group 4.

In line with Zhu et al., (2020), the researcher decided to remove the 7 outliers from the dataset as the statistical test adopted within the present study is not robust against outliers (Hair et al., 2010). Indeed, ANOVA is not robust against outliers because one single value can cause the overall estimate to deviate exceptionally far from the true value and in doing so can affect the Type-I error probability. Hence, this present study adhered to the recommendation posited by Hair et al., (2010, p.686), that all outliers should be identified and removed from the dataset as; ‘their impact will be disproportionate in the overall results’. Additionally, prior experimental studies that have also performed ANOVA also removed identified outliers (See: Hilken et al., 2017). Hence, the 7 outliers that were substantially different were removed from the present study, resulting in 393 remaining observations.

8.3.3. Unengaged Responses

Unengaged responses, also known as straight-lining, can be identified when a subject provides the same (non-differentiated) score consecutively to a series of questions (Schonlau and Toepoel, 2015). Prior research has used straight-lining as an indicator of poor response quality (Zhang and Conrad, 2014). Straight-lining is extremely common for online surveys as questions are often assembled in a grid format using the same response categories (Kim et al., 2019). Thus, respondents may be encouraged to aimlessly click the same response due to survey fatigue.

Straight-lining does not always imply a loss in data quality; however, if a survey includes both positively and negatively worded items, straight-lining is likely to indicate poor data quality (Schonlau and Toepoel, 2015). As the online survey within this study included both
positively and negatively worded items, straight-lining was a vital consideration. Although Qualtrics attempted to control for straight-lining by providing a minimum time limit on each page to ensure thoughtful responses, straight-lining was further examined by performing standard deviations on all variable responses. Adhering to the criterion outlined by Nguyen et al., (2017), unengaged responses were omitted from the dataset if they received a SD < .30. Within the present study, 1 response (Case No. 392, Group 4) scored a SD = .00 and so, this response was omitted from the dataset resulting in a final sample size of 392.

8.4. Screening the Variables
Once the researcher had screened the data, preliminarily analysis was undertaken to test the assumption of normality for all of the variables. Normality is concerned with the extent to which the distribution of the sample data corresponds to a normal distribution (Hair et al., 2010). Many statistical tests assume that scores on the dependent variable are normally distributed (Pallant, 2011). In the present study, normality was checked for each of the dependent variables across each of the groups using histograms, skewness and kurtosis values, Q-Q plots and statistical tests of normality.

8.4.1. Histograms
Histograms are graphical displays of the distribution of a dependent variable (Hair et al., 2010). The shape of a histogram provides information as to whether the scores on the continuous variable are normally distributed (Pallant, 2011; Denis, 2019). If the data is normally distributed, the scores are disseminated symmetrically around the centre of all scores and are often characterised as having a bell-shaped curve (Field, 2009). However, there are two alternative shapes of distribution, which deviate from normal: skewness and kurtosis (Hair et al., 2010). If the data is skewed then the scores are unbalanced and will gather more predominantly on one side of the histogram (Hair et al., 2010). Alternatively, kurtosis refers to how peaked or flat the distribution is compared to a normal distribution (Field, 2009; Hair et al., 2010; Pallant, 2011).

It is apparent from Appendix IV that although the histograms appear to be slightly negatively skewed, there were no serious concerns with skewness or kurtosis for perceived product fit diagnosticity for any of the four groups. However, it is also clear from Appendix IV that there were some skewness and kurtosis issues for both concerns with clothing fit online and
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

purchase intentions for the four groups. However, Tabachnick and Fidell (2014, p.114) stated that for reasonably large samples (200+) skewness and kurtosis issues do not make a practical difference during the analysis. Hence, as this present study had a sample size exceeding 200, this violation of normality was not a prominent concern.

8.4.2. Skewness and Kurtosis Values

Although histograms are perceived to be advantageous given their simplicity (Hair et al., 2010), they are incredibly subjective and so, researchers should interpret them with caution (Field, 2009). Consequently, within this study skewness and kurtosis values were explicated alongside the histograms. If a kurtosis or skewness value deviates above or below 0, this will infer non-normal distribution (Field, 2009).

Several measures have been posited to determine acceptable levels of skewness and kurtosis. Indeed, West, Finch and Curran (1995) proposed that a skewness value of less than 2.0 and a kurtosis value less than 7.0 would infer normality. Whereas Hair et al., (2010) recommend that values exceeding ±1.0 indicate skewed distribution. Alternatively, Field (2009) states that whilst skewness and kurtosis scores are useful for assessing normality, these scores can also be converted to z-scores by dividing the skewness/ kurtosis statistic by the standard error, exhibited by the equation below:

\[ Z_{\text{skewness}} = \frac{S - 0}{SE_{\text{skewness}}} \quad \text{and} \quad Z_{\text{kurtosis}} = \frac{K - 0}{SE_{\text{kurtosis}}} \]

**Key:**
- \( K \) = Kurtosis value,
- \( S \) = Skewness value,
- \( SE \) = Standard Error

**Equation 8.1. Z scores for Skewness and Kurtosis**

*Source: Field (2009, p.139)*

Field (2009) advocates that for smaller sample sizes, z-scores higher than ±1.96 are significant and would infer deviations from normality, which is further supported by Hair et al., (2010). However, Field (2009) also acknowledges that for larger sample sizes z-scores greater than 2.58 would infer non-normality. Conversely, Kim (2013) advocates that for medium sample sizes (N=50-300), z-scores less than ±3.29 would demonstrate normality. Both skewness and kurtosis values and z-scores were calculated in the present study. Table 8.1 demonstrates the results.
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It is apparent from Table 8.1, that all the skewness scores for perceived product fit diagnosticity, concerns with clothing fit online and purchase intentions were less than 2.0 in line with the recommendations of West et al., (1995) which infers normality. In a similar vein, although the majority of kurtosis values for perceived product diagnosticity, concerns with clothing fit online and purchase intentions were negative, all the scores were less than 7.0 in line with West et al., (1995), which also infers normality. When assessing the z-scores, it is apparent that the Zskewness and Zkurtosis scores, besides purchase intentions in G4 (Zskewness score = -2.61), were under the recommended threshold of ±2.58 for large sample sizes (Field, 2009). Thus, from this, it can be inferred that there are no severe skewness or kurtosis concerns within this present study, besides purchase intentions in G4, which is negatively skewed.

### 8.4.3. Q-Q Plots

Normality can also be assessed through the visual inspection of normal probability plots (Pallant, 2011), also referred to as Q-Q plots. Q-Q plots effectively compare the observed values with the expected values of the variable under the condition of normality (Denis, 2019). In the Q-Q plot, the straight diagonal line depicts the expected values, and the individually plotted points represent the observed values (Field, 2009). If the observed values align precisely with the expected values, then this would extrapolate that the data is normally distributed (Field, 2009). However, if the observed points deviate below or above the expected values, then this would suggest there is an issue with kurtosis (Field, 2009). Whereas, if the observed points wrap around the straight diagonal line, depicting an S-like shape, then this would indicate that the data is skewed (Field, 2009).
Q-Q plots were used in the present study to visually assess the normality of the three dependent variables for each of the groups. It was clear from the Q-Q plots that for perceived product fit diagnosticity, the observed values do not deviate substantially from the expected values. Hence, this would suggest that the scores for product diagnosticity for each group are normally distributed. However, it was also apparent from the Q-Q plots that for concerns with clothing fit online and purchase intentions, the observed values slightly wrap around the expected values, which would suggest that there are some minor issues in regards to the skewness of these two variables.

### 8.4.4. Statistical Tests of Normality

Additionally, SPSS can provide statistical tests for normality (Hair et al., 2010). Indeed, the Kolmogorov-Smirnov (KS) test and the Shapiro-Wilk (SW) test examine the hypothesis that the sample data originates from a normalised population (Denis, 2019). A non-significant result ($p > .05$) would infer that the data is normally distributed (Pallant, 2011). Figure 8.7 demonstrates the statistical tests of normality for the present study.

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<th>Tests of Normality</th>
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<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
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<tr>
<td><strong>Mean pi</strong></td>
</tr>
<tr>
<td>Group</td>
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<tr>
<td>1</td>
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<tr>
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<tr>
<td>3</td>
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<td>4</td>
</tr>
</tbody>
</table>

It is indicative from Figure 8.7 that the scores for perceived product fit diagnosticity in Group 1, $D$ (96) = .07, $p > .05$, Group 2, $D$ (97) = .09, $p > .05$, Group 3, $D$ (100) = .07, $p > .05$ and Group 4, $D$ (99) = .08, $p > .05$, were all non-significant suggesting normal distribution. Conversely, concerns with fit online in Group 1, $D$ (96) = .11, $p < .05$, Group 2, $D$ (97) = .096, $p < .05$ and Group 4, $D$ (99) = .10, $p < .05$, were statistically significant suggesting a
deviation from normality. However, concerns with fit online for Group 3, \( D (100) = .09, p > .05 \) produced a non-significant result suggesting normal distribution for Group 3. Finally, purchase intentions in Group 1, \( D (96) = .11, p < .05 \), Group 2, \( D (97) = .14, p < .05 \), Group 3, \( D (100) = .12, p < .05 \) and Group 4, \( D (99) = .14, p < .05 \), were all statistically significant suggesting a deviation from normality. However, it is important to note that the KS and SW tests have been criticised for being unreliable for large sample sizes (300+) (Kim, 2013). Accordingly, the results from the KS outputs are interpreted with caution in the present study.

### 8.4.5. Normality Conclusion

In the present study, the assumption of normality was tested through an analysis of histograms, skewness and kurtosis values, Q-Q plots and by undertaking statistical tests of normality in SPSS. The aforementioned suggests that the scores for perceived product fit diagnosticity were normally distributed across all four groups. However, the findings from the Kolmogorov-Smirnov (KS) test of normality denote that the scores for concerns with clothing fit online and purchase intentions were not normally distributed. Although normality cannot be assumed for concerns with clothing fit online and purchase intentions, Hair et al., (2010) state that with large sample sizes of 200 respondents or more, the violations of normality are insignificant. Indeed, the author posits that larger sample sizes can increase statistical power by reducing sampling error and so, larger sample sizes reduce the negative impacts of deviation from normality (Hair et al., 2010). This justification is further corroborated by Pallant (2011), who stated that parametric tests are robust against the violation of normality as long as the sample size is large (i.e. 30+). Additionally, Hair et al., (2010) advocate that for modest sample sizes, a violation of the normality assumption can be discounted as long as the differences are due to skewness and not outliers. Hence, as all 7 outliers in this study had been removed, and the sample size exceeded 200, violations of non-normality are not a significant concern within the present research.

### Reliability and Validity Testing

#### 8.5. Reliability

Reliability is concerned with the extent to which a variable or a set of variables are consistent and stable in what they intend to measure (Hair et al., 2010; Field, 2013; Fan et al., 2020). Thus, reliability helps to assess the ‘goodness’ of a measure (Cavana, Delahave and Sekaran, 2001) and is operationalised as, how measurement items are free from random error
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

(Malhotra et al., 2017). Internal consistency is commonly assessed using Cronbach’s alpha (Hair et al., 2010; Fan et al., 2020; Zhu and Li, 2020). Cronbach’s alpha equation is outlined below. The top part of the equation calculates the number of measurement items (N) squared, multiplied by the average covariance between items. In contrast, the bottom part calculates the sum of all the item variances and covariances (Field, 2009).

\[ \alpha = \frac{N^2 \text{Cov}}{\sum s^2_{\text{item}} + \sum \text{Cov}_{\text{item}}} \]

<table>
<thead>
<tr>
<th>Key:</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = Number of items, Cov = Average Covariance between item-pairs, ( \sum ) = Sum</td>
</tr>
</tbody>
</table>

**Equation 8.2. Cronbach Alpha Coefficient**  
*Source: Field (2009, p.674)*

A correlation coefficient value ranges from 0 to 1 and the nearer the result is to 1 the more internally reliable the scale is perceived to be (Bryman and Cramer, 2011). However, a discrepancy exists as to what is an acceptable value of Cronbach’s alpha. Indeed, some scholars state that a value of .8 is acceptable (Kline, 1999; Field and Hole, 2003; Hair et al., 2010), whereas others posit that a Cronbach’s alpha exceeding .7 is sufficient (Nunnally et al., 1967; Cavana et al., 2001). Alternatively, Hair et al., (2010) acknowledged that a Cronbach’s alpha of .6 could be accepted in exploratory research, which is further corroborated by Kline (1999) who posited that when measuring psychological constructs, a value below .7 could be accepted.

However, despite this contradiction, prior research has often adopted a Cronbach’s alpha value ranging between .7-.9 as the criterion for internal consistency (Park et al., 2005; Pavlou and Fygenson 2006; Jiang and Benbasat, 2007; Wang and Chang, 2013; Shin and Baytar, 2014; Cano et al., 2017; Kim, 2019; Hu and Krishen, 2019; Fan et al., 2020). Hence, in line with prior research, this study will also adopt this criterion for reliability. It is clear from Appendix VI that the Cronbach’s alpha scores for all three variables exceeded the recommended threshold of .8. Hence, internal reliability of the constructs can be assumed within this study.
8.6. Validity
Validity is concerned with the accuracy of the measurement that the study intends to measure (Bryman and Cramer, 2011; Babbie et al., 2019; Zhu and Li, 2020). Indeed, when undertaking experimental research, experimental validity and construct validity have to be achieved. Whilst Chapter 6 of the thesis outlines how experimental validity was achieved within this study, construct validity, in particular convergent and discriminate validity was empirically measured by examining the correlation between a set of defined variables (Hair et al., 2010). Convergent validity establishes the level of correlation between different measures of the same concept (Hair et al., 2010; Fallon, 2016). Alternatively, discriminate validity examines the extent to which the measures of a construct are empirically distinct from one another (Peng et al., 2016). Consequently, this study examined construct validity by undertaking an Exploratory Factor Analysis (Cavana et al., 2001). The proceeding section will demonstrate the suitability for running an Exploratory Factor Analysis (EFA) and disseminate the validity results from the EFA.

8.6.1. Exploratory Factor Analysis (EFA)
An Exploratory Factor Analysis (EFA) is concerned with identifying the essential structure of the variables in question (Field, 2009; Hair et al., 2010), without determining the degree to which the results fit a particular model (Bryman and Cramer, 2011). Factor analysis enables a high number of interrelated variables to be grouped and reduced into a smaller set of more appropriate factors (Field, 2009). In summary, EFA explores the dataset and provides the researcher with insight into how many factors best characterise the data (Hair et al., 2010). EFA has been used abundantly in prior online retailing studies to demonstrate construct validity (Dai et al., 2014; Rubab et al., 2018; Zhang et al., 2019; Plotkina and Saurel, 2019; Liang et al., 2020; Fan et al., 2020; Zhu et al., 2020). Hence, EFA was undertaken within this study to confirm construct validity.

8.6.1.1. Sample Size
Field (2009) and Bryman and Cramer (2011) theorise that the reliability of EFA is highly contingent upon the sample size. Several theories have been identified when discerning a suitable sample size. Hair et al., (2010) recommended that a sample size of 100+ is preferable. A more recent recommendation by Pallant (2013) suggests that a sample size above 150 is ideal. However, academics have also stated that the ratio of people to the
number of measured variables must also be considered when determining sample size suitability. For example, Hair et al., (2010) acknowledge that the sample size should have at least 5 times the amount of observations as the number of variables that are to be analysed. Kass and Tinsley (1979) further recommend having between 5-10 subjects per variable. Despite the irreconcilable suggestions, a sample size of 400, which was obtained within this study, was considered a suitable sample size for EFA.

