

E-Service Performance of Apparel E-Retailing Websites: A Longitudinal Assessment

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ABSTRACT

This article takes a longitudinal approach to examine the evolution of e-retail sites in reference to service delivery performance. Using a content analysis approach, product-related e-service attributes currently available on women's apparel websites were identified and quantified in order to compare them to data collected in an earlier time frame. A Chi-square Goodness-of-Fit test was conducted to compare availability of e-service attributes in 2011 and 2016. The current retailers provided more product description/presentation attributes on their websites than in the 2011 research. However, they are still at an unsatisfactory level that need further improvement. This article offers practical insights for fashion websites in terms of the areas of strengths and weakness in e-service performance by exploring how e-service performance of apparel e-retailers has changed over the past five years.

KEYWORDS

Apparel E-Retailing, E-Service Quality, Longitudinal Analysis, Web Performance

INTRODUCTION

With the advent of e-commerce, the retail industry has been revolutionized. With technological advances in information technology and telecommunications, the way people live and how business runs have dramatically changed (Alhawari, Alryalat, & Hunaiti, 2016; Tshin & Tanakinjal, 2014; Wahi, Medury, & Misra, 2015). The growth and maturation of e-commerce as a retail channel and the wide adoption of e-commerce led to the recent emergence of omni-channel retailing where online and offline distinctions are quickly disappearing. Consumers today have high expectations for e-retailers, demanding both efficiency and personalization in addition to competitive prices (E-tailing group, 2015). Additionally, as business boundaries between countries are diminished by the wide adoption of digital technology, growing global competition among e-retailers has been observed and is expected to continue (Barns, 2016).

Despite its strong potential, e-commerce sales in the U.S. are relatively low compared to other developed countries. For example, U.S. e-commerce sales accounted for 7.1% of the total retail sales in 2015 in contrast to 14.4% in the UK and 10.2% in Asia-Pacific (eMarketer, 2015b).

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For e-retailers not only to keep up with the current emerging social and business trends, but also to effectively respond to fast changing consumer behavior in accordance with market shifts, they need to carefully monitor issues that affect consumer shopping/purchasing behavior in e-retailing. One such factor is e-service quality. Turk, Scholz, and Berresheim (2012) stated that e-service quality is an essential factor affecting the consumer online shopping experience. As e-commerce has matured in the retail industry, consumer expectation of e-service has likewise increased. It has become a norm among frequent online shoppers to expect free shipping, expedited shipping, or personalized service via live chat or social media. Tshin and Tanakinjal (2014) pointed out that e-service quality is one of the main determinants of retail business success since there is no face-to-face interaction available between consumers and retailers in the online setting.

During the last decade with the fast growth of e-commerce, e-service quality has received wide scholarly attention (e.g., Kim, Kim, & Lennon, 2011; Turk et al., 2012). Extant research offers useful insights into critical service dimensions affecting consumer evaluation of e-service quality across different product or service categories. However, most of these studies are cross-sectional research (i.e., taking snapshots of e-service quality performance at a given time). Despite an abundance of e-service quality research, there is a fundamental lack of understanding of how e-service quality has evolved over time. Due to a wide variety of samples used, direct comparisons across different cross-sectional research studies are not adequate to draw meaningful conclusions.

In order to make a meaningful longitudinal investigation of e-service quality, the current study utilizes two research publications that took a systematic assessment of e-service quality performance of fashion websites (Kim, Kim, & Lennon, 2006, 2011). These studies employed a large set of fashion websites in the U.S. and content analyzed an extensive list of e-service attributes available as cross-sectional research. Therefore, it was deemed relevant to adopt the coding guide developed and validated by Kim et al. (2006, 2011) and use it for the current longitudinal study of e-service quality. The findings of this study offer not only the up-to-date assessment of current e-service quality performance of U.S. fashion websites, but also new historical insights about how e-service quality of U.S. fashion websites has evolved over a recent five-year period. Such findings are expected to fill the gap in existing e-service quality literature and offer practical insights for fashion websites in terms of the areas of strengths and weaknesses in e-service performance.

