Looking for the perfect fit?
online fashion retail - opportunities and challenges

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Abstract
This paper broadly describes the e-Size project as well as presenting the preliminary results of its first pilot test - an exploratory survey administered to a convenience sample of customers in the attempt to establish whether the integration of a size recommendation application into a menswear fashion retail website had been successfully achieved by verifying the size recommendations made by the application, and to assess the user experience of the application in order to determine its suitability for live user testing on the retailer's website. From the preliminary findings it emerges that all participants found the size recommendation application easy to use. The majority of participants received the correct size recommendation from the application, and would be willing to use the application due to its helpfulness in providing a size recommendation when shopping online, however, users' personal style and fit preference is an important factor, irrespective of the size that fits them correctly. By integrating additional garment and fit information into the application, retailers can ensure every user will be able to receive a tailored recommendation that meets both their size and personal style preferences.

1. Introduction

Drawing on our existing research, e-Size is a research project funded by the Economic and Social Research Council, exploring how online fashion retailers can utilise innovative technology to give consumers the ability to match their size and find the perfect fitting garment.

By assessing the implementation and the deployment of novel yet existing software applications that capture body measurements and provide accurate garment size recommendations, in an online menswear retailer, the e-Size project aims to improve shopper satisfaction, increase fashion garments' online sales, and reduce product return rates.

The key objectives of the research being: to further develop an existing software application aimed at producing accurate body measurements in close collaboration with an online fashion retail partner; to enhance the retailers customers' satisfaction by improving the quality of their online shopping experience; to focus on user experience testing to contribute to the development of the user experience; to critically evaluate the opportunities and the challenges that are associated with the deployment and implementation of such novel software application for the retailer and for the broader fashion industry; and to contribute to the reduction of the economic and environmental impact associated with garments' returns due to their poor fit.

More specifically, this project focuses on user experience testing: observing how customers interact with the size recommendation application, integrating feedback from customers into the sizing information, providing guidance on improving the user experience of the application, and thereby the online shopping experience, and integrating feedback on the garment information into the retailer's operations.

The keys to this are the quality of the measurement data from the retailer, overall user satisfaction with the online experience, accuracy of the personal information provided by the user, and the effectiveness of the size recommendation application in matching body and garment measurements so the consumer can find the best fitting clothing size. This paper consists of four sections. The first section outlines the literature review, the second section describes the methodology adopted. While the third section highlights the preliminary findings of the research, the final section illustrates the conclusion, the limitation of the application in its current state and directions for further research.

2. Online Fashion Retail: Benefits and Challenges

Today, within the fashion industry, E-retail conceived as a web presence alone (Ha & Stoel, 2012), is not sufficient for any high street retailer to operate or promote themselves. Doherty et al. (1999) suggested that the Internet adoption might not be a viable strategy for all retailers, as the likelihood of an organisation succeeding in their investment decision would be dependent upon the retailer's specific internal and environmental inhibitors and facilitators. More specifically, it was argued that only those retailers with an appropriate blend of technological and organisational capabilities and an appropriate product offering, which were operating in Internet-friendly market-place, should contemplate Internet retailing, at least until the market and technology were more mature. Moreover, it was suggested that certain products categories were likely to have the greatest growth potential and opportunity to create competitive advantage: books, music, computers, and airline tickets were viewed as potential winners, whilst clothing and fashion goods were tipped as losers (De Figueiredo, 2000).