8.6.1.2. Kaiser-Meyer-Olkin (KMO) Sampling Adequacy
An alternative method for measuring sampling adequacy is to use the Kaiser-Meyer-Olkin (KMO) test (Field, 2009). Whilst the KMO statistic varies from 0 to 1 (Field, 2009), high values between .5 and 1 indicate that it is suitable for a factor analysis to be carried out (Malhotra et al., 2017). Alternatively, whilst Malhotra et al., (2017) suggest that a value higher than .5 is desirable, Hutchenson and Sofroniou (1999) propose that values between .8 and .9 are ideal. Figure 8.8 illustrates the KMO value for the present study.

Figure 8.8. KMO Value in the Present Study.

8.6.1.3. Factor Extraction
Given that the primary aim of an EFA is to reduce the number of variables into fewer and more significant factors (Field, 2009; Bryman and Cramer, 2011), it is vital to determine how many factors to retain. Determining the number of factors can be undertaken in several ways, including (1) a-priori determination, (2) Kaiser’s criterion or (3) visual inspection of the scree plot (Malhotra et al., 2017).

The a-priori criterion would be suitable to apply if the researcher had already determined the number of factors required for the study (Hair et al., 2010). Kaiser established the second determination method in 1960. Indeed, the author postulated that factors should only be retained if they displayed eigenvalues greater than 1 (Field et al., 2009; Malhotra et al., 2017). The final determination method is the visual assessment of the scree plot, whereby each eigenvalue (Y-axis) is plotted against the factor with which it is associated with (X-axis) (Field, 2009; Malhotra et al., 2017). Stevens (2002) recommends that only the factors
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that are to the left of the turning point should be retained, which Field (2009) also supports. Whilst the scree plot is deemed a useful way to identify factors visually, it also contended that factor retention on this criterion alone is not advisable (Field, 2009) given its high dependency on subjective visual assessment. Figure 8.9 demonstrates the scree plot obtained in this study.

![Scree Plot](image)

**Figure 8.9. Scree Plot**

It is evident from Figure 8.9 that the point of inflexion occurs at the fourth factor, and therefore this would infer that 3 factors have been identified. Adhering to the recommendation that the scree plot should not be used in isolation (Field, 2009), Figure 8.10 further demonstrates that only 3 factors obtained eigenvalues greater than 1, suggesting that 3 factors explain 65.63% of the total variance.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
<td>Cumulative</td>
</tr>
<tr>
<td>3</td>
<td>1.955</td>
<td>10.861</td>
<td>65.628</td>
</tr>
<tr>
<td>4</td>
<td>0.776</td>
<td>4.311</td>
<td>69.938</td>
</tr>
</tbody>
</table>

**Figure 8.10. Eigenvalues and Total Variance Explained**
8.6.1.4. Factor Rotation

Factor rotation is a process that manipulates the factor axes to reduce the number of factors needed to reflect a more straightforward and meaningful factor structure (Hair et al., 2010; Denis, 2019). Indeed, whilst factor extraction identifies the factors that explain the highest amount of variance (Bryman and Cramer, 2011), it fails to differentiate against the items that load onto those factors. There are two primary rotation methods; (1) orthogonal rotation and (2) oblique rotation (Malhotra et al., 2017; Denis, 2019). Orthogonal rotation is to be employed if all of the factors are independent and do not correlate (Malhotra et al., 2017). Alternatively, oblique rotation allows the factors to correlate (Field, 2009; Denis, 2019). There are a number of rotational techniques that can be undertaken in SPSS, namely, Quartimax, Varimax and Equamax for orthogonal rotation, and Promax and Direct Obliman for oblique rotation (Pallant, 2013). Field (2009) highlights that orthogonal rotation methods are nonsensical to use in the context of social science research, as it is doubtful that one psychological construct will not correlate with another psychological construct. Indeed, within this study, it was apparent from the component correlation matrix (Figure 8.11) that component 2 and 3 were correlated ($r>.3$).

![Component Correlation Matrix](image)

**Figure 8.11. Component Correlation Matrix**

Thus, because two components were highly correlated ($r>.3$), Promax with Kaiser Normalisation was the rotational method adopted in this study, as it permitted a correlation between variables to exist. Moreover, Promax can analyse larger data sets much quicker than Direct Obliman (IBM, 2020), and has been predominantly used in social science research (Zhang, Ko and Carpenter, 2016; Hallam and Zanella, 2017).

8.6.1.5. Factor Loading and Pattern Matrices

The pattern matrix is one of two matrices that are produced when undertaking oblique rotation (Hair et al., 2010). The pattern matrix demonstrates the loadings, which represent...
the contribution of each variable on a particular factor (Field, 2009; Hair et al., 2010; Pallant, 2013). A factor loading of more than .3 is typically considered significant (Field, 2009; Tabachnick and Fidell, 2014). Yet, Hair et al., (2010) argue that sample size is a vital consideration when determining whether a factor loading is significant. The author suggested that a factor loading of .3 or above is only considered significant in a sample size of 350+ (Hair et al., 2010). However, Stevens (2002) advised that only factor loadings with a value of .4 or greater should be accepted. Thus, as the present study had a sample size of 392, only loadings that exceeded .4 were included in the analysis. Figure 8.12 demonstrates the pattern matrix and factor loadings for the present study.

<table>
<thead>
<tr>
<th>Pattern Matrix&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Concerns with Fit Online</strong></td>
<td>CON_3</td>
</tr>
<tr>
<td></td>
<td>CON_6</td>
</tr>
<tr>
<td></td>
<td>CON_4</td>
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<td></td>
<td>CON_1</td>
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<tr>
<td></td>
<td>CON_7</td>
</tr>
<tr>
<td></td>
<td>CON_2</td>
</tr>
<tr>
<td></td>
<td>CON_5</td>
</tr>
<tr>
<td><strong>Perceived Product Fit Diagnosticity</strong></td>
<td>PD_2</td>
</tr>
<tr>
<td></td>
<td>PD_3</td>
</tr>
<tr>
<td></td>
<td>PD_4</td>
</tr>
<tr>
<td></td>
<td>PD_7</td>
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<tr>
<td></td>
<td>PD_6</td>
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<tr>
<td></td>
<td>PD_5</td>
</tr>
<tr>
<td></td>
<td>PD_1</td>
</tr>
<tr>
<td><strong>Purchase Intentions</strong></td>
<td>PI_3</td>
</tr>
<tr>
<td></td>
<td>PI_1</td>
</tr>
<tr>
<td></td>
<td>PI_2</td>
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<tr>
<td></td>
<td>PI_4</td>
</tr>
</tbody>
</table>

The extraction method is Principal Component Analysis and the rotation method is Promax with Kaiser Normalization.<sup>a</sup>

**Figure 8.12. Pattern Matrix and Factor Loadings**

It is apparent from the pattern matrix, that the factor loadings for perceived product fit diagnosticity (.805-.613), concerns with fit online (.861-.772) and purchase intentions (.929-.851) all had factor loadings higher than .6. As demonstrated in Figure 8.12, all items that measured concerns with clothing fit online loaded onto component 1, all items that measured...
perceived product fit diagnosticity loaded onto component 2 and all items that measured purchase intentions loaded onto component 3. Consequently, convergent validity, which is the extent to which items of a specific construct share a high proportion of variance in common (Hair et al., 2010), can be assumed. Discriminant validity refers to the extent to which two constructs are empirically distinct from one another (Peng et al., 2016). Adhering to Dai et al., (2014) and Liang et al., (2020), Figure 8.12 illustrates the absence of cross-loadings greater than .4, hence, discriminate validity was also assumed for this study.

8.6.1.6. EFA Summary
To examine construct validity, a principal component factor analysis (PCA) was conducted on 18 items with an oblique rotation (Promax). The Kaiser-Meyer-Olkin (KMO) measure verified the suitability and sampling adequacy for the analysis, KMO= .893. Bartlett’s test of Sphericity indicated that correlations between the items were sufficiently large for PCA ($p<.001$). An initial analysis was undertaken to obtain eigenvalues for each component in the data. Three components had eigenvalues over Kaiser’s criterion of 1 and in combination explained 65.63% of the total variance. The screen plot further corroborated that three factors were obtained before the point of inflexion. Hence, three factors were retained in the analysis.

The pattern matrix, illustrated in Figure 8.12, showed that all items converged onto the correct factor and factor loading scores for all three factors were higher than the recommended threshold of .4 (Field, 2009). The items that clustered onto component 1 reflect concerns with clothing fit online (CON), component 2 reflects perceived product fit diagnosticity (PD), and component 3 reflects purchase intentions (PI). Finally, no items exhibited cross-loadings greater than .4 onto other items, extrapolating that discriminant validity was assumed within this dataset.

8.7. Common Method Bias (CMB)
Common Method Bias (CMB) occurs when the variance is attributed to the measurement method rather than to the actual constructs of the measure (Podsakoff et al., 2003). Method bias can occur in many ways, such as respondents answering in a way they perceive to be socially satisfactory (Podsakoff et al., 2003). CMB is hugely problematic in social science research as it threatens the validity and reliability of findings (MacKenzie and Podsakoff,
2012). Hence, as the present study used a self-reported questionnaire to measure a set of variables, Harman’s single factor test was undertaken to examine the presence of common method bias in line with Podsakoff et al., (2003) and Guo et al., (2020).

Whilst Harman’s single factor test has been criticised for its inability to statistically control for common method variance (Podsakoff et al., 2003), it has been widely adopted in prior literature (see: Spralls, Hunt and Wilcox, 2011; Aw, 2019; Mou et al., 2019; Guo et al., 2020; Chen, Li and Zhao, 2020; Friedrich et al., 2020; Tang and Zhang, 2020). Thus, it is a suitable method for assessing CMB. Hence, an EFA was undertaken to examine whether one factor held a substantial amount of the shared variance (Tang and Zhang, 2020).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Total Eigenvalues</th>
<th>% of Variance</th>
<th>Cumulative %</th>
<th>Extraction Sums of Squared Loadings</th>
<th>% of Variance</th>
<th>Cumulative %</th>
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<tr>
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<tr>
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<tr>
<td>18</td>
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<td>.934</td>
<td>100.000</td>
<td></td>
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</tr>
</tbody>
</table>

**Figure 8.13. Harman’s Single Factor Test**

It is apparent from Figure 8.13 that the largest variance explained by a single factor was 28.52%, which is substantially less than the recommended threshold of below 50% (Mou et al., 2019). Hence, this indicated that there was no serious threat of CMB within this dataset.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

8.8. Choice of Statistical Test

To meet Research Objective 5: To test the theorised S-O-R model in a between-subjects factorial web-experiment and to provide future recommendations on how product information pages can ameliorate the design of fit provision online, this phase of the research employed a 2x2 factorial online shopping experiment. To test the hypotheses outlined in Chapter 5 of the thesis, 2-way ANOVAs were undertaken, followed by a bivariate correlation. It is important to note that the researcher initially considered undertaking a MANOVA, which permits the investigation of multiple dependent variables (Malhotra et al., 2017). However, a MANOVA was not suitable as it was apparent that the dependent variables (concerns with clothing fit online and perceived product fit diagnosticity) were not moderately correlated, which is a fundamental assumption of MANOVA (Malhotra et al., 2017). Thus, in line with the recommendations posited by Meyers, Gamst and Guarino (2013) and Malhotra et al., (2017) separate 2-way ANOVAs were undertaken.

2-way ANOVAs were suitable for this research as it allowed for the empirical testing of the research framework by specifically investigating the impact of two independent variables (stimuli: visual and verbal fit information) on separate dependent variables (cognitive processes: concerns with clothing fit online, perceived product fit diagnosticity, and behavioural outcomes: purchase intentions) (Pallant, 2013). Additionally, the use of ANOVA has been corroborated within prior experimental research that has also investigated the impact of online product presentations on consumers’ cognitive and behavioural responses (Yoo and Kim, 2012; Kim and Lennon, 2012; Overmars and Poels, 2015; Orus et al., 2017; Huang et al., 2018; Craciun and Moore, 2019; Fan et al., 2020). However, before ANOVA could be undertaken, it was fundamental that the assumptions of ANOVA were met.

8.9. Assumptions of ANOVA

8.9.1. Variables

The first assumption of ANOVA concerns the type of variables that are necessary for successful analysis. For ANOVA, the independent variables must be non-metric, and the dependent variable must be metric (Field and Hole, 2003). A 2-way ANOVA aims to examine the impact of two independent variables on a dependent variable (Pallant, 2011). This assumption was met within the present study, as the independent variables were
categorical (visual: body shape x verbal: user-generated fit reviews) and the dependent variables were metric and measured on a 7-point scale.

8.9.2. Independent Random Sample

The second assumption is concerned with guaranteeing that the groups are independent in their responses on the dependent variable (Hair et al., 2010). Thus, this assumption ensures that within an experiment, the observations across the different groups are not probabilistically related (Denis, 2019). Violations of this assumption are incredibly challenging as it can substantially inflate Type I error (Field, 2009). Consequently, to meet this assumption, the blocking approach recommended by Hair et al., (2010) was adhered. Indeed, whilst designing the survey, Qualtrics incorporated a randomisation blocking function, which permitted the random assignment of subjects to one of the four website treatments. This randomisation approach has also been employed in prior experimental studies to ensure the independence of observations (Yim and Park, 2019; Smink et al., 2019; Yang and Xiong, 2019; Fan et al., 2020). Additionally, to confirm the success of the random subject assignment, additional variance tests were undertaken to ensure there were no significant differences between the groups in respect to age, online shopping experience and clothing size, in line with Stubb and Colliander (2019). Section 8.11.1 outlines the results of these additional tests.

8.9.3. Detection and Removal of Outliers

As previously outlined in section 8.3.2, outliers are extremely problematic when analysing variances between groups. Consequently, Hair et al., (2010, p.686) advise that if outliers are detected and are different from the other responses in a treatment, then they should be eliminated. ANOVA is extremely sensitive to outliers as they can affect the Type I error (Hair et al., 2010). Thus, in line with the recommendation of Hair et al., (2010), the 7 outliers were removed from the present study.

8.9.4. Normality

As delineated in section 8.4, normality refers to the extent to which the distribution of the sample data corresponds to a normal distribution (Hair et al., 2010). In regards to ANOVA, the researcher must ensure that the scores within each group are normally distributed (Field, 2009). Whilst normality is an assumption of ANOVA, many academics have affirmed that ANOVA is robust against the violation of this assumption (Field, 2009; Hair et al., 2010;
Pallant, 2011). Indeed, there is a consensus that as long as the sample size is large and there is an equal distribution of subjects amongst the groups, then analysis of variance will still be valid despite the violation of normality (Winer, Brown and Michels, 1991). Furthermore, Hair et al., (2010) advocate that for modest sample sizes, a violation of the normality assumption can be accommodated for, as long as the differences are due to skewness and not outliers. Therefore, as the outliers in the study were removed, and the sample size is moderate and equal across the four groups, ANOVA is argued to be robust against a violation of normality.

8.9.5. Homogeneity of Variance

A further assumption of ANOVA is the homogeneity of variance, which ensures that the variances of the outcome variables are the same across all groups (Field, 2009). Hence, homogeneity of variance certifies that samples are obtained from populations with the same variance (Field, 2009; Pallant, 2013). To test this assumption, a Levene’s test for equality of variances was performed in SPSS as part of the ANOVA (Field, 2009; Pallant, 2013; Denis, 2019). If the Levene’s statistic produces a significant result \( p<.05 \), then this assumption has been violated, and the researcher cannot ascertain that variances across the groups are equal. However, some academics have theorised that ANOVA is relatively robust to violations of this assumption, as long as the number of subjects per group are similar (e.g. largest/ smallest <1.5) (Field, 2009; Hair et al., 2010; Pallant, 2013; Denis, 2019), which is true of this study (largest group (G3=100)/ smallest group (G1=96) =1.04).