CONCEPTUAL FRAMEWORK

The three-component service quality model developed by Rust and Oliver (1994) guided the conceptual development of this study. The three-component model is built based on the Nordic model proposed by Grönroos (1984) and includes service product, service delivery, and service environment as key influencers of service quality. The service product is related to the outcomes consumers get after they interact with a service provider. Service delivery is associated with how consumers interact with the service provider (i.e., how consumers get it). Service environment is relevant to the internal and external atmosphere in which a service takes place (Polyakova & Mirza, 2015).

How consumers interact with a service provider affects consumers' perception of service quality (Kim et al., 2006; Parasuraman, Zeithaml, & Berry, 1988). Therefore, the current study focuses on service delivery by identifying service attributes available on e-retailing websites. In a virtual retail setting, researchers found that service delivery is much more critical than the other two components of service quality (i.e., service product, service environment) (Kim & Lennon, 2017) because how a consumer achieves his/her goal by interacting with the website plays a critical role in affecting his/her perception of the service (Polyakova & Mirza, 2015).

Online purchasing often involves high levels of perceived risk, especially for experience goods because consumers cannot physically evaluate products before purchasing (Kim & Lennon, 2008;

Klein, 1998; Weathers, Sharma, & Wood, 2007). According to Dai, Forsythe and Kwon (2014), product performance risk (i.e., uncertainty about product performance before purchasing) was the most common reason why consumers do not purchase online. Weathers et al. (2007) suggested that information on a website can lessen consumers' uncertainty about product performance. For instance, product information and visual depictions of products on a retail website help online shoppers feel more certain about the product prior to purchase without physical interactions (Weathers et al., 2007) and decrease perceived risk (Kim & Lennon, 2010). Likewise, this study postulates that e-service attributes available on fashion websites help determine the performance of service delivery.

LITERATURE REVIEW

E-Service Quality

Rowley (2006) defined e-service as “deeds, efforts or performances whose delivery is mediated by information technology (including the Web, information kiosks and mobile devices). Such e-service includes the service element of e-tailing, customer support and service, and service delivery” (p. 341). E-service quality affects overall consumer shopping responses such as satisfaction, trust, perceived risk, and loyalty (e.g., Lennon & Kim, 2015; Ribbink, van Riel, Liljander, & Streukens, 2004; Sadeh, Mousavi, Garkaz, & Sadeh, 2011; Segoro, 2013; Vila & Kuster, 2011; Wolfinbarger & Gilly, 2003).

More than 42% of the world population has access to the Internet (Schmidt et al., 2016). With the rapid development and advancement in Internet technology, online shopping has become more accessible and convenient and has led to intense competition among e-retailers. To be successful in today's highly competitive online market, e-retailers need to closely monitor their web service performance from the customers' perspectives. Understanding and satisfying customer needs and wants is a key to successful customer relationship management (Jain & Bhatnagar, 2016; Kaoud, 2017) and customer acquisition through improved customer satisfaction (Alhawari et al., 2016).

Assessment of E-Retailers' Service Performance

To measure e-retailers' service performance, researchers have developed various scales/dimensions in diverse e-retail contexts (Kim & Lennon, 2017). For instance, Loiacono, Watson, and Goodhue (2002) developed WebQual consisting of 12 dimensions to gauge e-commerce website quality. Yoo and Donthu (2001) developed SITEQUAL including 4 dimensions to assess perceived quality of e-shopping sites. Parasuraman, Zeithaml, and Malhotra (2005) proposed E-S-QUAL to measure service quality delivered by retailing websites by including two sub-categories with 7 dimensions. Despite numerous scales in the e-service quality literature, few commonalities exist among the dimensions identified (Kim & Lennon, 2017). For instance, Yoo and Donthu (2001) identified ease of use, design, speed, and security as key dimensions of e-service quality, whereas Montoya-Weiss, Voss, and Grewal (2003) identified navigation structure, information content, and graphic style as essential dimensions of e-service quality.