Traditionally, the term 'channel' described the flow of a product from source to end-user. This definition implies a passive unidirectional system whereby the manufacturer / producer marketed through a wholesaler or retailer to the consumer (Davies, 1993). The concept of the retailer as simply the final distributor has been supported by the emphasis on "buying decisions, operational concerns" and overall "product orientation" (Mulhern, 1997). However, recent developments in information technology are changing this orientation by enabling retailers to focus their marketing efforts on managing the customers more effectively (Mulhern, 1997). It is now widely recognised that the Internet's power, scope and interactivity provide retailers with the potential to transform their customers' shopping experience (Evanschitzky et al., 2004), and in doing so, strengthen their own competitive positions (Doherty & Ellis-Chadwick, 2009). The Internet's capacity to provide information, facilitate two-way communication with customers, collect market research data, promote goods and services and ultimately to support the online ordering of merchandise, provides retailers with an extremely rich and flexible new channel (Basu & Muylle, 2003). In doing so, the Internet gives retailers a mechanism for: broadening target markets, improving customer communications, extending product lines, improving cost efficiency, enhancing customer relationships and delivering customised offers (Srinivasan et al., 2002). By and large, consumers have responded enthusiastically to these innovations (Soopramanien & Robertson, 2007), and on-line retail sales have grown significantly over the past fifteen years, and are predicted to continue rising into the future (Ho et al., 2007; McKinsey, 2013). This suggests a shift towards a bi-directional retailer / consumer relationship, in which more power accrues to the customer (Hagel, 1997). In evaluating the Internet's potential as a retail channel a number of advantages, opportunities and threats have been identified by the literature. The reported advantages are:

Accessibility. Given the current rates of domestic PC uptake and the basic desire to communicate (Parker & Gulliford, 1996) the use of the Internet is forecasted to expand exponentially.

Direct communications. As an interactive channel for direct communication and data exchange (Verity, 1995) the Internet enables focused targeting and segmentation opportunities for retailers who can more closely monitor consumer behaviour.

Cost savings. The Internet could ultimately replace the High Street by satisfying all shopping needs on-line, from home. This could benefit the retailer by substantial transaction cost savings (Hooi-Im Ng et al., 1998).

New markets. It is predicted that retailers can gain additional sales, either to existing customers or through attracting new ones via a whole new global marketplace (Cronin, 1996). Furthermore, the new communication opportunities of the Internet provide the potential and easy access for brand positioning and diversification into new product areas (McWilliam et al., 1997).

The possibility to leapfrog stages of development since e-retail could facilitate retailers to shift from multi-channel distribution to cross-channel distribution (McKinsey, 2013) by also implanting new business models, undertaking substantial rationalization of the existing operations (Vecchi & Brennan, 2009) and enabling the emergence of new collaborative practices across their supply chains (Vecchi & Brennan, 2009; Vecchi & Brennan, 2011).

The anecdotal evidence provided by the experience of China is highly significant. According to McKinsey (2013), China has overnight become one of the most wired retail markets. Millions of customers can now log on and purchase a vast number of products that they could only dream of acquiring just a few years ago. McKinsey's analysis seems to suggest that 60 percent of online consumption is simply replacing offline retailers but the remaining 40 percent is incremental consumption that would not have happened without e-retail. This is particularly the case outside China's biggest cities where brick-and-mortar retail remains undeveloped. E-retailing is beginning to fill the gap. In particular, Chinese consumers seem to buy more apparel and houseware than any of their counterparts (70 percent of the total online consumption), where astonishing growth has been achieved with very reasonable investments.

However, although the comparative advantages of using the Internet appear compelling, its potential as a retail channel will only be realised if a number of well-documented limitations are successfully addressed. For example technical problems: the complexity of the user interface bandwidth restrictions and access connection speeds and security concerns (O'Brien, 2010). From a retailing perspective the Internet also presents a number of problems. The use of the Internet is an elective activity whereby consumers require effort to access sites and products and consequently planned purchasing may dominate over impulse purchasing (McWilliam et al., 1997). The move from a physical to a virtual marketplace may require more complex product differentiation and positioning (Baty & Lee 1995; O'Brien, 2010). Fundamentally, Shi and Salesky (1994) warn that value created by retailing on the Internet is unlikely to be additional but rather a re-distribution of profitability from current retail channels.