8.9.6. Sample Size

The sample size, that is how many subjects are to be assigned to each group, is a vital assumption of ANOVA to detect meaningful and reliable variances amongst groups. There are several recommendations for discerning a suitable sample size for ANOVA. For example, Field and Hole (2003) recommended that for results to be significant in experimental designs there must be at least 15 respondents per group. A more recent recommendation by Lazar et al., (2017) suggests that there should be at least 16 respondents within each group as a bare minimum. Within this study, the sample size exceeded these recommendations. To this end, the sample size across each group ranged from 96 to 100 subjects (Group 1=96, Group 2= 97, Group 3=100 and Group 4=99).
8.10. Measuring Effect Sizes

An effect size is a quantitative measure of the strength of an experimental manipulation (Field, 2009). It represents the magnitude of the influence of the independent variables and concerns the strength of the association (Pallant, 2011). There are numerous ways to calculate effect sizes. The most common measure to compare groups is partial eta squared which is generated automatically by SPSS as part of the ANOVA output (Yiğit and Mendes, 2016; Denis, 2019).

The partial eta squared calculates the proportion of variance of the dependent variable that is explained by the independent variable (Pallant, 2011). Whilst partial eta squared is a useful description of the effect size in a sample, it has been criticised for overestimating the true effect in a population (Denis, 2019). Thus, statisticians suggest that omega-squared should be used to calculate and report effect sizes rather partial eta squared (Hays, 1994; Field, 2009; Dennis, 2019), as it produces an effect size based on the population. Yiğit and Mendes (2016) discovered that omega-squared estimates were unbiased compared to partial eta squared that is often reported in research papers and SPSS packages. Equation 8.3 demonstrates the calculation for omega-squared.

\[
\omega^2 = \frac{SSx - (dfx \times MSError)}{SSTotal + MSError}
\]

**Key:**  
\(SS = \text{Sum of Squares, } df = \text{Degrees of Freedom, } MS = \text{Mean Square}\)

**Equation 8.3. Omega-Squared**  
**Source:** Malhotra et al., (2007, p. 563)

Hence, given that the omega-square measure of effect size produces a more accurate estimate of effect size from a population which data were obtained (Denis, 2019), effect sizes within this study were reported using the omega-squared (est \(\omega^2\)) rather than partial eta squared (\(\eta^2\)). Malhotra et al., (2017) provided a criterion for interpreting omega-squared effect sizes, whereby a large experimental effect will produce an est \(\omega^2\) of .15 or greater, a medium experimental effect will produce est \(\omega^2\) of around .05 and a small effect will produce a score of .01.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Dissemination of Findings (Phase 3)

8.11. Sample Characteristics

Descriptive statistics were employed to analyse specific attributes of the demographic to ensure that the required sample had been obtained. During a period of two weeks (September 20th - October 04th, 2019), Qualtrics collected 400 responses using a convenience sampling strategy. In total, data was gathered from 400 UK female respondents, aged 18-34. Qualtrics screened all respondents before starting the questionnaire to ensure that they had previously shopped for fashion garments online. Following the aforementioned data screening procedures, which involved the removal of outliers (N=7) and unengaged responses (N=1), the final sample consisted of 392 valid responses. Table 8.2 presents the sample characteristics that were analysed by obtaining frequencies.

It is apparent from the descriptive statistics outlined in Table 8.2, that 37.8% (N=148) of the total sample were aged 18-24, whereas 62.2% (N=244) were aged 25-34. These findings are important as they verify that all subjects who took part in the experiment (N=392) fulfilled the target age criteria of 18-34. It is also evident from the group frequencies that there was little to no variance in age across the four groups. The majority of subjects (N=143, 36.5%) disclosed that they purchased clothing online once a month. All subjects (N=392, 100%) verified that they had purchased a dress online in the past year, with 26.5% (N=104) of subjects acknowledging that they purchase dresses online every month or every couple of months. All respondents who took part in the experiment needed to be familiar with purchasing a dress online as different garment types may encounter different fit appraisals online (Boardman and McCormick, 2019). Additionally, all female respondents (N=392, 100%) revealed that when shopping online they either purchased UK clothing sizes 6-10 (N=203, 52%) or 12-16 (N=189, 48.2%) which was vital as a plus-size demographic was not under investigation for this study. Hence, it can be concluded that all respondents who took part in the experiment were UK females, aged 18-34, who had prior experience with purchasing dresses online. In summary, the target sampling criteria had been fulfilled.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Investigating How Product Page Design Affects Clothing Fit Appraisal Online

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total Frequency &amp; Percentage</th>
<th>Group Frequency and Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>G1, G2, G3, G4= 100% Female</td>
</tr>
<tr>
<td></td>
<td>Male 0 (0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female 392 (100%)</td>
<td></td>
</tr>
<tr>
<td>Age Groups</td>
<td></td>
<td>G1= 18-24 (36, 37.5%) 25-34 (60, 62.5%)</td>
</tr>
<tr>
<td></td>
<td>Under 18 0 (0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18-24 N=148 (37.76%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-34 N=244 (62.24%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-44+ N=0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Do you live in the UK?</td>
<td></td>
<td>G1, G2, G3, G4= 100% Yes</td>
</tr>
<tr>
<td></td>
<td>Yes N=392 (100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No N= 0 (0%)</td>
<td></td>
</tr>
<tr>
<td>How Frequently do you Purchase for Clothes Online?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday N=15, 3.8%</td>
<td></td>
<td>G1(5,5.2%), G2(3,3.1%), G3(5.5%), G4(2.2%)</td>
</tr>
<tr>
<td>Several times a week N=39,10%</td>
<td></td>
<td>G1(16,16.7%), G2(8,8.2%), G3(10,10%), G4(5.5%)</td>
</tr>
<tr>
<td>Once a week N=86, 21.9%</td>
<td></td>
<td>G1(19,19.8%), G2(25,25.8%), G3(22,22%), G4(20,20.2%)</td>
</tr>
<tr>
<td>Once a month N=143, 36.5%</td>
<td></td>
<td>G1(33,34.4%), G2(33,34%), G3(37,37%), G4(40,40.4%)</td>
</tr>
<tr>
<td>Every couple of months N=90, 23%</td>
<td></td>
<td>G1(16,16.7%), G2(23,23.7%), G3(23,23%), G4(28,28.3%)</td>
</tr>
<tr>
<td>Couple of times a year N=19, 4.8%</td>
<td></td>
<td>G1(7,7.3%), G2(5,5.2%), G3(3,3%), G4(4,4%)</td>
</tr>
<tr>
<td>How frequently do you shop for dresses online?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Everyday N=21, 5.4%</td>
<td></td>
<td>G1(10,10.4%), G2(5,5.2%), G3(4,4%), G4(2,2%)</td>
</tr>
<tr>
<td>Several times a week N=51, 13%</td>
<td></td>
<td>G1(14,14.6%), G2(14,14.4%), G3(11,11%), G4(12,12.1%)</td>
</tr>
<tr>
<td>Once a week N=52, 13.3%</td>
<td></td>
<td>G1(10,10.4%), G2(12,12.4%), G3(15,15%), G4(15,15.2%)</td>
</tr>
<tr>
<td>Once a month N=104, 26.5%</td>
<td></td>
<td>G1(24,25%), G2(29,29.9%), G3(22,22%), G4(29,29.3%)</td>
</tr>
<tr>
<td>Every couple of months N=104, 26.5%</td>
<td></td>
<td>G1(22,22.9%), G2(23,23.7%), G3(32,32%), G4(27,27.3%)</td>
</tr>
<tr>
<td>Couple of times a year N=60, 15.3%</td>
<td></td>
<td>G1(16,16.7%), G2(14,14.4%), G3(16,16%), G4(14,14.1%)</td>
</tr>
<tr>
<td>When shopping online, what garment size do you usually buy?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK 6-10 N=203, 52%</td>
<td></td>
<td>G1(58,60.4%), G2(42,43.3%), G3(54, 54%), G4(49,49.5%)</td>
</tr>
<tr>
<td>UK 12-16 N=189, 48.2%</td>
<td></td>
<td>G1(38,39.6%), G2(55,56.7%), G3(46,46%), G4(50,50.5%)</td>
</tr>
</tbody>
</table>

Table 8.2. Descriptive Statistics Frequency Distribution of Sample Characteristics

8.11.1. Sample Characteristic Variance across Groups

To ensure that the subjects had been randomly assigned to one of the four groups, and that there were no statistical variances in sample characteristics between groups, a Kruskal-Wallis test was undertaken. The Kruskal-Wallis test is the non-parametric counterpart of ANOVA (Denis, 2019), which determines whether there are statistical differences between two or more groups of an independent variable on an ordinal (i.e., age categories) or continuous variable (Field, 2009; Pallant, 2013). Hence, it is a valuable test to use to ascertain whether the independent samples originated from the same population (Denis, 2019). The researcher considered alternative tests such as The Mann-Whitney U-Test; however, this statistical test can only compare two groups, and so, it was not suitable for the present research, which featured four groups. Before performing a Kruskal-Wallis Test, the following three assumptions needed to be met:

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1) The dependent variable must be ordinal or continuous
2) There must be independence of observations
3) There must be two or more groups

As the aforementioned assumptions were adhered to in this research, a Kruskal-Wallis test was undertaken for age, ethnicity, shopping frequency and clothing size, to determine whether there were any differences in sample characteristics across the four groups. The results are illustrated in Appendix VII. The output from the Kruskal-Wallis H tests demonstrated that there were no statistically significant differences in age, $H(3) = 0.50, p > 0.05$, ethnicity, $H(3) = 7.012, p > 0.05$, online purchasing frequency, $H(3) = 5.254, p > 0.05$, online dress purchasing frequency, $H(3) = 1.935, p > 0.05$ and clothing size $H(3) = 6.051, p > 0.05$, across the four groups. Hence, it was apparent that the randomisation of subjects into the four groups was successful and that subjects in each group derived from the same population. Consequently, these findings suggest that sample characteristics do not influence any variance in responses across the four groups.

8.12. Manipulation Checks

Within experimental research, it is vital to ensure that the manipulation of the independent variable was successful. A manipulation check is a procedure whereby the researcher statistically checks that the controlled factors of an experiment have been implemented successfully (Webster and Sell, 2014). If the researcher does not report the results of a manipulation check, the stability and generalisability of the findings cannot be guaranteed (Webster and Sell, 2014). A researcher can perform manipulation checks in two primary ways, such as (1) a pre-test to validate the success of the manipulations before the main experiment (Narwal and Nayak, 2020) or (2) by including questions relating to the manipulated variable at the end of the experiment.

The present study adopted both methods. Indeed, the pilot test validated that subjects ($N = 100$) were able to detect a difference in body shapes and whether user-generated fit reviews were present or absent. Moreover, the researcher also implemented the latter manipulation method by adhering to the recommendation by Webster and Sell (2014, p.152) and in line with prior online experimental studies (Yoo and Kim, 2012; Craciun and Moore, 2019; Fan et al., 2020). Thus, at the end of the survey, subjects were asked whether they...
could detect a difference in body shape amongst the models on a 5-point Likert-scale and whether they noticed the presence or absence of product reviews.

8.12.1. Visual Stimuli: Body Shape

To ensure the manipulation of the independent variable, body shape, between the treatment conditions was successful, the researcher conducted a one-way ANOVA followed by a post-hoc test. Before undertaking an ANOVA, it was essential that all of the ANOVA assumptions were met (outlined in section 8.9). A Levene’s test checked the assumption of homogeneity of variance (Figure 8.14).

| Levene's Test of Equality of Error Variances<sup>a,b</sup> |
|---------------------------------|--------|--------|--------|
| Levene Statistic                | df1    | df2    | Sig.   |
| On each of the three product information pages that you have viewed today, did you detect a difference in body shapes amongst the models? |        |        |        |
| Based on Mean                   | 13.984 | 3      | 388    | .000   |
| Based on Median                 | 6.713  | 3      | 388    | .000   |
| Based on Median and with adjusted df | 6.713  | 3      | 365.116| .000   |
| Based on trimmed mean           | 13.630 | 3      | 388    | .000   |

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

**Figure 8.14. Levene’s Test**

It is apparent from Figure 8.14 that the homogeneity of variance assumption was violated as the Levene’s test yielded a significant result ($p<.001$). Hence, adhering to the recommendation by Field (2009), a Welch’s AVOVA, followed by a Games-Howell post hoc was undertaken. The results of the Welch’s ANOVA revealed that subjects detected a significant difference in the body shapes of models amongst the treatments, Welch’s $F(3, 213.198) =14.21 \, p<.001$, est $\omega^2 = .09$. Additionally, Figure 8.15 demonstrate the results from the Games-Howell post-hoc test.
Post Hoc Tests

Multiple Comparisons

<table>
<thead>
<tr>
<th>(i) group</th>
<th>(j) group</th>
<th>Mean Difference (i-j)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>.746 (^*)</td>
<td>.184</td>
<td>.000</td>
<td>-.27</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>-.056</td>
<td>.203</td>
<td>.993</td>
<td>-.58</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>.829 (^*)</td>
<td>.184</td>
<td>.000</td>
<td>.35</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>-.746 (^*)</td>
<td>.184</td>
<td>.000</td>
<td>-1.22</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>-.802 (^*)</td>
<td>.172</td>
<td>.945</td>
<td>-.30</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>.083</td>
<td>.149</td>
<td>.945</td>
<td>-1.25</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>.056</td>
<td>.203</td>
<td>.993</td>
<td>-1.25</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>.802 (^*)</td>
<td>.172</td>
<td>.000</td>
<td>.44</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>-.829 (^*)</td>
<td>.184</td>
<td>.000</td>
<td>-1.31</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>-.685</td>
<td>.172</td>
<td>.945</td>
<td>-.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.885 (^*)</td>
<td>.172</td>
<td>.945</td>
<td>-1.33</td>
</tr>
</tbody>
</table>

\(^*\): The mean difference is significant at the 0.05 level.

**Figure 8.15. Post-Hoc Test for Body Shape Manipulation**

The results from the post-hoc validate that subjects detected a significant difference in body shapes between G1\textsubscript{Hourglass} and G2\textsubscript{Diverse} \((p<.001)\) and between G1\textsubscript{Hourglass} and G4\textsubscript{Diverse} \((p<.001)\), but there was a non-statically significant difference between G2\textsubscript{Diverse} and G4\textsubscript{Diverse} \((p=.945)\) and between G1\textsubscript{Hourglass} and G3\textsubscript{Hourglass} \((p=.993)\). Hence, the results demonstrate that the manipulation of the independent variable, body shape, was successful.