Another issue related to the extant scales is that items used to measure the identified dimensions do not give practical information to e-retailers to assess their web performance. For example, Wolfinbarger and Gilly (2003) developed eTailQ to measure e-tail quality. They employed five items to measure website design: the website provides in-depth information; the site doesn't waste my time; it is quick and easy to complete a transaction at this website; the level of personalization at this site is about right, not too much or too little; this website has good selection. In measuring e-retailers' website service performance, these items appear to address consumers' overall perception of website performance, but do not offer specific suggestions (e.g., how to make transactions easy?) for e-retailers to utilize. It is unclear how much practical information e-retailers are able to acquire using previous e-service scales in gauging their actual service performance and identifying specific areas for improvement. To

address such issues, the current study took a different approach to assess e-retailers' web performance and identified specific service attributes available on current e-retailer websites by adopting and refining a comprehensive empirically-tested e-service coding guide.

Information (Content) on E-Retailers' Websites

The importance of information content available on websites and the strategies to deliver information to end users is well addressed in numerous research papers (e.g., Barnes & Vidgen, 2002; Gupta & Garg, 2015; Kim et al., 2006; Montoya-Weiss et al., 2000; Song et al., 2012). Kim and Lennon (2008) demonstrated that information on a website is presented in a visual (images) and/or text form. Of the various information content available on e-retailers' websites, product information is one of the most critical types of information needed to make a purchase decision. For example, Vila and Kuster (2011) identified well-designed website variables that influence website success and found that full product information with a variety of product presentations was one of the most important variables for successful websites.

Furthermore, information available on websites is directly related to consumers' perceptions of perceived risk (Vila & Kuster, 2011). Bruner, Hensel, and James (2005) defined product performance risk as "uncertainty and consequences of a product not functioning at some expected level" (p. 474). Due to the inability to feel and try on a garment, purchasing apparel online generates more product performance risk perceptions compared to other products (Yu, Lee, & Damhorst, 2012). Creating a website with enhanced visual product information, such as bigger pictures and/or more images (e.g., Song & Kim, 2012) or kinetic visual cues such as 3D-rotations and video (e.g., Yu et al., 2012), can help consumers evaluate apparel products more accurately and reduce risk perceptions.

Apparel E-Retailing

Apparel is the most prominent purchasing category for online shopping (CNBC, 2016). Consumers in the U.S. spent approximately \$63 billion in 2015 purchasing apparel and accessories online, which made up 17.2% of the total dollar value sales (Statista, 2016). The sales of online apparel and accessories are expected to increase up to 20% over the next four years (CNBC, 2016). Although over four-fifths of U.S. apparel retail purchases in 2016 are offline purchases (Statista, 2016), consumer in-store purchases are highly influenced by online shopping. According to Forrester Research, approximately 52% of U.S. retail sales in 2014 were web-influenced sales (Internet Retailer, 2014). As current retailing moves towards an omni-channel era, more and more consumers will look up a retailer's website before visiting a store. Therefore, information on the retailers' websites may be more critical than ever before to be successful in today's omni-channel retail setting.

As discussed in the previous section, the current study focuses on service delivery by identifying service attributes available on e-retailing websites. In a virtual setting, information about service available online (e-service attributes hereafter) facilitates service delivery. Recognizing a lack of understanding of how e-retail sites have evolved over time in service quality performance, this exploratory study takes a longitudinal approach and examines availability of e-service attributes at two different points in time. Considering the importance of product information and associated perceived risk in the context of apparel e-retailing, this study focused on e-service performance in terms of offering product-related information. The results reported in Kim et al. (2011) are used as baseline data. Based on the conceptual framework and review of literature, the following research questions guided the current study.

RQ1: How has e-service performance related to availability of product-related information evolved over the five-year period (2011 to 2016)?

RQ2: What are the strengths and weaknesses of the current e-service performance related to product-related information?

METHOD

Scope of Study

The current study focused on product-related e-service attributes available on women's apparel websites. This focus was chosen because apparel is the best-selling category in e-commerce (Consumerist, 2016; Delrey, 2016) and women are the dominant online apparel shoppers (Complex, 2015). In essence, buying apparel online is considered risky due to the inability to physically touch, examine, or try on an item. Therefore, product-related information on apparel websites is essential compared to other product categories considered search goods (Kim & Lennon, 2008; Klein, 1998).