According to McKinsey (2013), however, e-retail is not just a replacement of purchases that otherwise would have taken place offline. It actually seems to spur incremental consumption especially where there is a demand for products that brick-and-mortar retailers have not yet managed to deliver. It appears that the true benefit of the Internet as a retail channel has to be traded off against these drawbacks. Additionally these challenges are further exacerbated within the context of the fashion industry where the aforementioned challenges are coupled by some distinctive ones due to the intrinsic nature of fashion products. Fashion products are experiential by their nature (Kim & Martinez, 2012), thus replicating the shopping fashion experience in the online environment poses additional challenges (O'Brien, 2010). High street retailers still find it challenging to communicate store atmosphere and excellent service via

online communication (Okonkwo, 2005; Ha & Stoel, 2012). However retailers that operate single and multiple channel strategies can provide a range of valuable benefits for customers while still maintaining heritage, luxury status and service. This can be achieved by innovative use of new technologies and digital tools such as 3d body-scanning, style advice, co-design and interactive screening, which enables an online retailer to equal or surpass that of the physical retail environment (Okonkwo, 2009; Ross, 2010). This is becoming a key strategy for the future viability of fashion high street retailers, as additional channels can provide additional income.

From the perspective of experiential web-atmospherics in the fashion industry there is a body of knowledge which includes Kurniawan (2000), Schenkman, and Jonsson, (2000) and Mahike, (2008). However, recently Manganari et al reviewed the subject in 'Store atmosphere in web retailing' (2009). A conceptual model of consumer responses to the online store environment was tested and was compared with the physical store environment in terms of sensory perception, accuracy of product information and social presence. From the findings it emerges that all of these dimensions are equally important in the online store environment. This is in line with the findings from a recent study conducted by Ross on Saville Row's tailors where e-tailoring with the aid of dedicated body scanner is a widespread practice (Ross 2007, 2012). In particular for clothes which need to provide an exceptionally good fit, the anthropometric data generated by sizing systems such as body-scanners can actually bridge the gap between "custom-made" and "mass-produced" (Apeagyei & Otieno, 2006) and ultimately lead to a substantial growth of online sales (Ha & Stoel, 2012). Anthropometrics, the study of measuring the human body, has been considered by tailors and scientists for decades, but instead of using traditional methods of measurement, a good fit can now be achieved digitally. The big question for high street retailers is how accurately? This brief summary of the literature highlights the high level of interest in the commercial potential of the Internet as a distribution channel for the fashion industry and some likely implications for store based retailers. A criticism of the literature is that much is based on speculation and informed comment as opposed to primary evidence. As such, there is the opportunity to conduct some valuable research by focusing upon fashion retailing on the Internet.

3. Methodology

The e-Size project is a research project funded by the Economic and Social Research Council, exploring how online fashion retailers can utilise innovative technology to give consumers the ability to match their size and find the perfect fitting garment. By assessing the implementation and the deployment of novel yet existing software applications that capture body measurements and provide accurate garment size recommendations, in collaboration with an online menswear retailer, the e-Size project aims to improve shopper satisfaction, increase fashion garments' online sales, and reduce product return rates.

From a preliminary survey of the applications commercially available, it emerged that there are various size and style recommendation/mapping services using a low-cost webcam, including *UPcload, Metail*, *Fits.me* and *Poikos*. Some of these services require a minimum of two photographs – a front view and in profile. They also require detailed preparation regarding the calibration and segmentation of the captured image, thus making them difficult to use (Peng and Al-Sayegh 2014). According to the Technology Acceptance Model (TAM), there are two types of technology acceptance – perceived usefulness and perceived ease of use (Davis, Bagozzi & Warshaw 1989). Most of the size and style recommendation services fit into one category only, rather than combining both. In terms of ease of use, *Metail*, for example, uses a Virtual Try-On (VTO), where the users have control of their body shape, hairstyle and skin tone. Amongst all of these services, the research team found that *UPcload* provides the most accurate measurement,

with their entire measurement process taking an average of 20-30 minutes (Peng, Sweeney & Delamore, 2013). *UPcload* was therefore deemed as the most suitable application to conduct some preliminary testing and hence was integrated into the retailer's website. During the initial stages of the e-Size project, the *UPCload* user experience was simplified, removing the need for a photograph of the user in order to extract the body measurements, and instead requiring only three pieces of personal data: height, weight and age. Two distinct garments were selected to test the application: a t-shirt and a hoodie, since *UPcload* size recommendations only work for upper body garments.