8.12.2. Verbal Stimuli: User-Generated Fit Reviews

To ensure that the manipulation of the presence vs. absence of user-generated fit reviews was successful across the groups, a Kruskal-Wallis H test was undertaken. The results from the Kruskal-Wallis H test showed that there was a statistically significant difference in the presence vs. absence of user-generated fit reviews across the four groups, H (3) = 31.074, \(p<.001\). Indeed, Figure 8.16 outlines the post-hoc results.
8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Investigating How Product Page Design Affects Clothing Fit Appraisal Online

<table>
<thead>
<tr>
<th>Sample 1</th>
<th>Test Statistic</th>
<th>Std. Error</th>
<th>Std. Test Statistic</th>
<th>Sig.</th>
<th>Adj. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-3</td>
<td>10.358</td>
<td>14.770</td>
<td>.701</td>
<td>.483</td>
<td>1.000</td>
</tr>
<tr>
<td>4-2</td>
<td>62.147</td>
<td>14.883</td>
<td>4.176</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>4-1</td>
<td>64.630</td>
<td>14.922</td>
<td>4.331</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>3-2</td>
<td>51.789</td>
<td>14.846</td>
<td>3.488</td>
<td>.000</td>
<td>.003</td>
</tr>
<tr>
<td>3-1</td>
<td>54.271</td>
<td>14.886</td>
<td>3.646</td>
<td>.000</td>
<td>.002</td>
</tr>
<tr>
<td>2-1</td>
<td>2.482</td>
<td>14.998</td>
<td>.166</td>
<td>.869</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Figure 8.16. Post-Hoc Results for Manipulations Check: User-Generated Reviews

Figure 8.16 further demonstrates that there was a statistically significant difference between G1 Absence and G3 Presence (p<.05), between G2 Absence and G3 Presence (p<.05), between G4 Presence and G1 Absence (p<.05), and between G4 Presence and G2 Absence (p<.05). However, there were no statically significant differences in the responses of G2 Absence and G1 Absence (p>.05) and the responses between G4 Presence and G3 Presence (p>.05). Hence it is apparent that the manipulation of the independent variable, user-generated fit reviews, was successful.

8.13. Dissemination of Experimental Results (S-O)

A factorial ANOVA tested the first part of the S-O-R framework underpinning the present research. ANOVA was performed to test hypotheses 1a-2b, which theorise that there will be a statistically significant difference between perceived product fit diagnosticity and concerns with clothing fit online amongst groups exposed to different visual and verbal fit combinations.

8.13.1. The Effect of Fit Stimuli on Perceived Product Fit Diagnosticity (S-O)

It was apparent from the Levene’s Test (exhibited in Figure 8.17) that the homogeneity of variances assumption had been adhered to, as the Levene’s Test statistic yielded non-significant results (p>.05). Therefore, it can be assumed that the variances in each population, as represented by the different levels of independent variables, were equal.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

### Levene’s Test of Equality of Error Variances

<table>
<thead>
<tr>
<th>Source</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN_PDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on Mean</td>
<td>1.903</td>
<td>3</td>
<td>388</td>
<td>.129</td>
</tr>
<tr>
<td>Based on Median</td>
<td>1.804</td>
<td>3</td>
<td>388</td>
<td>.146</td>
</tr>
<tr>
<td>Based on Median and with adjusted df</td>
<td>1.804</td>
<td>3</td>
<td>378.902</td>
<td>.146</td>
</tr>
<tr>
<td>Based on trimmed mean</td>
<td>1.885</td>
<td>3</td>
<td>388</td>
<td>.132</td>
</tr>
</tbody>
</table>

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

**Figure 8.17. Homogeneity of Variance Assumption: Perceived Product Diagnosticity**

Hence, as all the assumptions of ANOVA had been met, a parametric 2-way ANOVA was undertaken to test the null hypothesis that responses regarding perceived product fit diagnosticity were equal across the different levels of the visual (body shape: hourglass vs. diverse) and verbal (user-generated fit review: absence vs. presence) fit stimuli. Figure 8.18 outline the results.

### Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>11.185a</td>
<td>3</td>
<td>3.728</td>
<td>5.568</td>
<td>.001</td>
</tr>
<tr>
<td>Intercept</td>
<td>10798.847</td>
<td>1</td>
<td>10798.847</td>
<td>16127.957</td>
<td>.000</td>
</tr>
<tr>
<td>Bodyshape</td>
<td>5.752</td>
<td>1</td>
<td>.7.52</td>
<td>8.591</td>
<td>.004</td>
</tr>
<tr>
<td>Review</td>
<td>5.471</td>
<td>1</td>
<td>5.471</td>
<td>8.171</td>
<td>.004</td>
</tr>
<tr>
<td>Bodyshape * Review</td>
<td>.009</td>
<td>1</td>
<td>.009</td>
<td>.014</td>
<td>.906</td>
</tr>
<tr>
<td>Error</td>
<td>259.794</td>
<td>388</td>
<td>.670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11079.980</td>
<td>392</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>270.979</td>
<td>391</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .041 (Adjusted R Squared = .034)

**Figure 8.18. Tests of Between-Subjects Effects for Product Diagnosticity**

It is apparent from the test of between-subjects effects, illustrated in Figure 8.18, that there was a statistically significant main effect of the type of body shape stimuli presented on a product information page on females’ perceived product fit diagnosticity, $F(1, 388) = 8.59$, $p < .05$, $\omega^2 = .02$. Additionally, there was a statistically significant main effect of the presence (vs. absence) of reviews on females’ perceived product fit diagnosticity, $F(1, 388) = 8.17$, $p < .05$, $\omega^2 = .02$. However, the results also illustrate that there was a non-statistically significant interaction effect between body shape and user-generated review on product fit diagnosticity $F(1, 388) = .014$, $p = .906$, $\omega^2 = .002$. 

Investigating How Product Page Design Affects Clothing Fit Appraisal Online
8.13.2. Inspection of Cell Means and Profile Plots

Further inspection of the cell means revealed that females who were exposed to visual fit information in the form of diverse body shapes disclosed higher perceived product fit diagnosticity ($M_{Diverse}=5.4$) compared to subjects who were exposed to visual fit information in the form of one body shape ($M_{Hourglass}=5.1$). **Thus, H1a is supported.** Additionally, the mean scores disclosed that females who were exposed to verbal fit information in the form of user-generated fit reviews reported higher perceived product fit diagnosticity ($M_{Presence}=5.4$), compared to female subjects who were not exposed user-generated reviews ($M_{Absence}=5.1$). Consequently, **H1b is also supported.** The profile plot exhibited in Figure 8.19 corroborates the aforementioned by visually demonstrating the main effect of body shape and user-generated fit reviews on product fit diagnosticity.

![Profile Plot: Product Fit Diagnosticity](image)

**Figure 8.19. Profile Plot: Product Fit Diagnosticity**

It is evident from Figure 8.19 that perceived product fit diagnosticity was the highest when females were exposed to diverse (vs. hourglass) body shapes and when user-generated fit reviews were present (vs. absent) on product information pages. The profile plot further corroborates that there was a non-significant interaction effect of body shape*user-generated fit reviews on perceived product fit diagnosticity. Hence, this infers that product diagnosticity did not diverge across the different combinations of body shape vs. user-generated fit reviews.
8.13.3. The Effect of Fit Stimuli on Concerns with Fit Online (S-O)

A Levene’s test was undertaken to test the null hypothesis that the error variance of the dependent variable, concerns with fit online, is the same across all groups.

<table>
<thead>
<tr>
<th>Levene's Test of Equality of Error Variances (^{a,b})</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN_CONCERNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on Mean</td>
<td>2.240</td>
<td>3</td>
<td>388</td>
<td>.083</td>
</tr>
<tr>
<td>Based on Median</td>
<td>1.890</td>
<td>3</td>
<td>388</td>
<td>.131</td>
</tr>
<tr>
<td>Based on Median and with adjusted df</td>
<td>1.890</td>
<td>3</td>
<td>384.234</td>
<td>.131</td>
</tr>
<tr>
<td>Based on trimmed mean</td>
<td>2.198</td>
<td>3</td>
<td>388</td>
<td>.088</td>
</tr>
</tbody>
</table>

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Figure 8.20. Homogeneity of Variance Assumption: Concerns with Fit Online

It is apparent from Figure 8.20 that the homogeneity of variance assumption required for ANOVA was adhered to (\(p>.05\)), suggesting a parametric 2-way ANOVA was suitable to analyse the data. The results from the test-between subject effects are outlined in Figure 8.21.

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Type III Sum of Squares</td>
<td>df</td>
<td>Mean Square</td>
<td>F</td>
</tr>
<tr>
<td>Corrected Model</td>
<td>6.704(^a)</td>
<td>3</td>
<td>2.235</td>
<td>1.330</td>
</tr>
<tr>
<td>Intercept</td>
<td>8992.879</td>
<td>1</td>
<td>8992.879</td>
<td>6156.032</td>
</tr>
<tr>
<td>Bodyshape</td>
<td>6.225</td>
<td>1</td>
<td>6.225</td>
<td>4.262</td>
</tr>
<tr>
<td>Review</td>
<td>.479</td>
<td>1</td>
<td>.479</td>
<td>.328</td>
</tr>
<tr>
<td>Bodyshape * Review</td>
<td>.028</td>
<td>1</td>
<td>.028</td>
<td>.019</td>
</tr>
<tr>
<td>Error</td>
<td>566.800</td>
<td>388</td>
<td>1.461</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9566.551</td>
<td>392</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>573.504</td>
<td>391</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(a\). R Squared = .012 (Adjusted R Squared = .004)

Figure 8.21. Tests of Between-Subjects Effects for Concerns with Fit Online

The findings illustrated in Figure 8.21 demonstrate that the type of body shape presented on a product information page significantly affected females’ concerns with fit online, \(F (1, 388) = 4.26, p<.05, \omega^2 = .01\). Thus, it is apparent that there was a statistically significant main effect of the type of body shape presented on a product information page, on females’ concerns with fit online. Conversely, there was a non-statistically significant main effect of the presence (vs. absence) of a review on females’ concern with fit online, \(F (1, 388) = .33, p=.567, \omega^2 = .001\). Additionally, the results also highlight that there was a non-statistically
significant interaction effect between body shape and user-generated reviews on concerns with clothing fit online $F(1, 388) = .02, p = .889, \omega^2 = -.002$.

### 8.13.4. Inspection of Cell Means and Profile Plots

A further investigation of the cell means demonstrated that females who were exposed to visual fit information in the form of diverse body shapes, reported having fewer concerns with fit online ($M_{Diverse} = 4.6$), compared to females who were exposed to the hourglass body shape ($M_{Hourglass} = 4.9$). **Thus, H2a was supported.** However, an inspection of cell means provides an insight as to why there was a non-significant main effect of the presence (vs. absence) of a user-generated review on females’ concerns with fit online. Indeed, when exposed to user-generated fit reviews, female respondents did not report having fewer concerns with fit online ($M_{Presence} = 4.8$) compared to females who were not exposed to reviews ($M_{Absence} = 4.8$). **Hence, H2b was rejected.** The profile plot exhibited in Figure 8.22 visually sustains these findings by demonstrating the significant main effect of body shape and non-significant main effect of the presence vs. absence of user-generated fit reviews on concerns with fit online.

![Profile Plot: Concerns with Fit Online](image)

**Figure 8.22. Profile Plot: Concerns with Fit Online**

It is apparent from the profile plot for concerns with clothing fit online that, whilst viewing a garment on diverse body shapes significantly reduced females’ perceived concerns with fit online, the presence (vs. absence) of user-generated fit reviews did not. This extrapolates...
that only visual fit information in the form of diverse body shapes (vs. hourglass) significantly reduced concerns with fit online.

8.13.5. The Effect of Fit Stimuli on Purchase Intentions (S-R)

A 2 (visual fit information: hourglass vs. diverse body shapes) x 2 (verbal fit information: absence vs. presence of user-generated fit reviews) ANOVA was conducted in order to test whether there were significant differences in purchase intentions across the four groups. A Levene’s test was undertaken to check the homogeneity of variance assumption required for ANOVA. It is apparent from Figure 8.23 that the Levene’s test yielded a significant result ($p<.05$) inferring that this assumption had been violated.

### Levene’s Test of Equality of Error Variances

<table>
<thead>
<tr>
<th>MEAN PI</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on Mean</td>
<td>9.247</td>
<td>3</td>
<td>388</td>
<td>.000</td>
</tr>
<tr>
<td>Based on Median</td>
<td>7.107</td>
<td>3</td>
<td>388</td>
<td>.000</td>
</tr>
<tr>
<td>Based on Median and with adjusted df</td>
<td>7.107</td>
<td>3</td>
<td>311.509</td>
<td>.000</td>
</tr>
<tr>
<td>Based on trimmed mean</td>
<td>8.707</td>
<td>3</td>
<td>388</td>
<td>.000</td>
</tr>
</tbody>
</table>

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

**Figure 8.23. Homogeneity of Variance Assumption: Purchase Intentions**

However, as previously outlined, statisticians have claimed that ANOVA is fairly robust to violations of this assumption, as long as the number of respondents per group is similar (e.g. largest/ smallest <1.5) (Field, 2009; Hair et al., 2010; Pallant, 2013; Denis, 2019), which is true of this study (largest group (G3=100)/ smallest group (G1=96) =1.04). Hence, a parametric 2-way ANOVA was undertaken. The results are illustrated in Figure 8.24.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

### Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>29.945 a</td>
<td>3</td>
<td>9.982</td>
<td>7.024</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>100,368.866</td>
<td>1</td>
<td>100,368.866</td>
<td>706.262</td>
<td>.000</td>
</tr>
<tr>
<td>Bodyshape</td>
<td>28.980</td>
<td>1</td>
<td>28.980</td>
<td>20.392</td>
<td>.000</td>
</tr>
<tr>
<td>Review</td>
<td>1.011</td>
<td>1</td>
<td>1.011</td>
<td>.711</td>
<td>.400</td>
</tr>
<tr>
<td>Bodyshape * Review</td>
<td>.000</td>
<td>1</td>
<td>.000</td>
<td>.000</td>
<td>.992</td>
</tr>
<tr>
<td>Error</td>
<td>551.396</td>
<td>388</td>
<td>1.421</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10617.750</td>
<td>392</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>581.341</td>
<td>391</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .052 (Adjusted R Squared = .044)

**Figure 8.24. Tests of Between-Subjects Effects for Purchase Intentions**

The results reveal that there was a statistically significant main effect of visual fit information (hourglass vs. diverse body shapes) on purchase intentions, $F(1, 388) = 20.39$, $p < .001$, $\omega^2 = .05$. However, there was a non-statistically significant main effect of verbal fit information (presence vs. absence of user-generated fit reviews) on females’ purchase intentions, $F(1, 388) = .71$, $p = .400$, $\omega^2 = -.001$. In regards to the interaction effects of visual and verbal fit information (body shape*user-generated fit reviews) on respondents’ final behavioral responses (purchase intentions), the results were non-statistically significant, $F(1, 388) = .000$, $p = .992$, $\omega^2 = .002$.

#### 8.13.6. Inspection of Cell Means and Profile Plots

Interestingly, an inspection of the cell means demonstrated that females who were exposed to visual fit information, in the form of the diverse body shapes, reported having lower purchase intentions ($M_{Diverse} = 4.8$) compared to females who were exposed to the hourglass body shape ($M_{Hourglass} = 5.3$). **Thus, H3a was not supported.** Additionally, the cell means also provided insight as to why there was not a significant main effect of verbal fit information on females’ purchase intentions. Indeed, females who were exposed to the verbal fit information in the form of user-generated fit reviews did not report having higher purchase intentions ($M_{Presence} = 5.0$) compared to females who were not exposed to reviews ($M_{Absence} = 5.1$). **Hence, H3b was not supported.** The profile plots, illustrated in Figure 8.25 visually corroborate the aforementioned.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

It is ostensible from the profile plot that visual fit information in the form of the hourglass body shape elicited higher purchase intentions than seeing a garment on diverse body shapes. Additionally, it is also apparent that there were no statistically significant differences in purchase intentions for females who were exposed to user-generated fit reviews, compared to females who were not exposed to user-generated fit reviews. Thus, it can be deduced that verbal fit information did not have a significant effect on females’ purchase intentions.