Research Strategy

A longitudinal content analysis method was employed to assess apparel e-retailers' e-service performance with a focus on e-service attributes related to product-related information. Content analysis is a widely used nonreactive research method used to understand a phenomenon by describing and quantifying it (Elo & Kyngäs, 2007; Hsieh & Shannon, 2005). Using a content analysis approach, product-related e-service attributes available on women's apparel websites in 2016 were identified and quantified in order to compare them to data collected in an earlier time frame in a study by Kim et al. (2011). The comparison of data from the two time frames (2011 and 2016) will offer valuable information on the changes apparel e-retailers have made in relation to the provision of product-related information on their websites as well as what new e-service attributes have emerged over the five-year period.

Coding Procedure

In a previous study, Kim et al. (2011) content analyzed 97 men's and 97 women's apparel sites in terms of e-service attributes. Using the results from that study as baseline data, this study replicated the process and gathered data for comparison. Since women are the dominant e-shoppers, only data from the 97 women's apparel sites were included in the current study. As mentioned in the previous section, this study focused on e-service attributes available from the product pages considering the importance of product-related information in apparel e-retailing.

Three coders were involved with the content analysis. After several coding trials using the coding guide adopted from Kim et al. and collaborative discussions, a revised coding guide contained specified steps to code, procedures, and a clear definition of each attribute. The three coders then individually coded five websites to check the validity of the data and the interpretations of the data (Lombard, Snyder-Duch, & Bracken, 2010). A high level of reliability (i.e., inter-coder reliability of .91) was achieved. The three coders re-evaluated and discussed the attributes not coded consistently until consensus was achieved and the coding guide finalized.

The remaining websites were divided among the coders. The 19 websites from the original list of 97 websites from Kim et al. (2011) that were no longer available were excluded during the coding process. The initial version of the coding sheet from Kim et al. had 25 product-related service attributes. During the pilot coding, 9 new product-related e-service attributes (e.g., magnified view, full screen view, customer review and rating) were identified and added to the revised coding sheet. As a result, a total of 34 product-related e-service attributes were included in the final coding process. The 34 product-related e-service attributes were divided into two categories: 14 product description attributes (PDAs) and 20 product presentation attributes (PPAs). PDAs are text-based product-related descriptions such as fiber content, country of origin, size chart and customer reviews. PPAs are visual product descriptions such as larger view and alternative color views.

RESULTS

Sample Characteristics

A total of 78 women's websites were content analyzed for the current study. Forty-three websites sold apparel only, 19 sold apparel and home products, 8 sold apparel and other non-home related items such as health and fitness items, and 8 sold all of the categories. The 78 e-retailers were categorized into four types of e-retailers based on the types of e-retailers identified in Kim et al. (2011) (see Table 1). A Chi-square Goodness-of-Fit test was performed to determine if differences exist between the data collected by Kim et al. (2011) and the data from the current study in terms of the types of retailers identified because 19 websites were no longer available and thus were excluded from the current study. The chi-square result indicated no statistically significant difference between the two data sets with regard to retailer types, $\chi^2(3) = 1.19, p = .75$.

Availability of Product-Related E-Service Attributes

Table 2 shows a complete list of all 34 e-service attributes coded for the current study. To compare the availability of e-service attributes in the two data sets (2011 data and 2016 data), a Chi-square Goodness-of-Fit test was performed on all 34 product-related service attributes.

Product Description Attributes (PDAs)

With regards to 14 PDAs, 11 attributes showed differences between the two data sets (see Table 3). With regard to size chart, the 2016 retailers did a better job of providing measurement tables compared to the 2011 data (21.5% increase over the five-year period). Still, 10 of the 2016 retailers did not provide a size chart and more than half did not provide explanations about how to measure each body part (i.e., measurement guideline). Apparel has an extremely high online return rate ranging from 20% to 30% and fit is indicated as one of the primary reasons for returning online purchases (Internet Retailers, 2013; Internet Retailer, 2015). Thus, providing a measurement table on websites is imperative for apparel e-retailers. Moreover, a measurement table alone is often not enough for consumers to accurately determine their correct size (Fashion Metric, 2016) because people may not know how to take their measurement correctly. A detailed measurement guide coupled with a measurement table can help consumers choose the right size. Nonetheless, only about half of the 2016 websites offered both a measurement table and a measurement guide, a 21% decline from 2011.