The research project has been jointly undertaken with an emerging online fashion retailer that only recently launched an online fashion retail platform to sell ethically-sourced menswear, with a target market of style conscious 18-40 year old males. The successful implementation and the deployment of the software application are particularly crucial for the online fashion retailer since it could enable them to build a distinctive business value proposition by also timely seizing substantial first mover advantages within the industry. In particular, both the small size of the company and its early stage of its business development lend themselves to greater flexibility in the scope for the implementation and the deployment of an existing albeit novel, software application. Such flexibility is crucial for the successful completion of the project and the company's distinctive features make the chosen online fashion retailer the ideal industrial setting to engage with the user community. As such, there is the opportunity to conduct valuable research in relation to the implementation and the deployment of a novel application in the context of fashion online retail. This project is specifically framed around the user experience with the twofold aim to promote the elimination of waste through reduction of returns (highly significant for both its economic and environmental impact), and to increase customer satisfaction by addressing the balance between online and high street shopping experience within the digital era.

More specifically, this project focuses on user experience testing: observing how customers interact with the size recommendation application, integrating feedback from customers into the sizing information provided by the application, providing guidance on improving the user experience of the application, and thereby the online shopping experience, and integrating feedback on the garment information into the retailer's operations.
The keys to this are the quality of the measurement data from the retailer, overall user satisfaction with the online experience, accuracy of the personal information provided by the user, and the effectiveness of the size recommendation application in matching body and garment measurements so the consumer can find the best fitting clothing size. Drawing on our existing research (Delamore & Sweeney, 2010; Peng, Sweeney & Delamore, 2013; Vecchi et al., 2007; Vecchi et al., 2010; Kontu & Vecchi, 2012), we specifically seek to assess the implementation and the deployment of a novel software application into e-retailer systems, so to implement any corrective action that might prove to be necessary as well as making recommendations in relation to the application's implementation and deployment and its broader commercialisation to the fashion industry at large and dissemination of the scientific results.

Primary data has been generated by means of an initial pilot test session aimed at assessing the successful integration of the sizing application into the retailer's website. Subsequently, the e-Size researchers conducted a pilot test at London College of Fashion to verify that *UPCload* had been successful integrated into the retailer's website, and that the user experience of the application was suitable for the customers of the retailer. The successful integration of the application would depend on the accuracy of the garment measurements from

the retailer, along with the algorithm powering the size recommendation application. The suitability of the application would be determined by the accuracy of the size recommendation received by the user coupled by the ease of use of the application.

UPcload works by integrating a specific set of data for each garment into the application. It does not require precise measurement data for each garment; instead it requires a 'fit range', which is the range of body measurements that will fit a particular clothing size. For example, for the Rapanui t-shirt used for the pilot test, the size Small has a chest measurement of 39.5 inches (Table 1), with a fit range of 34-36 inches, meaning that it will fit someone whose chest measurement falls within that range.   The garment data is normally supplied by the retailer or designer, but for the purposes of the e-Size pilot test session the garments were manually measured. *UPcload* places importance on certain garment measurements, which for upper body garments are chest and waist measurements.

The fit range is determined by the 'ease', which is the extra room the designer has added to the pattern of the garment during manufacture, to allow for comfortable movement. Depending on the style of the garment, the designer may add additional ease into the pattern in order to give a particular silhouette. For example, if a designer intends a garment to be closely fitted to the body, there will only be a minimal amount of ease, however for garments with a loose fitting shape, where the fabric hangs away from the contours of the body, additional ease will be added to the pattern. For both garments used for the pilot tests, an ease factor of 3-3.5 inches was used (Table 1), which is a standard amount of ease for loose fitting garments.