8.14. Relationship between Organism and Response (O-R)

A bivariate correlation was conducted to assess hypotheses 4a and 4b, which posit that a relationship exists between perceived product fit diagnosticity (O) and purchase intentions (R), and amongst concerns with fit online (O) and purchase intentions (R). Indeed, correlations are useful to determine the strength and direction (i.e., positive and negative) of a relationship between two variables (Pallant, 2013). Correlation coefficient scores ($r$) range from -1 to 1, whereby the prefixed sign denotes whether the relationship between the two variables is positive or negative (Pallant, 2013). An absolute value of 1 indicates that there is a perfect correlation, whereas a score of 0 suggests that there is no correlation between the two variables. Correlations have been employed abundantly in prior research to examine the relationship between consumers’ internal states and their final behavioural responses (Orus et al., 2017). Thus, correlations are reasoned to be a suitable statistical test to employ within the present research.
8.14.1. Assumptions of Bivariate Correlation

Before undertaking a bivariate correlation analysis, a number of assumptions must be met. Indeed, the assumptions are as follows; all the dependent variables must be normally distributed (Field, 2009), outliers must be removed (Pallant, 2013), the scale of measurement for the variables must be continuous (Pallant, 2013), observations must be independent from each other, and finally, there must be a linear relationship between the variables (Field, 2009). It is apparent from Figure 8.26 that the latter assumption of linearity was met.

![Figure 8.26. Linearity Between the Dependent Variables](image)

However, as previously deliberated, the assumption of normality for purchase intentions was violated (outlined in Section 8.4.4), and so the recommendation to interpret the non-parametric equivalent, Spearman correlation test, was adhered to (Field, 2009; Pallant, 2013; Denis, 2019).

8.14.2. Dissemination of Findings (O-R)

Figure 8.27 presents the matrix of correlation coefficients for the three variables under investigation; concerns with clothing fit online, perceived product diagnosticity and purchase intentions.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

Investigating How Product Page Design Affects Clothing Fit Appraisal Online

The correlation coefficient scores show the strength of the linear relationship between the variables, and how different the correlation is from zero (Field, 2009). It is apparent from the Spearman correlation output that there was a significant relationship between perceived product fit diagnosticity and purchase intentions, \( r_s = .47, p < .001 \) (one-tailed). Indeed, there was a medium, positive correlation between perceived product fit diagnosticity and purchase intentions (.47), which indicates that as product fit diagnosticity increases purchase intentions also increases. **Thus, H4b is supported.** Whilst there was a significant correlation between concerns with fit online and purchase intentions, \( r_s = .16, p < .01 \) (one-tailed), the effect size was extremely weak (Cohen, 1988). However, there was a slight positive relationship between concerns with fit online and purchase intentions, which would suggest that as concerns with clothing fit online increase, purchase intentions also increase. **Thus, H4a is not supported.**

### 8.15. Summary of Research Hypotheses

Table 8.3 outlines a summary of the hypotheses under investigation in phase 3.
Chapter 8. Findings and Discussion of Phase 3 (Online Shopping Experiment)

<table>
<thead>
<tr>
<th>No.</th>
<th>Hypotheses</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>When exposed to visual fit information in the form of diverse body shapes, females will experience higher perceived product fit diagnosticity compared to the exposure of visual fit information in the form of one body shape.</td>
<td>Yes</td>
</tr>
<tr>
<td>H1b</td>
<td>When exposed to verbal fit information in the form of user-generated fit reviews, females will experience higher perceived product fit diagnosticity compared to the absence of user-generated fit reviews.</td>
<td>Yes</td>
</tr>
<tr>
<td>H2a</td>
<td>When exposed to visual fit information in the form of diverse body shapes, females will have fewer concerns with fit online compared to the exposure of visual fit information in the form of one body shape.</td>
<td>Yes</td>
</tr>
<tr>
<td>H2b</td>
<td>When exposed to verbal fit information in the form of user-generated fit reviews, females will have fewer concerns with fit online compared to the absence of user-generated fit reviews.</td>
<td>No</td>
</tr>
<tr>
<td>H3a</td>
<td>When exposed to visual information in the form of diverse body shapes, females will report higher purchase intentions compared to the exposure of visual fit information in the form of one body shape.</td>
<td>No</td>
</tr>
<tr>
<td>H3b</td>
<td>When exposed to verbal information in the form of user-generated fit reviews, females will report higher purchase intentions compared to the absence of user-generated fit reviews.</td>
<td>No</td>
</tr>
<tr>
<td>H4a</td>
<td>Females who have fewer concerns with garment fit online will report increased purchase intentions compared to when they experience high concerns about clothing fit online.</td>
<td>No</td>
</tr>
<tr>
<td>H4b</td>
<td>Females who experience higher perceived product fit diagnosticity will report increased purchase intentions compared to when they experience low perceived product fit diagnosticity.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 8.3. Summary of Research Hypotheses

8.16. Chapter Summary

This chapter reports and disseminates the results from the between-subjects factorial web-experiment, partially achieving Research Objective 5. The results from the ANOVAs empirically validate that females who were exposed to visual fit information in the form of diverse body shapes, disclosed higher perceived product fit diagnosticity $F(1, 388) = 8.59$, $p < .05$, ($M_{Diverse} = 5.4$ vs. $M_{Hourglass} = 5.1$) and fewer concerns with fit online $F(1, 388) = 4.26$, $p < .05$, ($M_{Diverse} = 4.6$ vs. $M_{Hourglass} = 4.9$), compared to females who were exposed to visual fit information in the form of the hourglass body shape. Despite this, females who were exposed to visual fit information in the form of the hourglass body shape reported higher purchase intentions, $F(1, 388) = 20.392$, $p < .001$, ($M_{Hourglass} = 5.3$ vs. $M_{Diverse} = 4.8$), compared to females who were exposed to diverse body shapes. These results extrapolate that whilst showing the same garment on diverse body shapes increases perceived product fit diagnosticity and reduces concerns with clothing fit online; purchase intentions are lower compared to when a garment is shown on the hourglass body shape.

Conversely, the results further highlighted that females who were exposed to verbal fit information in the form of user-generated fit reviews, experienced higher product fit
diagnosticity, \( F(1, 388) = 8.17, p <.05, (M_{\text{Presence}}=5.4 \text{ vs. } M_{\text{Absence}}=5.1) \), compared to females who were not exposed to user-generated fit reviews. However, the results also indicated that there was a non-statistically significant main effect of the presence (vs. absence) of a review on females’ concerns with fit online \( F(1, 388) = .328, p=.567, (M_{\text{Presence}}=4.8 \text{ vs. } M_{\text{Presence}} = 4.8) \). These results infer that whilst user-generated fit reviews help to increase perceived product fit diagnosticity, they do not reduce or increase concerns with fit online. Additionally, the results demonstrated that there were no statistical differences in purchase intentions of females who were exposed to user-generated fit reviews, compared to females who were not exposed to user-generated fit reviews, \( F(1, 388) = .711, p=.400, (M_{\text{Presence}}=5.0 \text{ vs. } M_{\text{Absence}}=5.1) \). This infers that the presence (vs. absence) of user-generated fit reviews on a product information page does not affect females’ intentions to purchase a garment.

Finally, the results from the correlations demonstrated that whilst there was a significant positive relationship between perceived product fit diagnosticity and purchase intentions, \( r_s = .47, p<.001 \) (one-tailed), the relationship between concerns with fit online and purchase intentions was extremely weak, \( r_s = .16, p <.01 \) (one tailed). Thus, it can be extrapolated that as perceived product fit diagnosticity increases purchase intentions also increase. The theoretical and managerial implications of the findings outlined within this chapter, will be discussed in the proceeding chapter.
Chapter 9. Conclusions, Implications and Future Research

9.1. Introduction

This study aimed to investigate how different types of garment fit information (visual: hourglass vs. diverse body shapes and verbal: absence vs. presence of user-generated fit reviews), on a fashion retailer’s product page, affect females’ perceived product fit diagnosticity, concerns with clothing fit and in turn, purchase intentions. This study strived to make vital academic contributions as prior research has not yet validated the role of body shape and user-generated fit reviews in the online garment fit appraisal process and so, the findings of this research fill this noticeable paucity. Moreover, the study provides managerial insights into how online fashion retailers can enhance clothing fit provision online. The research objectives and how they have been addressed are delineated in Table 9.1.

<table>
<thead>
<tr>
<th>Research Objectives</th>
<th>How The Objective was Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) To critically review existing literature concerning online fashion retailing and the consumer’s online decision-making process, garment fit evaluation, body shape and online fashion product presentation, to evaluate issues in these domains.</td>
<td>A critical literature review concerning online fashion retailing and the online consumer decision-making process (Chapter 2), the garment fit appraisal process and body shape (Chapter 3), and information provisions currently available on retailers’ online product pages (Chapter 4) was undertaken.</td>
</tr>
<tr>
<td>2) To identify suitable stimuli (dresses) for phase 2 (garment try-on) and phase 3 (online shopping experiment) of the research through a quantitative online dress survey.</td>
<td>Chapter 7 disseminates the results from the online dress survey, which yielded 262 usable responses. The midi body con, maxi and pencil dress were taken forward for phase 2 and 3 of the research.</td>
</tr>
<tr>
<td>3) To develop website stimuli (visual and verbal fit information) for phase 3 (online shopping experiment) through a mixed-methods enquiry. a. Visual fit information: Body scan 30 UK female participants using a Size Stream body scanner and discern the key body shape typologies for this demographic. b. Verbal fit information: Critically understand the learned fit preferences of 30 UK females through face-to-face post-purchase evaluations.</td>
<td>30 body scans of UK females, aged 18-34, were undertaken during a physical garment try-on session. Images of the participants, with varying body shapes, wearing the dresses were captured to create the visual stimuli. The same participants appraised the fit of the three dresses through face-to-face semi-structured interviews, which emulated a real-life post-purchase fit evaluation (qualitative). The participant’s review of the dresses formed the verbal stimuli that was to be tested in phase 3.</td>
</tr>
<tr>
<td>4) To hypothesise that different combinations of visual and verbal fit stimuli will affect consumers’ internal states, leading to different responses.</td>
<td>Based on the theoretical gaps identified from the literature reviews, and a consideration of appropriate theoretical frameworks, a number of hypotheses were developed in Chapter 5.</td>
</tr>
<tr>
<td>5) To test the theorised S-O-R model in a between-subjects factorial web-experiment and to provide future recommendations on how product information pages can ameliorate the design of fit provision online in order to help assist the consumer’s online decision-making.</td>
<td>The theorised research model was tested in a between-subjects factorial web-experiment and the quantitative findings, outlined in Chapter 8, provide insight into how different types of fit information on a fashion product page affect consumers’ cognitive and behavioural outcome.</td>
</tr>
</tbody>
</table>

Table 9.1. Summary of Addressed Research Objectives
Chapter 9. Discussions, Conclusions and Future Research

The proceeding section will outline how the research objectives were achieved in the present study and provide a summary of the chapters in this thesis. Chapter 1 introduces the research by outlining the research aims, objectives and outcomes, as well as the research problem and theoretical gap that was ascertained through a replete review of prior literature. The introductory chapter further outlines the adopted theoretical framework and provides a brief synopsis of the 3-phase research methodology implemented within this research. A critical literature review concerning online fashion retailing and the online consumer decision-making process (Chapter 2), the garment fit appraisal process and body shape (Chapter 3), and information provisions currently available on retailers’ online product pages (Chapter 4) was undertaken, and theoretical gaps in existing literature were identified, meeting Objective 1 of the research.

Through the collection and analysis of primary data (quantitative), suitable dress stimuli were identified for phase 2 (garment try-on) and phase 3 (online shopping experiment) of the research through the dissemination of an online survey, meeting Objective 2. 30 body scans of UK females, aged 18-34, were undertaken during a physical garment try-on session. The same participants appraised the fit of the three dresses through face-to-face semi-structured interviews, which emulated a real-life post-purchase fit evaluation (qualitative). The findings from phase 1 (online dress survey) and 2 (garment try-on) are provided in Chapter 7 of the thesis, thus meeting Objective 3a and 3b.

Based on the findings from the literature reviews and consideration of appropriate theoretical frameworks, a number of hypotheses were developed in Chapter 5, meeting Objective 4. The theorised research model was tested in a between-subjects factorial web-experiment and the quantitative findings, outlined in Chapter 8, provide insight into how different types of fit information on a fashion product page affect consumers’ garment fit appraisal online, partially meeting Objective 5. Chapter 9 will discuss the theoretical and managerial implications of the research findings, as well as providing limitations and potential avenues for future research, fully achieving Objective 5.
9.2. Summary of Findings and Discussions
The proceeding section will outline and discuss the multifarious contributions of the findings of this research project, with particular reference to their importance to online fashion retailing.

9.2.1. Summary of Phase 1: Online Dress Survey
The online dress survey yielded 343 responses, of which 262 (76.38%) fulfilled the inclusion criteria. All respondents were UK females, aged 18-34, with the average age of 18-25 (N=191, 72.9%). Descriptive statistics, such as frequencies and central tendencies, were used to identify which dress styles were considered the most/least flattering, likeable and similar to what the respondent would usually wear, in line with Kim and Lennon (2008; 2010) and Kim, (2019). The mean scores of the nine dress styles ranged from 2.45 to 4.34, and so, the researcher selected the three dress styles with the medium scores between 2.87 and 3.69. The three styles that received the most neutral responses were the midi body-con dress (M=3.69, SD=1.1), pencil dress (M=3.37, SD=1.3) and maxi dress (M=2.87, SD=1.4). Thus, these three dress styles were taken forward for phases 2 (garment try-on) and 3 (online shopping experiment) of the research.

9.2.2. Summary of Phase 2: Body Scanning and Body Shape Classification
Adhering to the mathematical procedure outlined by Lee et al., (2007), the key measurement outputs from each of the 30 body scans were fed through an excel spreadsheet to classify females’ body shapes using the FFIT system originally developed by Simmons et al., (2004). From the 30 body scans, five body shape typologies were unveiled including; triangle (N=1, 3.3%), bottom hourglass (N=13, 43.3%), hourglass (N=2, 2.7%), rectangle (N=10, 33.3%) and spoon (N=4, 13.3%). The prominent body shape category discovered was the bottom hourglass (N=13, 43.3%).

Whilst these body shape typologies partially corroborate with Grogan et al., (2013), this research offers new insights by exploring a larger UK female demographic (N=30), as well as investigating a more specific age range (18-34). Indeed, unlike Grogan et al. (2013) who found the hourglass to be the most popular body shape amongst 20 UK females aged 18-45, only 2 participants conformed to the hourglass body shape in this present research, which emphasises the need for more representative body shapes within the UK fashion industry.

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Additionally, the inverted triangle and top hourglass were not discovered within this study, nor were they found by Grogan et al., (2013). In a similar vein, Lee et al., (2007) found that the inverted triangle and the top hourglass were the two least popular body shapes found amongst both US and Korean females.

Consequently, based on the primary and secondary data analysis, the four body shapes that featured within the diverse body shape website treatments were bottom hourglass, rectangle, spoon and triangle. The findings from the body scanning session provide empirical insights regarding the prevalent disparity in body shapes of UK females, aged 18-34.

9.2.2.1. Phase 2: Garment Try-On and Fit Appraisals

Additionally, phase 2 captured females’ real-life garment fit appraisals by undertaking 30 semi-structured interviews. To fully explore all garment fit variables, questions and further probes, which were adapted from the existing clothing selection literature (Eckman et al., 1990, Grogan et al., 2013; McKinney and Shin, 2016), were asked to the participants. It was apparent from the interviews that participants evaluated garment fit through four key variables, namely, aesthetic fit, functional fit, physical fit, and social fit, a finding further corroborated by prior studies that have also explored garment fit from a consumer’s perspective (Shin, 2013; Shin and McKinney, 2016; Shin and Damhorst, 2018). Indeed, similar to the findings of Shin and Damhorst (2018), the participants in this study did not refer to any of the five objective fit criteria when evaluating the fit of each dress (ease, grain, balance, line and set). Whilst the (dis)satisfaction of dress fit differed amongst participants with different body shapes, the four key variables used to evaluate the fit of each dress did not. This finding extrapolates that all four fit variables are vital evaluative criteria during the consumer’s garment fit appraisal. Thus, given that a consumer determines on an individual basis what constitutes as satisfactory garment fit (LaBat and DeLong, 1990), the communication of these four fit variables was theorised as being vital for consumers when shopping online.

Moreover, it was notable from the thematic analysis that body shape was a fundamental consideration during females’ garment fit appraisals, which directly challenges the findings of Makhanya and Mabuza (2020). Firstly, there was a discrepancy between females’ self-perceived and actual body shape, with the majority of participants inaccurately describing...
their body shape like an hourglass, also found in previous body shape research (Pisut and Connell, 2007; Manuel et al., 2010; Newcomb and Istook, 2011; Seo and Namwamba, 2018). Yet, despite this, participants disclosed that the aesthetic perception of their body shape influenced which dress fits they were (dis)satisfied with. This finding infers that whilst objective body shape categorisation is vital for the provision of fit online, a consumer’s perceived body shape is just as crucial during the garment fit appraisal process as it will dictate a consumer’s clothing selection and preferences (Seo and Namwamba, 2018). It was also indicative from the analysis that females were satisfied with the fit of a dress when it allowed them to gain temporary achievement of the hourglass figure or disguise their body shape or problem zones. This finding further emphasises the salient role of body shape on the consumer’s garment selection process.

Lastly, whilst phase 2 supports prior literature by establishing that females with different body shapes will experience various garment fit issues (Alexander et al., 2005; Chen, 2007; Pisut and Connell, 2007; Makhanya et al., 2014), it also contributes novel insights to the body shape literature by investigating a UK demographic. Although Grogan et al., (2013) examined garment fit in relation to females’ body image, the authors did not report how females with different body shapes experienced different clothing fit issues. To this end, phase 2 not only demonstrated the complex and multifaceted understanding of garment fit from a consumer’s perspective, but it also emphasised the importance of body shape on the consumer’s garment appraisal process.

9.3. Summary of Phase 3: Online Shopping Experiment

Phase 3 of the research was undertaken in response to the call by Hernández et al., (2019) who suggested that alternative methods of clothing fit selection (besides physically trying-on the garment) was warranted. 400 responses were captured in the online shopping experiment, in which 392 were usable and fulfilled the inclusion criteria. Underpinned by the S-O-R framework, the researcher demonstrated how the inclusion of body shape stimuli and user-generated fit reviews affected consumers’ garment fit appraisals and purchase intentions when shopping for dresses online.

9.3.1. The Influence of Visual Fit Information on Cognitive Processes

As conjectured, the researcher confirmed that visual fit information, in the form of diverse body shapes (vs. hourglass), enhanced perceived product fit diagnosticity and reduced
concerns with clothing fit online. This finding extrapolates that the presence of various body shapes plays a fundamental role in the online clothing appraisal and selection process (Rasband and Liechty, 2006; Faust and Carrier, 2009). Indeed, this finding empirically validates the recommendations of prior scholars who propose that the presence of fashion models with varying body shapes may enhance the consumer’s online decision-making process (Yu et al., 2012; De et al. 2013; Yu and Damhorst, 2015; Saarijärvi et al., 2017; Alexander, Pisut and Ivanesescu, 2017; Boardman and McCormick, 2019; Plotkina and Saurel, 2019).

9.3.2. The Influence of Verbal Fit Information on Cognitive Processes

Alternatively, the findings from phase 3 infer that verbal fit information, in the form of user-generated fit reviews (vs. absence), only increased perceived product fit diagnosticity, but had no significant effect on females’ concerns with fit online. This finding substantiates prior research that has also established that user-generated reviews can help to provide females with a better understanding of garment fit based on their learned fit preferences (Hong and Pavlou, 2014; Shin and McKinney, 2017). However, a plausible explanation for there being no significant effects on concerns with fit online may be that both positive and negative fit reviews were present within this study. Indeed, Chapter 4 of the thesis outlines the current debate in online retailing literature as to whether the valence of reviews reduces or increases product risk. Yet, despite this finding, it is apparent that visual fit information, in the form of diverse body shapes, had more of an influence on the consumer’s online garment appraisal within the present study.

9.3.3. The Influence of Visual Fit Information on Behavioural Responses

The researcher observed an increase in purchase intentions when females were presented with a product page that featured the hourglass body shape (vs. diverse). This finding challenges the recommendation by Plotkina and Saurel (2019) who suggest that retailers should feature various models wearing the same garment, as it will lead to higher purchase intentions. One explanation of this finding, which has been unearthed in prior research, is that the aim of a fashion model is to permit consumers to envisage their aspirational selves adequately and to sell clothes (Lonergan, Patterson and Lichrou, 2018; Craddock et al., 2019). Hence, it can be suggested that what looks good on one body shape may not look good on another and so, will diminish the desire to purchase that product. This finding appears to further support Hammond and Kohler’s, (2002) proposition that, shoppers prefer
to buy garments that are displayed on models who are perceived to be socially ideal instead of seeing it draped over a consumer’s realistic but imperfect body. A similar inference was suggested by Yang and Xiong (2019) who highlighted that retailers who use virtual fitting rooms may experience a decline in sales as the technology permits consumers to see how a garment fits on them, which in reality may not look as good as on a model. This suggestion was further found by Lee and Xu (2020). Thus, the same reasoning can be applied to the findings of the present study.

Additionally, extant literature that has investigated the size of online fashion models have found that purchase intentions were higher for skinnier models (vs. plus-size models) (D’Alessandro and Chitty, 2011; St-Onge et al., 2017). This finding seems to suggest that online retailers should use visual product presentation methods, which feature attractive models with ideal figures to display the clothing item at its best (Yang and Xiong, 2019).

Scholarly research has demonstrated that the hourglass body shape is the most ideal (Manuel et al., 2010; Aghekyan et al., 2012; Makhanya and Mabuza, 2020) and so, females select clothing to reduce the discrepancy between an individual’s ideal and actual body shape (Grogan et al., 2013; Ridgway et al., 2017; Seo and Namwamba, 2018). In terms of industry practice, the fast-fashion retailer, Pretty Little Thing, who has dedicated a section of their website to dresses that enable females to attain ‘the perfect hourglass shape’ (Pretty Little Thing, 2020), further market the ideal hourglass body shape. Moreover, the desire to create an hourglass body shape was found within phase 2 (garment try-on) of the present study, which demonstrated that females were satisfied with the aesthetic fit of a garment when it allowed them to achieve an hourglass body shape. Thus, a possible reason as to why purchase intentions were lower in the diverse body shape condition (vs. hourglass body shape) is that the respondents perceived their body shape to look similar to the models with diverse body shapes. Consequently, it can be suggested that they were less inclined to purchase the garment as the discrepancy between the ideal and actual body shape was heightened.

9.3.4. The Influence of Verbal Fit Information on Behavioural Responses

Alternatively, the results demonstrated that there were no statistical differences in purchase intentions of females who were exposed to user-generated fit reviews, compared to females who were not exposed to user-generated fit reviews. This result infers that the presence (vs.
absence) of user-generated fit reviews, on a product information page, does not affect females’ intentions to purchase a garment. Whilst this challenges Xia et al., (2020) and Rodrigues et al., (2017) who found that first-hand consumer reviews led to a greater online purchase of clothing, a plausible reason for the insignificant finding may be that respondents, during their online fit appraisals, can collect enough information from the visual fit information alone. The findings of Kim (2020) support this inference, as the author unveiled that convincing signals about a product, other than user-generated reviews, may reduce consumers’ reliance on reviews for decision-making to the extent where the effect on purchase likelihood is minimal. Thus, it appears that in the face of body shape stimuli, consumers’ reliance on verbal information is reduced.

Indeed, Gribbin’s (2014) definition of garment fit as, how a garment looks on a consumer, may offer reasoning as to why consumers rely more on visual information when finalising their garment decisions online. Although this provides a direct challenge to Kim and Lennon (2008) who found support for verbal superiority on consumers’ online purchase intentions, the study provides empirical support for the supremacy of visual fit information on purchase intentions during the garment fit appraisal process. Lastly, the findings of this study somewhat agree with Kawaf and Istanbulluoglu (2019) who found that customers consulted Facebook reviews during their online search for product information, but the reviews did not influence the consumer’s purchase intentions. Accordingly, the findings of the present research infer that whilst user-generated fit reviews are useful during the information search, as they can help consumers to better understand the fit of a garment, they do not affect consumers’ purchase intentions.

9.3.5. The Influence of Cognitive Processes on Behavioural Responses
By testing the relationship between the organism and the response, the results suggest that when concerns with fit online increase, purchase intentions also increase, which contradicts existing online retailing findings (Park et al., 2005; Kim and Damhorst. 2010; Dai et al., 2014). Whilst this was a weak relationship, rs=.16, p <.01(one-tailed), the results of Zhang et al., (2019) provide a potential reason for this finding. For instance, Zhang et al., (2019) found that consumers’ attitude towards virtual try-on was not affected by perceived risk, leading the authors to theorise that the low cost of online product returns may be a possible reason behind the finding. As such, it may be reasoned that even though
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females’ express concerns with product fit assessment online, they will still be inclined to purchase the RTW garment given the ease and low cost of online product returns, which is further discussed Chapter 2, section 2.3.1 of the thesis.

The results from the correlations further demonstrated that there was a significant positive relationship between perceived product fit diagnosticity and purchase intentions, $r_s = .47, p < .01$ (one-tailed). Thus, this finding extrapolates that as perceived product fit diagnosticity increases, purchase intentions also increase. This finding concurs with existing research which has validated that if information about a product is diagnostic then purchase intentions will be increased as a consumer’s understanding of the product’s attributes are enhanced (Kempf and Smith, 1998; Jiang and Benbasat, 2007; Wang and Chang, 2013). However, the findings of this research provide new insights into the relationship between perceived product fit diagnosticity and online purchase intentions, which has not previously been established.

9.4. Theoretical Implications
The current research contributes theoretical knowledge to online fashion retailing, garment fit and online consumer research. The proceeding section will discuss the academic contributions of this study in further detail.

9.4.1. Theoretical Contributions
This research extended the S-O-R framework by incorporating visual and verbal fit stimuli, delineated in Figure 9.1, to provide empirical validation of how online fit information affects consumers’ online garment fit appraisal and decision-making process, which to date is absent in existing research.
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Although prior literature has established the saliency of garment fit evaluation (Apeagyei, 2008; Bye and LaBat, 2005; Hugo and Aardt, 2012; Shin and Chang, 2018), existing research has failed to investigate which types of online garment fit information affect a consumer’s garment appraisal. Consequently, this research responds to Wang et al.’s. (2019) research call to examine the effects of visual and verbal fit information on a consumer’s cognitive processes and in turn, behavioural responses. Supporting the S-O-R model in an online apparel-retailing context, this study found that whilst both visual and verbal fit information (S) influence a consumer’s cognitive process (O), only visual fit information influenced purchased intentions (R). The extended S-O-R framework of this study could be used in future research to understand how alternative fit stimuli (e.g., product videos and virtual try-on) affect consumers’ internal and final behavioural responses.
9.4.2. Academic Contributions

The outcomes of this research make multifarious, interdisciplinary academic contributions to the field of online retailing and marketing, consumer behaviour and psychology, and clothing fit and technology, as illustrated in Figure 9.2.

Figure 9.2. The Interdisciplinary Contributions of The Present Research

9.4.2.1. Online Fashion Retailing and Marketing (Fashion E-Commerce)

The findings of this research contribute to the growing field of online fashion product presentation in digital commerce and enrich the scant literature regarding the impacts of garment fit provision online. This study finds that visual fit information, in the form of diverse body shapes (vs. hourglass), enhanced perceived product fit diagnosticity and reduced concerns with fit online. Whereas, verbal fit information, in the form of user-generated fit reviews (vs. absence), only increased perceived product fit diagnosticity, but had no significant effect on concerns with fit online or purchase intentions. Hence, this
research makes novel contributions to the current debate regarding the superiority of online verbal vs. visual product information on the consumer’s decision-making.

For instance, whilst Kim and Lennon (2008) unveiled that verbal information was superior to visual details in regards to increasing purchase intentions, Li et al. (2016) found evidence for the preference of visual information in high information load conditions. Alternatively, this present research adds novel insights to the debate regarding visual vs. verbal superiority by establishing that visual information is more influential during the consumer’s garment fit appraisal process. Moreover, prior studies that have investigated online product presentation have either (1) overlooked fit information or (2) explored product information sources in isolation (Bleier et al., 2019; Narwal and Nayak, 2020) when in reality customers often appraise multiple product cues simultaneously. Thus, this research provides novel contributions to the body of online information design by ascertaining that although both visual and verbal fit information affects consumers’ online garment appraisal, only visual fit information affects purchase intentions during the garment fit appraisal process.

Additionally, there is relatively little research that has investigated the influence of a human fashion model on the online consumer decision-making process (Plotkin and Saurel, 2019; Boardman and McCormick, 2019). Indeed, the limited studies that have explored fashion models on retailers’ websites have only examined the size of the model (e.g. plus-size vs. ultra-skinny) (Halliwell and Dittmar, 2004; D’Alessandro and Chitty, 2011; Yu and Damhorst, 2015; Bian and Wang, 2015; St-Onge et al., 2017; Clayton et al., 2017; Pounders and Mabry-Flynn, 2019; Mulgew et al., 2020) or Virtual Try-On models (Shin and Baytar, 2014). Thus, by shedding light on the importance of body shape on the consumer’s online garment appraisal process, this study proposes a new research direction by introducing body shape as a factor of consideration in the online realm. Additionally, the abundant research concerning the impact of model body size on consumers’ online purchase intentions has reported mixed results. Thus, this research adds to the current debate by establishing that purchase intentions were higher upon exposure to the hourglass body shape (vs. diverse body shapes). Overall, this research offers a better understanding of the role of human fashion models, in particular body shape provision, in online commerce product presentation and on the consumer’s decision-making.
Scholarly research has acknowledged that the product information page is the most crucial page on an e-commerce website (Schmutz et al., 2010). Yet, despite its importance, previous research that has explored online consumer decision-making have investigated retailers’ websites as a whole, demonstrating the distinctively under-researched area of fashion product presentation on fashion retailers’ product pages. Thus, the findings of this study offer new insights into the mechanism by which digital product fit information affects a consumer’s online decision-making in the context of apparel. In particular, the results demonstrate how visual and verbal fit information on a retailer’s product page shape consumers’ internal processes which ultimately influence behavioural responses.