Rapanui t-shirt	Small		Medium		Large		X Large	
Product Measurement	**Size**	**To fit**	**Size**	**To fit**	**Size**	**To fit**	**Size**	**To fit**
Chest circumference	39.5"	34-36"	41"	36-38"	43.5"	38-40"	45.5"	41-43"
Length	28"	/	29"	/	29.5"	/	30.5"	/
Waist	39"	33-35"	40"	35-37"	42.5"	37-39"	45"	40-42"
Hem circumference	39.5"	/	41"	/	43.5"	/	45.5"	/
Rapanui hoodie	Small		Medium		Large		X Large	
Product Measurement	**Size**	**To fit**	**Size**	**To fit**	**Size**	**To fit**	**Size**	**To fit**
Chest circumference	41.5"	36-38"	43.5"	38-40"	45"	40-42"	48"	43-45"
Length	28.5"	/	29"	/	29.5"	/	30.5"	/
Waist	39.5"	34-36"	41"	36-38"	43"	38-40"	45.5"	40-42"
Hem circumference	38.5"	/	39"	/	41.5"	/	42.5"	/

Table 1: t-shirt and hoodie garment data

In order to collect the primary data participants were made to use a tablet to access a dedicated version of retailer's website, where they used the application to receive size recommendations for two garments (a t-shirt and a hoodie), and then physically tried on the recommended size for each garment. The pilot test session captured the relevant data concerning five main areas of investigation. These mainly concerned each participant's body size, his online shopping habits, the accuracy of the size recommendations, the participants' overall satisfaction rating and feedback on the application.

Eleven participants took part in the pilot test session on 20th November 2014. Participants were recruited via email from the staff and student body of the London College of Fashion. Additional participants were recruited on the day of the session via a poster advertising the pilot test, located in the main foyer of the college. All participants were purposefully selected in the pilot test and were male, and an effort was made to recruit people with different body shapes and ages. Table 2 below summarises the distinctive features of the 11 participants in terms of their gender (all males), age, height, weight and chest. These parameters were deemed as

necessary to provide an accurate size recommendation for the two upper body garments that were tested in the pilot.

User ID	Sex	Age	Height (cm)	Weight (kg)	Chest (cm)
1	M	39	185	90	95
2	M	19	178	68.2	91
3	M	34	183	93	97
4	M	21	161	55.4	84
5	M	21	173	57.3	83
6	M	42	179	87	98
7	M	48	182	75.6	95
8	M	25	186	69	86
9	M	33	187.5	76	99
10	M	27	177	80	95
11	M	31	169	76	99

Table 2: Participants' distinctive features

Each individual session lasted approximately 15 minutes. During the session, the researchers explained the test session and asked the participant questions on their online shopping habits. The researchers also asked the participants to confirm their height and weight, which was then manually measured by the researchers, along with their chest measurement, to verify the accuracy of their response, using weighing scales, a tape measure and height measurement apparatus. This was done to establish the degree of accuracy that the participants have of their body measurements, as this will determine the size that is recommended by the application.

Participants were given a tablet to access a dedicated webpage of the retailer's website, where they input their height, weight and age into the *UPcload* application to get a size recommendation for two garments: a cotton t-shirt and a cotton hoodie. Both garments were available in the following sizes: Small, Medium, Large and Extra Large. The *UPcload* application is launched by clicking the 'size help' button located next to the size drop down menu on each garments' webpage (Figure 1, step 1). When the application is launched a pop up screen appears, where users can enter their personal data (Figure 1, step 2). The user is then taken to a page where they are invited to select an image that offers the most accurate representation of their body shape (Figure 1, step 3). This is followed by the size recommendation page, where the user is shown the most suitable size, based on the designer's intended fit of the garment (Figure 1, step 4).
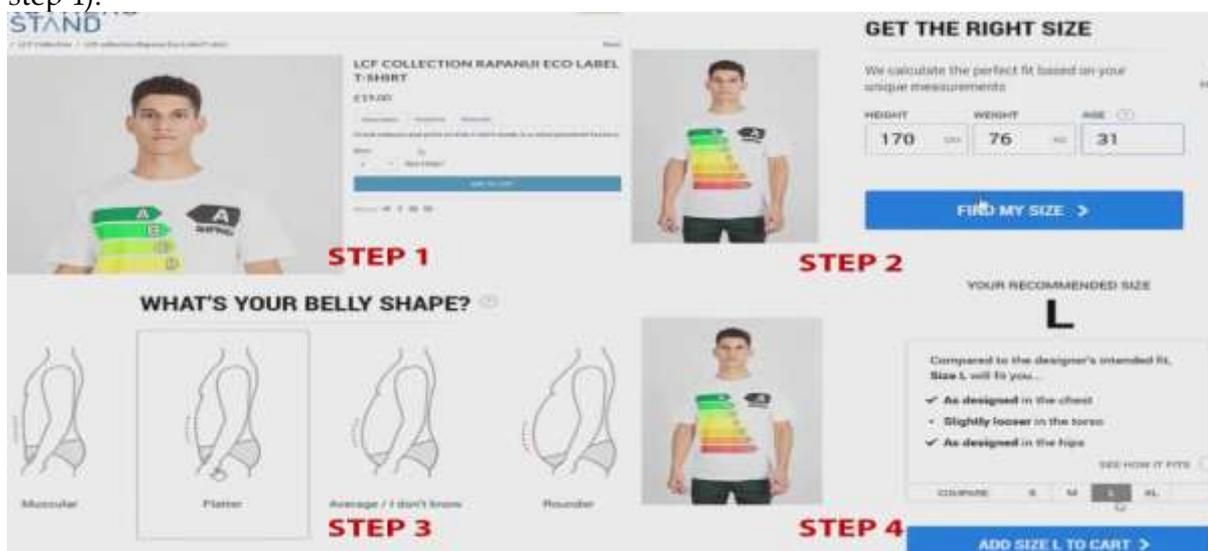
Figure 1: using the UPcload application on the retailer's website