9.4.2.2. Online Fashion Retailing and Marketing (Fashion S-Commerce)

The findings of this research contribute to the advancement of consumer behaviour research in s-commerce literature in three primary ways. First, whilst a surplus of research exists regarding online product reviews, prior studies have not yet identified the role of user-generated reviews on the consumer’s online garment fit appraisal and behavioural outcomes. Existing research has predominantly explored quantitative variables of user-generated reviews (e.g., volume, length and valence) rather than the qualitative informational content found in reviews (Jang et al., 2019). Therefore, by building on the research of Shin and McKinney (2017), the findings of this study suggest that whilst user-generated fit reviews increased perceived product fit diagnosticity; they did not reduce concerns with fit online or affect purchase intentions. Thus, our results indicate that user-generated fit reviews play an essential role in the pre-purchase stage of the consumer decision-making process, in particular when searching for information, but do not influence a consumer’s final behavioural response.

Secondly, there is relatively little research that has focused on explaining consumer behaviour by looking at s-commerce features in an e-commerce setting (Wang et al., 2019). Indeed, given the dual definition of s-commerce outlined in Chapter 2 of the thesis, the majority of research that has previously investigated reviews have either used a SNS setting (e.g. Instagram/ Facebook) or a single e-commerce site, such as Amazon (Castagnos et al., 2010; Mudambi and Schuff, 2010; Baek et al., 2013; Cui et al., 2014; Ahmad and Laroche, 2015; Huang and Benyoucef, 2015; Amblee et al., 2017; Hazari et al., 2017; Wang et al., 2019; Gang and Taeho, 2019; Diwanji and Cortese, 2020; Hong and Pittman,
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2020), Tmall (Xia et al., 2020; Guo et al., 2020), Taobao (Luan et al., 2016) or Expedia (Kim, 2020). As such, this research overcomes this paucity by examining the role of user-generated fit reviews on a fashion e-commerce product page. Accordingly, this study not only extends the emerging theme of s-commerce in the context of traditional e-commerce, but the findings also shed light onto the role of garment fit information found in user-generated reviews which can be used for maximising marketing outcomes.

Thirdly, although meaningful attempts have been made to investigate the role of user-generated reviews on a consumer’s online decision-making, most research has focused on search product categories such as speakers (Qui et al., 2012), mobile phones (Flavian et al., 2016), household products (Helversen et al., 2018) or cameras (Eslami et al., 2018; Ismagilova et al., 2019) and so, have overlooked experience products, such as apparel. Yet, given the experiential nature of clothing, consumers can only finalise their valuation of a garment after they touch and try-on the product (He et al., 2020), making the search for fashion products online extremely problematic. Thus, further exploration of this product category was vital. To this end, as fashion garment criteria, such as fit, is experienced on an individual basis (Gill, 2015), the effectiveness of reviews in the context of apparel will differ significantly compared to search product attributes. Hence, this research provides considerable insights by extending the scope of user-generated product reviews to generalise the effect of user-generated reviews on a consumer’s online garment decision-making.

9.4.2.3. Consumer Behaviour and Psychology
The results of this research make novel academic contributions to the literature concerning the female’s clothing selection process, with particular consideration of body shape. Firstly, there has been limited research that has investigated consumers’ post-purchase fit experiences with fashion garments and so, the findings from phase 2 (garment try-on) demonstrate the importance of understanding fit from a consumer’s perspective. In particular, this study builds on the research of Grogan et al., (2013), who explored consumers’ fit appraisals in relation to aesthetic fit and body image, by incorporating Shin and Damhorst’s (2018) aesthetic, functional, social and physical fit parameters, to explore consumers’ fit appraisals holistically. Yet, this research offers novel insights by extending these consumer fit appraisals to the online realm, which to date has never been examined. The empirical findings from the online shopping experiment (phase 3) suggest that the
provision of user-generated reviews, which encapsulate a consumer’s subjective fit evaluation, can help online consumers understand garment fit better, demonstrating the significance of user-generated fit reviews when communicating garment fit online.

Secondly, whilst the results from phase 2 (garment try-on) challenge the findings of Makhanya and Mabuza (2020), they do corroborate with and extend existing scholarly findings that body shape is a fundamental moderator in the consumer’s clothing appraisal and selection process (Rasband and Liechty, 2006; Faust and Carrier, 2009; Tiggeman and Lacey, 2009; Kasambala et al., 2014). In particular, the findings of phase 2 (garment try-on) established that females select items of clothing in an attempt to either (1) obtain an hourglass body shape or (2) hide their perceived body shape (Yasim and Tajuddin, 2020). Moreover, phase 2 further demonstrated that females with different body shapes experience various fit issues, supporting the findings of Seo and Namwamba (2018). Whilst the results support prior research concerning the role of body shape on a consumer’s garment appraisal process, they also provide multifarious contributions to the website design and online marketing literature by extending this consideration of body shape to the online garment appraisal process, which to date has not been explored.

9.4.2.4. Clothing Fit and Technology

Finally, this study provides significant contributions to the current understanding of female body shape typologies, by particularly establishing the divergent body shapes prevalent amongst a UK female demographic. Indeed, there is a scarcity of research that has investigated female body shapes in the UK market, with only one other study being found (Grogan et al., 2013). Hence, through the use of body scanning, this study quantifiably offers a better understanding of the classification of female body shapes and how current RTW garments fit these different body shape classifications. Moreover, whilst body shape categorisation approaches have been used in prior studies, these methods remain largely academic and until now have failed to be applied in a commercial context (Gill, 2015). Consequently, the present research overcomes this limitation by testing the provision of body shape typologies on a retailer’s apparel website.

9.4.3. Methodological Contributions

This study also makes critical methodological contributions to the current online fashion retailing and body scanning literature. For instance, the majority of experimental studies in
the field of online product presentation have predominantly focused on student samples (Park, Lee and Han, 2008; Kim et al., 2009; Yoo and Kim, 2012; Shin and Baytar, 2014; Sina and Wu, 2019; Plotkina and Saurel, 2019; Deng and Gu, 2020), whereas the present research obtained a wider age group through Qualtrics. Indeed, females aged 18-34 were specifically targeted to overcome ecological validity problems associated with a student sample (Hong and Pittman, 2020).

Moreover, the majority of studies that have investigated consumers’ garment fit appraisals have either used (1) a fit preference scale, (2) black and white line drawings to depict garment fit (Alexander et al., 2005) or (3) have explored perceived consumer fit preferences in general (Shin and Damhorst, 2018; Makhanya and Mabuza, 2020). However, the methods mentioned above do not permit consumers to evaluate the fit of a garment on a 3D body (Newcomb and Istook, 2011) and so, to overcome the above limitations the present study undertook a physical garment try-on session in an attempt to replicate a real-life try-on experience.

The try-on session not only permitted an in-depth exploration of all garment fit evaluation variables, but it has also been found to be the most reliable evaluation method of garment fit (Hernández et al., 2019). Proceeding on this track, phase 2 of the research also emphasises the need to further incorporate digital methods, such as body scanning, into research methodologies to make better-informed body shape classifications. Indeed, prior research that has investigated female body shapes have required consumers to self-report their own perceived body shape (Alexander et al., 2005; Pisut and Connell, 2007; Manuel et al., 2010; Makhanya and Mabuza, 2020), rather than using a combination of body scanning and objective body shape categorisation. Self-reporting body shapes is thought to be an unreliable method as it is based on the consumer’s personal perception and judgement of their own body (Song and Ashdown, 2013). Accordingly, the detailed outline of the garment try-on sessions (Chapter 7) should be used in future research to examine different product categories and alternative demographics.

9.5. Managerial Contributions and Recommendations
The findings of this study offer several managerial insights for online apparel retailers. According to scholarly research, consumers identify the inability to physical appraise
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garment fit to be a significant problem with online shopping (Lee and Xu, 2020). Consequently, it has been shown that consumers are beginning to turn to social media channels to better appraise the fit of apparel (Kerviler et al., 2017; Nash, 2019), which imposes alarming challenges for the future success of B2C websites. Consequently, this study provides new insights into how retailers can enhance the provision of fit information on their product pages. Indeed, phase 2 of the research provides retailers with an empirical understanding of consumer’s learned fit preferences and the variety of diverse body shapes that exist amongst one demographic (UK females, 18-34). Thus, by incorporating this fit information on a product page, retailers can guide consumers with their apparel fit decisions, which, in turn, may boost revenues and reduce returns for consumers.

In particular, the findings of this study would be especially useful for pure-play retailers, which evoke high perceptions of risk, since consumers cannot physically check the merchandise at a store. As such, we recommend that pure-play retailers should focus on developing effective product fit presentation strategies that enable consumers to undertake a more in-depth product examination before purchasing. Specifically, we recommend that retailers should feature the option to see a garment on diverse body shapes because, although it decreased purchase intentions, it increased the consumer’s understanding of the fit of the garment, which may reduce non-conformance and in turn, lead to fewer returns for retailers in the future.

Additionally, given the popularity of s-commerce and the need to feature user-generated content in e-commerce, this study has important implications for practice. The findings from phase 3 demonstrate that although the inclusion of user-generated fit reviews enhanced perceived product fit diagnosticity, it was the visual fit information, which significantly affected concerns with clothing fit online and purchase intentions. Hence, echoing the recommendations by Kim and Damhorst (2010), retailers should focus predominantly on visual methods to enhance fit provision online. Nonetheless, the findings from the web experiment do not mean that online apparel retailers should remove fashion models with hourglass body shapes from their websites. Indeed, the results showed that purchase intentions were higher for females upon exposure to the hourglass (vs. diverse) body shape. Hence, the findings of the current study extrapolate that online retailers should use advanced devices to effectively assist consumers with various body shapes to visualise the fit and size of garments better online. For example, consumers should be provided with the opportunity
to look at the fit of a garment on a similar body shape using online filters. Whilst this type of device may be helpful for consumers to envisage the fit of a garment, it may also increase purchase intentions, as the ‘aspirational’ hourglass model will still be present.

Finally, the implications of this study advise product developers and marketers to better understand the diverse body shapes of UK females, aged 18-34. Additionally, phase 2 of the research illustrates how consumers evaluate garment fit, and so, it is paramount that these variables are incorporated on retailers’ product pages. Indeed, retailers must recognise the personal fit problems and preferences of this demographic to reflect target consumers better and improve product sale. In particular, manufacturers and marketers should use the findings from phase 2 to plan assortments and website information provisions based on preferences related to body shape and learned fit experiences. By doing so, retailers would go some way to address the current inability to effectively appraise garment fit online.

9.6. Societal Implications and Recommendations

Since commencing this research project, there has been a surge in promoting body inclusivity, both within the fashion industry and in academic literature. In particular, the call for greater representation of diverse body shapes and sizes through advertising is bourgeoning within marketing and body image literature (Moreno-Dominguez et al., 2018; Cohen et al., 2019; Mulgrew et al., 2020; Yu, 2020). Moreover, a number of fashion retailers have attempted to rebrand in response to this social agenda, as evidenced in Figure 9.3.
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For example, Rihanna’s Savage X Fenty lingerie brand (Figure 9.3) was praised for embracing less prescriptive body ideals by displaying different sized fashion models (Guardian, 2020). Thus, these initiatives represent a growing trajectory of inclusive body representation (Giorgianni, Danthinne and Rodgers, 2020). Despite this, Craddock et al. (2019) found that industry leaders still subscribe to the belief that being thin with an hourglass body shape is the essence of aspiration, offering a possible indication as to why the majority of retailers are still using fashion models with ‘ideal’ body shapes as part of their marketing strategies. However, as demonstrated by the protests at London Fashion Week for greater inclusivity across the UK fashion industry (Petter, 2019), the demand for inclusive representation is not diminishing. Subsequently, this research, which finds empirical evidence for the diverse body shapes prevalent within a UK female aged 18-34 demographic, makes societal contributions by emphasising the need to represent females with varying body shapes further within the fashion industry.
viewed as a long-term marketing strategy. Indeed, it will be beneficial for retailers to showcase models with different body shapes, wearing the same garment, as they will be more in tune with consumer sentiment, which may help to foster consumer loyalty in the long-term, as consumers may feel better represented.

In the past 10 years, the UK Government has taken some positive actions to mitigate the negative impacts of idealised media content. For example, the minister-led All Party Parliamentary Group on Body Image (2012) published a report suggesting that there should be better representation of high fashion models with different body shapes, a proposition that has been further supported by the Government Equalities Office (2019). Moreover, the UK Government has also worked with (1) ‘The Professional Publishers Association’ to develop an industry award to recognise effective examples of positive body image initiatives (Government Equalities Office, 2013) and (2) ‘All Walks Beyond the Catwalk’ to introduce the Centre of Diversity, which teaches fashion graduates to design clothes for a range of body shapes (Government Equalities Office, 2013).

However, the present research demonstrates that despite these efforts, there is still a lack of diverse body shape representation especially within fashion promotion. Indeed, Phase 2 of this research established that females select dresses that permit them to achieve the socially perceived ‘ideal’ hourglass body shape. Subsequently, the body shape typologies found within this research could offer helpful insights to the Advertising Standards Authority (ASA), who enforce Government proposed Advertising Codes of Practice, to advise retailers to offer more realistic depictions of women’s body shapes in fashion advertisements.

### 9.7. Research Limitations

Despite the research contributions, several limitations should be noted when interpreting the findings. First, similar to that of Mulgrew et al., (2020), phase 3 (online shopping experiment) featured different models in each condition. Although the images were carefully pre-selected for clothing size, style, colour, lighting and pose consistency, the models may have differed in unforeseen ways. For instance, extraneous factors, such as personal beauty preferences and ethnicity, were not considered. Research has found that consumers identify themselves with pictures of human models in e-commerce settings based on their body size and ethnicity (Plotkina and Saurel, 2019). Yet, to keep alternative variables consistent, all of the models that featured on the websites were Caucasian, which limits the understanding of...
how racially diverse images may affect consumers’ garment fit appraisals and purchasing decisions. In a similar vein, although the results from phase 3 suggest that there were no statistical differences in respondents clothing size across the four groups, the clothing size of the models across all conditions was held constant (e.g., sizes 8-10), which may have influenced respondents if they had a different clothing size to the online model.

Secondly, the data in this study was acquired from an all-female sample, aged 18-34, based in the UK. Therefore, caution needs to be made when generalising the findings to other consumer groups. Further research is required to investigate the impact of fit information, present on a fashion product page, on different consumer age and ethnicity groups to see if the results differ. Equally, the sample size used in phase 2 (garment try-on) was relatively small, given the difficulty in recruiting participants that were willing to be body scanned and who could gain access to the body scanner. Although the sample size (N=30) exceeded prior body scanning studies (Chen, 2007; Ashdown et al., 2009; Grogan et al., 2013; Zhang et al., 2017; Ridgway et al., 2017), further research should build on these findings by looking at a larger sample size to discern whether the same body shapes are prevalent.

Thirdly, adhering to prior online retailing experiments, the mock websites were designed on Wix, which was not only considered to be a suitable platform to create a website that emulated a realistic apparel website (Tang and Zhang, 2020), but it also enabled the researcher to control the treatment levels of the experimental variables fully. However, given the limited capabilities of the website design platform, videos were not incorporated on the product page, which may have affected the realism of the website. Hence, further studies should consider using a live fashion website to see if the results diverge.