The participants then physically tried on the garment sizes that had been recommended to them by *UPcload*, to verify that the recommended size was accurate and fitted correctly. If the recommended garment did not fit, or if the participant indicated a style preference for a particular fit (e.g. a tight fit or a loose fit), then they tried on another size until they found one they were satisfied with.

After the user tests were completed, the participants were asked to answer questions on the size and fit of the recommended garments, and to rate the application overall by using a 5-point Likert Scale (with measures ranging from Strongly Disagree to Strongly Agree) for the following subjective measures:

- How willing would you be to provide personal information for use in a size recommendation application when shopping online
- How willing would you be to use the application
- How will would you be to recommend the application to others
- The application is helpful because of the size recommendations it provides for online shopping

4. Findings and Discussion

Participants answered a series of questions on their online shopping habits and use of size recommendation applications. The majority of the participants that took part in the session shop online, either quarterly or monthly. Only a very small minority of the participants had previously using a similar application, however all participants indicated that having an application that provided a size recommendation would be useful when shopping online.

The *UPcload* application relies on the user inputting their height weight and age, which the application processes to produce a size recommendation. In order to assess the extent to which the participants were aware of their own body measurements, they were manually measured. In addition to height and weight, the chest measurement was taken to give additional information on their body shape. The error margin between participants' own estimation of their height and weight and the manual measurement was an average of 0.74% for height, and 2.96% for weight. This was not considered to be a significant enough discrepancy to present a constraint in the size recommendation process, and the participants' estimations of their body data were considered sufficiently accurate for the purposes of the test session.

The t-shirt used for the test sessions was a cotton t-shirt, which was designed to have a loose fitting shape and hang away from the contours of the body. The t-shirt is available in sizes Small (S), Medium (M), Large (L) and Extra-large (XL). Almost all (9 out of 11) of the participants received a correct size recommendation from the application and agreed that the recommended size fitted correctly, based on the designer's intended shape, and felt comfortable; however only a small minority (3 out of 11) of the participants would buy the size that was recommended to them. This is due to their fit preference differing from the way that the t-shirt is meant to be worn (with a loose fit), demonstrating that although the application generally provided a correct size recommendation based on the users' measurements, the style and shape of the garment is an important factor in deciding whether to make a purchase. The younger participants, in the 18-20 and 21-29 age ranges, on the whole preferred a loose fitting shape, as intended by the designer, however the participants in the 30-39 and 40-49 age ranges generally preferred a more fitted look, where the garment either follows the body shape, or skims the contours of the body. The figures below show User #1 wearing the size that was recommended (Figure 2) and the size that they prefer (Figure 3), which is more fitted, but could be considered too tight across the belly area. Due to the length of the garment, shorter users found that the size