9.8. Future Research Directions
9.8.1. Online Product Visualisation Strategies
The results of this study demonstrated the primacy of visual fit information on a consumer’s online garment fit appraisal and purchase intentions. However, static images were only explored in the present study and so, future research should examine the effect of alternative visualisation provisions, such as videos, avatars (Shin and Baytar, 2014; Gallino and Moreno, 2018) and Augmented Reality (McLean and Wilson, 2019; Park and Yoo, 2020; Baytar et al., 2020). Interestingly, some fashion brands are starting to use computer-generated models (CGI models) for their promotional campaigns. For example, Shudu, a
Chapter 9. Discussions, Conclusions and Future Research

CGI model who was created by ‘The Diigtals’, was the face of Balmain’s 2018 fashion campaign (BBC, 2018). Given that the bodies of CGI models can be digitally modified, the use of CGI models may be a suitable approach to incorporating diverse body shapes on fashion retailing websites. Accordingly, if fast fashion retailers choose to feature CGI models on their product information pages in the future, further research would be required to investigate the body shapes of CGI models and how they affect consumers’ online garment appraisals.

9.8.2. Wider Age Range
Whilst insightful, the findings of this research are somewhat limited to UK females, aged 18-34, and so, the effectiveness of online body shape provision should be tested on alternative demographics. Boardman and McCormick (2019) found that older women spent the most time looking at fashion model images when formulating online decisions, suggesting visual product provision is vital for an older demographic. Thus, adhering to the suggestion by Watson et al., (2015), fashion companies would benefit from addressing an older age group by offering a variety of body shapes in fashion advertising. Hence, future research should test how the inclusion of diverse body shapes affects online garment fit appraisals of females aged 35+. Additionally, Lee et al., (2012) found that as women mature their body shape changes resulting in further dissatisfaction with RTW garment fit. Thus, further research should undertake a physical garment try-on session to understand issues with garment fit as well as ascertain the core body shape typologies prevalent amongst an older female demographic.

9.8.3. Gender Comparison
Additionally, there is a lack of research that has explored body shape as a moderator in men’s clothing selection. Grogan et al., (2019) suggest that men may also be susceptible to appearance-related behaviour change interventions. Yet, in the field of apparel literature, male body shape studies are insufficient compared to female body shape studies (Lee, Song and Kim, 2020). Thus, future research should replicate this study by examining how males evaluate garment fit and the role of body shape during this process.

9.8.4. Cross-Cultural Comparison
The findings of this study could be enhanced by research that undertakes a cross-cultural comparison of consumers’ garment fit appraisals online. Although the prominence of body
shape categories across countries diverges (discussed in Chapter 3), the same body shapes typologies that are identified from the FFIT method have been found in several cultural contexts. As this research was limited in its investigation of UK females, future research should continue to examine the implications of body shape provision online by extending the current study to different cultural contexts and ethnicities.

9.8.5. Alternative Shopping Channels
The inability to appraise garment fit is a significant deterrent of shopping online and so, this research specifically looked at garment fit provision in the online shopping channel. Yet, given the apparent advantages of omnichannel retailing, follow-up studies must examine how consumers appraise and formulate garment fit decisions across many channels. According to scholarly research, garment fit is the most important, yet problematic garment evaluative criterion (Eckman et al., 1990; Abraham-Murali and Littrell, 1995; Bye and LaBat, 2005; Pisut and Connell, 2007; Howarton and Lee, 2010; Vuruskan and Ender, 2011; Hugo and Aardt, 2012; Shin and Chang, 2018; Park, 2019; Gupta, 2020). Thus, it would be interesting to see how consumers use different channels, such as mobile, s-commerce, physical stores, for various purposes when formulating their fit decisions.

It would also be valuable to investigate how the in-store experience could be enhanced to help aid consumers clothing selection. Cohen (2014) found that 55% of females stated that their body shape differed considerably compared to the body shape exhibited by retailers’ clothing mannequins. Hence, it would be stimulating to examine consumers’ responses to mannequins that better represent the body shapes of UK females. Moreover, Virtual Fitting Rooms are now being implemented in-stores such as, Burberry, in the form of magic mirrors, which enable consumers to try-on products before actually pulling them from the rack (Lee and Xu, 2020). Thus, further research should be undertaken to see how in-store fit provisions affect a consumer’s garment fit appraisals and purchasing decisions.

9.8.6. User-Generated Content
Despite user-generated video reviews becoming more prominent on retailers’ interfaces (Bug and Helwig, 2020), there is a limited understanding of how video reviews affect a shopper’s online experience (Diwanji and Cortese, 2020), especially in a fashion context. Hence, future research should examine whether video user-generated fit reviews provide a better appraisal of garment fit online compared to written reviews.
9.8.7. Alternative Methods of Enquiry
Research concerning the online garment fit appraisal is limited, and so, future research should build on the findings of this study through alternative methods of enquiry, such as eye-tracking. Tracking eye movements and measuring fixation counts would provide a better understanding of which information sources are the most salient when evaluating fit online. This enquiry would offer better insights, compared to the traditional means of consumer research, into effective online product provision design.

In a similar vein, follow-up qualitative interviews would provide an in-depth appreciation of the reasons behind the results found in this thesis. Future research should enquire why verbal fit information (presence vs. absence of user-generated fit reviews) did not affect the consumer’s concerns with fit online nor their purchase intentions. As such, a qualitative discussion may provide discernments into how verbal fit information could be enhanced in the future.

To further this, future research would also provide novel insights by looking at the business perspective of the topic of body shape. Indeed, by systematically investigating the viewpoints of business leaders in the fashion industry, the findings would further understand the current reluctance of e-commerce fashion retailers to feature diverse body shapes on their products pages. Proceeding on the same track, future studies should substantiate the findings of this research with empirical sales data from a pure-play retailer to establish whether body shape stimuli reduce or increase online garment returns.

9.8.8. Product Category
This research is limited to RTW dresses, and so, further research should replicate the current online shopping experiment to investigate alternative clothing styles for example, luxury or compression garments, such as sportswear. Firstly, fit has been noted to be imperative to consumers purchasing performance sportswear (Shishoo, 2005). Moreover, Lee, Rothenberg and Xu (2020) posit that luxury consumers demand new ways to experience fit before purchasing items online. Thus, it would be fascinating to see how the online fit information explored in this study affects sportswear and luxury purchases.
9.9. Chapter Summary and Conclusion

This research demonstrates that a consumer’s garment fit appraisal is a complex and multifaceted issue, which retailers must consider when selling apparel online. Through a mixed-method enquiry, phase 2 (garment try-on) demonstrated the importance of both subjective and objective determinants of clothing fit. For instance, the results confirmed prior research that consumers evaluate garment fit based on four personal criteria (aesthetic, social, functional and physical). Yet, currently, these variables are not communicated online. In particular, when evaluating aesthetic fit consumers often referred to how they used dresses for body shape management. Moreover, phase 2 (garment try-on) also established the importance of objective body shape categorisation in understanding the different body shapes prevalent amongst a particular demographic. Hence, by undertaking an online shopping experiment, whereby both objective and subjective fit criterion were the independent variables, this research has provided novel insights into how product page design affects consumers’ online garment fit appraisal and purchasing decisions.

Indeed, the quantitative study (phase 3) has conceptualised consumers’ cognitive and behavioural responses to different combinations of online garment fit provisions. Thus, in doing so, the findings of this thesis not only extend the S-O-R model by presenting an important focus for future research, but it also provides novel contributions to online product presentation literature. Specifically, this research has filled several gaps in academic literature and provided a detailed understanding of the influence of fit provision on the online clothing appraisal process. Furthermore, this research highlights the benefits of incorporating body shape stimuli and user-generated reviews of consumers learned fit preferences onto fashion retailer’s product pages. To this end, this thesis has provided scholars and practitioners with a greater knowledge of how product page design, in particular, online fit provisions affect cognitive and behavioural responses amongst UK females aged 18-34.
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Appendix I: Dresses
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Appendix II: Body Shape Typologies and Participant Codes

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Appendix III: User-Generated Fit Reviews

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<th>Maxi Dress</th>
<th>Positive Reviews:</th>
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<tr>
<td></td>
<td>This dress fits quite well. I went for a size 8 which is smaller than my usual size, so I would say it’s quite a big size 8 if it fits me. I didn’t really experience any problems with the fit of it, it’s quite loose anyway, so it would be hard to get the fit wrong. Also, because it’s quite loose it hides my stomach and hips which is good. It’s not as tight so it feels comfortable to wear. Overall, it’s pretty good.</td>
</tr>
<tr>
<td></td>
<td><strong>Recommend:</strong> Yes</td>
</tr>
<tr>
<td></td>
<td><strong>True to size:</strong> No</td>
</tr>
<tr>
<td></td>
<td><strong>Size:</strong> 8</td>
</tr>
<tr>
<td></td>
<td>It’s definitely a comfortable dress because of the floaty fabric, so it fits nice. It’s naturally tighter around the bust but then it flows out at the bottom, but it’s not an uncomfortable tight. I don’t think there were any problems with the fit. On the waist it’s not too clingy but it does sort of accentuate the waist before it goes out. But it makes me look a bit bigger around the bottom area because of the excess fabric. There’s definitely there’s ease of movement. True to size 10.</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>True to size:</strong> Yes</td>
</tr>
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<td></td>
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<table>
<thead>
<tr>
<th>Moderation Review:</th>
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<tbody>
<tr>
<td>I think the 10 fits me well, so I’d stick with a 10. It’s quite loose over my stomach area, so it hides my midriff area, but then because it pulls in at the waist it doesn’t feel like you’re wearing a bin bag, it still gives you some kind of shape. But I don’t like that its loose over my legs, I think that makes me look bigger than I am. But it’s loose around the hip area, so I’ve got a lot of movement.</td>
</tr>
<tr>
<td><strong>Recommend:</strong> Yes</td>
</tr>
<tr>
<td><strong>True to size:</strong> Yes</td>
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<table>
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<tr>
<th>Negative Review:</th>
</tr>
</thead>
<tbody>
<tr>
<td>This dress is too big! It just goes out. I know a maxi dress should be floaty but I feel like with this one you can’t see any shape to my body, so it’s not flattering. It’s just too loose everywhere, it doesn’t show off my body at all. I’d size down, but even the 6 might even be too big. It needs to be a bit tighter around the bust and then go out. The length is a little bit too long as well!</td>
</tr>
<tr>
<td><strong>Recommend:</strong> No</td>
</tr>
<tr>
<td><strong>True to size:</strong> No</td>
</tr>
<tr>
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<tr>
<td>I don’t like the fit of this dress! It’s too big, it doesn’t do anything for my shape. It fits around the bust but from there it just flows straight, so it’s not really appealing. Also, the straps are too big they fall of my shoulders. It doesn’t flatter my body shape as it’s just too big. It hides all your body. The length is also too long so I don’t like it! It’s not true to size, I would go for a smaller size.</td>
</tr>
<tr>
<td><strong>Recommend:</strong> No</td>
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<table>
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<th>Body Con Dress</th>
<th>Positive Reviews:</th>
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<tbody>
<tr>
<td></td>
<td>The fit of this dress is really good! At the bust it fits perfect, it’s just a bit low cut, so you might need to wear something underneath. The fit at the waist is brilliant! It’s very figure hugging. The fit accentuates my bum/ hip area which I don’t mind because it slims you down and makes you look slightly nicer. Also, with the slit on the side you can walk and feel comfortable in it. I would say it’s true to size. It’s really nice!</td>
</tr>
<tr>
<td></td>
<td><strong>Recommend:</strong> Yes</td>
</tr>
<tr>
<td></td>
<td><strong>True to size:</strong> Yes</td>
</tr>
<tr>
<td></td>
<td><strong>Size:</strong> 10</td>
</tr>
<tr>
<td></td>
<td>I like this dress, it’s nicely fitted on the top and on my legs but it’s a bit looser on my stomach area so it doesn’t fit as well around there. But no problems really, it’s a good fit. It fits nicely as it hugs my figure quite well. I went for the 8 and I would stick with that size. The dress</td>
</tr>
</tbody>
</table>
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compliments my body shape because it’s nice and tight at the bum and at the top, so it shows off my body shape. It’s a comfortable dress!

Recommend: Yes
True to size: Yes
Size: 8

Moderate Review:
The fit is quite accurate. It goes it at the waist which it’s supposed to, but obviously because of the stretch the dress does cling to your body, so it’s very revealing. The size 8 is true to size.
The straps don’t sit quite comfortably on the shoulder, but the actual body itself fits really well. Because this dress has a tighter fit it does show that you have a bit of a shape, so it emphasises that my waist is quite small. Because of the stretch it allows you to move quite well.

Recommend: Yes
True to size: Yes
Size: 8

Negative Review:
The fit of this dress is just tight all over, so it’s impractical! It shows up my lumps and bumps and all of the areas of my body that I dislike about myself, like my belly and hips! I don’t feel very comfortable in the dress as it makes me look bigger than I actually am. I would re-order a larger size. I like where the slit comes up to, but that’s it.

Recommend: No
True to size: No
Size: 8

This dress is very tight! I tried my usual size on but I would probably get a size 14 just so it is a little bit baggier around the stomach area. It’s a bit low cut. The straps are baggy, I feel like they wouldn’t be stable when I’m moving around. I feel uncomfortable because of the way the dress might look. I think the slit is way too short, I wouldn’t wear it this high. I think it’s exposing quite a lot.

Recommend: No
True to size: No
Size: 12

Pencil Dress
Positive Reviews:
It’s surprisingly a nice fit! The only problem I would have with it, is how to put it on. It’s flattering because of the way that the arms are designed, so it does focus a lot on your shoulders which makes it better to hide my bottom part. I think it shows that I’ve got a relatively small waist and that’s accentuated through the kind of fit it has. I think for me I would probably need a bigger size on the bottom part to make it look slightly nicer, but it is really comfortable!

Recommend: Yes
True to size: Yes
Size: 10

It fits very well! It’s a nightmare to get on but I think if it wasn’t so hard to get on it wouldn’t fit as nicely, so compromise. It’s fitted around my waist and it’s a thick material which smooths out my body shape a bit more, so it doesn’t show off all my lumps and bumps. It fits well at the bust, waist and hips area. The length is nice!

Recommend: Yes
True to size: Yes
Size: 8

Moderate Review:
The fit overall is good, it’s just a little bit clingy on the waist and hip area. It’s not a very comfortable dress, because the fit at the waist, bum/ hip area was a little bit too tight, so if I sat down or if I was walking around maybe it would feel too tight. But I think because it goes in at the waist, and then it’s also got stuff going on around the top half, it balances my whole shape out.

Recommend: Yes
True to size: Yes
Size: 10

Negative Review:
This dress fits really badly everywhere! It’s really tight on my left arm, at my stomach and it’s too tight on my bust/ hips and bum. It’s more of a size 8. The skirt is quite loose at the bottom.
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Appendix IV: Histograms

*Perceived Product Fit Diagnosticity*

![Histogram 1](image1)

![Histogram 2](image2)

![Histogram 3](image3)

![Histogram 4](image4)
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Concerns with Fit Online

Purchase Intentions
Appendix V: Q-Q Plots
Perceived Product Fit Diagnosticity

Appendix VI: Reliability- Cronbach’s Alpha Scores

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<td>Purchase Intentions</td>
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Investigating How Product Page Design Affects Clothing Fit Appraisal Online
Appendices

Appendix VII: Kruskal-Wallis Test Results
*Age, Ethnicity, Clothing and Dress Purchase Frequency, Clothing Size*

<table>
<thead>
<tr>
<th>Test Statistics</th>
<th>What is your age?</th>
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<th>Asymp. Sig.</th>
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<table>
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<table>
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<th>Test Statistics</th>
<th>How frequently do you shop for dresses online?</th>
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<table>
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<th>When shopping for clothing online, what garment size do you usually purchase?</th>
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Appendix VIII: Interview Transcripts and Raw Quantitative Data

Please find the attached USB containing:
- 30 body scans
- 30 semi-structured interview transcripts
- Raw survey responses from Qualtrics (N=400 responses)