recommended to them was slightly too long for their preference, which again is due to the loose fitting style of the t-shirt, and if it had been available in XS they would have purchased that size, even if it meant it was tighter fitting in other parts of the body, for example across the chest.
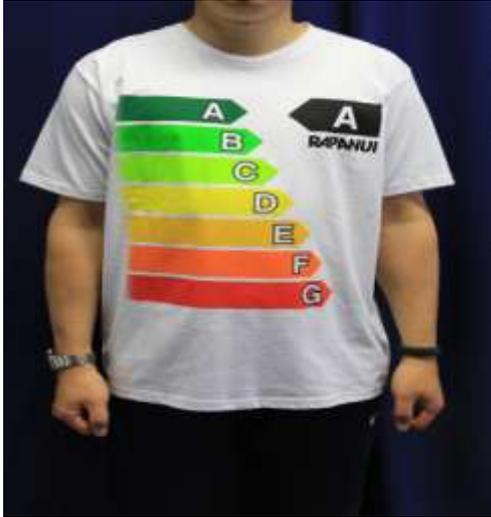

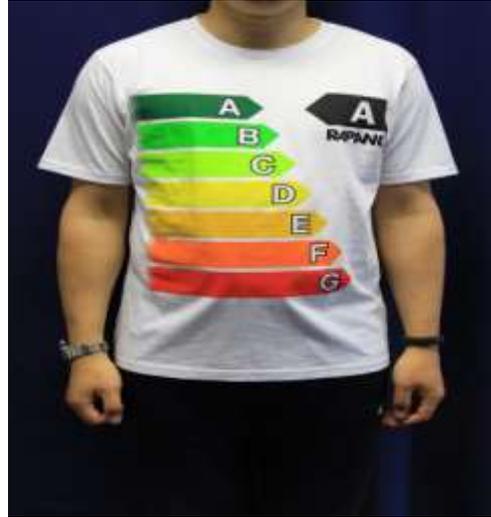Figure 2: User 1, recommended size, XL   Figure 3: User 1, preferred size, L

The hoodie used for the test sessions was a cotton hoodie, and was designed to have a loose fitting shape, that hangs away from the contours of the body. The hoodie is available in sizes Small (S), Medium (M), Large (L) and Extra-large (XL). The majority (8 out of 11) of participants received a correct size recommendation from the application and agreed that the recommended size fitted correctly, based on the designer's intended shape, and felt comfortable; however only a minority (4 out of 11) of the participants would buy the size that was recommended to them. Yet again, this is due to their fit preference differing from the way that the hoodie is meant to be worn (with a loose fit), however all users found that the sleeves of the garment were too long, which indicates an issue with the pattern and construction of the garment, and had an influence on their decision to purchase the garment. Similar to the t-shirt, the younger participants preferred a looser fit, and the older participants preferred a tighter fit. The figures below show User #1 wearing the XL size that was recommended (Figure 4) and the L size with a slim fit (Figure 5).

Figure 4: User 1, recommended size, XL   Figure 5: User 1, size L, slim fit

The two garments used for the pilot test were both loose fitting, and the results show that the shape and the style of the garment are important factors, as the customers' fit preference might be different from the designer fit. The pilot test demonstrated that the size recommendation application only works, and returns an accurate recommendation, if the garment data is accurate, the 'fit ranges' are accurate and the emphasis has been placed on the correct measurements. For garments outside of a standard fit, for example loose fitting garments or particularly long garments, additional information needs to be given by the application, for example '*If you prefer a loose fit try a size M*' so that customers can make an informed decision on the correct size that fits their body and personal style preferences.

After testing the size recommendation application, participants were asked to state which opinion matched their view on four statements, using a 5-point Likert Scale (where Strongly Agree=5, Agree = 4, Neither Agree nor Disagree = 3, Disagree=2, Strongly Disagree = 1). The response to the size recommendation application was generally positive. 9 out of 11 of participants would be willing to use the size recommendation application when shopping online and 10 out of 11 participants would recommend the size recommendation application to their friends. Participants commented that using the application made them feel more confident about shopping online, as they often don't know what size to choose, and using the application enabled them to overcome their uncertainty about purchasing clothing online, particularly with a retailer they hadn't previously purchased from in the past.
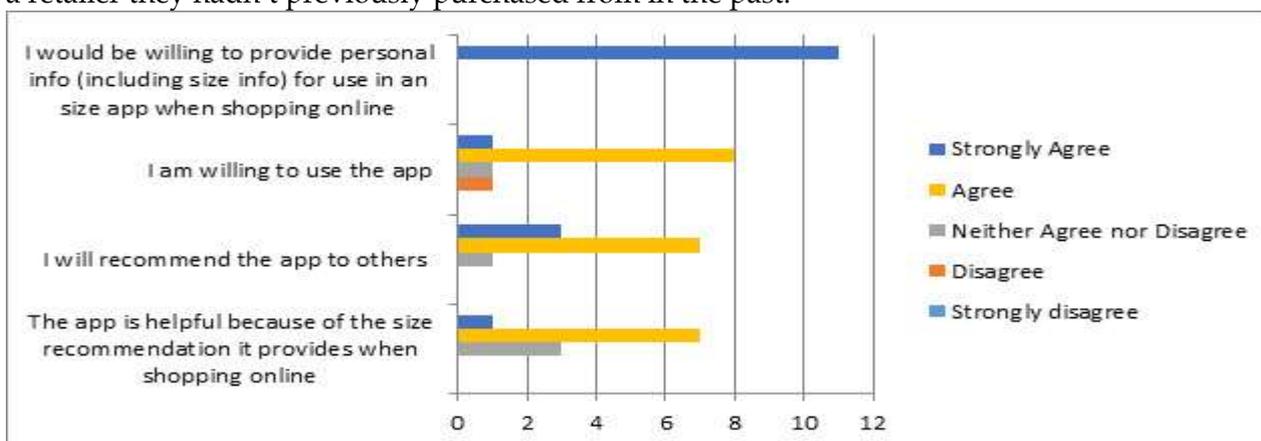

Figure 6: Participants' assessment of the application

5. Conclusion, Limitations and Directions for Future Research

Although we acknowledge the limitations in terms of generalisability of the findings that are inevitably associated with the adoption of a convenience sample, our findings provide an interesting "snap-shot" of the fashion customers and their perceptions of the sizing technology and its promising potential.

As for the future development of the sizing application, from our findings it emerges that the sizing application is helpful because of the size recommendation for online shopping. While they also found that the application is accurate, they found the experience to be easy and straightforward. Nonetheless, there is room for improvement.

In particular, personal style and fit preference are important factors when shoppers are deciding what size to buy, irrespective of the size that fits them, however the current version of the application does not take into account people's different preference for fit. By incorporating styling information from the retailer, and offering a recommendation that is based not only on body measurements but also fit preferences, the size recommendation application can provide an additional level of service to customers and a more accurate size matching service.

This paper provides only an overview of the preliminary results that ensued from the initial focus group that was conducted to assess the validity of the sizing application. Nonetheless, *UPcload* has been a success with the test users and the sizing recommendation results were satisfactory for all the participants. We have managed to offer a high level of tracking of body data for anonymous users and members in the database. The sizing application has the potential and capability to track how the body has changed over time, which could offer various different features to brands and retailers in the future. The main goal for *UPcload* is to enhance the shopping experience and reduce the confusion of sizing across different fashion brands by thus ultimately reducing product returns due to poor fit. In order to create a wider appeal, it was important to keep the user in the same shopping environment and make the interaction between the e-commerce platform and *UPcload* transparent and simple, with minimal interruption to the user experience. This should boost the engagement and increase the confidence and satisfaction when shopping online.

Following the preliminary testing of the validity of *UPcload,* further funding for the E-size project has been granted. This provides the research team the valuable opportunity to further develop the sizing application and test it with a wider range of customers for online shopping in close collaboration with a fashion retailer as explained in the methodology section. As such, the findings prove that there is therefore substantial opportunity and scope for the e-Size project in the context of online fashion retail.

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