Availability of a wish list also showed a significant difference between the two data sets. The e-service attribute of wish list availability has improved over time. Over two-thirds of the 2016 websites provided wish lists on their websites, a 26.9% increase compared to the 2011 data. Wish lists are efficient tools for both consumers and e-retailers. A wish list allows consumers to save items they like while browsing for possible future purchases. E-retailers can utilize the information available through customers' wish lists to develop a better understanding of customers' product interests and determine ways to reduce customers' shopping cart abandonment rate (Bigcommerce, 2015).

A printer friendly option was available in 5% of the 2016 websites, a 9.3% decrease from 2011. A printer friendly option is an efficient option for consumers who search for product information

Table 1. Types of e-retailers (n = 78)

Retailer Types	<i>f</i>	%
Pure e-retailer (only only)	7	9.0
Store e-retailer (store and online)	33	42.3
Catalog e-retailer (catalog and online)	8	10.3
Multi-channel e-retailer (store, catalog, and online)	30	38.5

Table 2. Product related e-service attributes

		2011 Study (n = 97)				2016 Study (n = 78)			
		Unavailable		Available		Unavailable		Available	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Product Description Attributes (14)									
	Item availability	22	22.7	75	77.3	10	12.8	68	87.2
	Size chart								
	<i>Unavailable</i>	13	13.4			10	12.8		
	<i>Measurement only</i>			14	14.4			28	35.9
	<i>Measurement guide only</i>			0	0.0			0	0.0
	<i>Both</i>			70	72.2			40	51.2
	Product descriptions (# of pieces of information)								
	3 (<i>Basic info: color, size, price</i>)			2	2.1			3	3.8
	4 (<i>Basic info + 1 more</i>)			1	1.0			6	7.7
	5 (<i>Basic info + 2 more</i>)			11	11.3			0	0.0
	6 (<i>Basic info + 3 more</i>)			13	13.4			22	28.2
	7 (<i>Basic info + 4 more</i>)			70	72.2			47	60.3
	Wish list (my save)	56	57.7	41	42.3	24	30.8	54	69.2
	Email to a friend	35	36.1	62	63.9	39	50.0	39	50.0
	Printer friendly option	83	85.6	14	14.4	74	94.9	4	5.1
	Size request	97	100.0	0	0.0	72	92.3	6	7.6
	Store availability	97	100.0	0	0.0	52	66.7	26	33.3
	Reserve at a store	97	100.0	0	0.0	67	85.9	11	14.1
	Interactive shopping aid								
	<i>Unavailable</i>	78	80.4			54	69.2		
	<i>Live chat</i>			12	12.4			16	20.5
	<i>Instant library help</i>			7	7.2			0	0.0
	<i>Call</i>			0	0.0			1	1.3
	<i>Live chat & call</i>			0	0.0			7	9.0
	Model measurement	97	100.0	0	0.0	67	85.9	11	14.1
	Fit predictor	97	100.0	0	0.0	73	93.6	5	6.4
	Customer review and rate	97	100.0	0	0.0	15	19.2	63	80.8
	Shipping & return info	97	100.0	0	0.0	40	51.3	38	48.7

continued on following page

Table 2. Continued

		2011 Study (n = 97)				2016 Study (n = 78)			
		Unavailable		Available		Unavailable		Available	
		f	%	f	%	f	%	f	%
Product Presentation Attributes (20)									
	Quick view	97	100.0	0	0.0	34	43.6	44	56.4
	Back view	71	73.2	26	26.8	25	32.1	53	67.9
	Side view	91	93.8	6	6.2	57	73.1	21	26.9
	Larger view	9	9.3	88	90.7	57	73.1	21	26.9
	3-D rotation	96	99.0	1	1.0	77	98.7	1	1.3
	Close-ups	51	52.6	46	47.4	57	73.1	21	26.9
	Magnified view	97	100.0	0	0.0	39	50.0	39	50.0
	Full screen	97	100.0	0	0.0	43	55.1	35	44.9
	Zoom function	58	59.8	39	40.2	58	74.4	20	25.6
	Video presentation	92	94.8	5	5.2	68	87.2	10	12.8
Product Presentation Attributes (20) – cont'd									
	# of alternative images								
	<i>None</i>	9	9.3			0	0.0		
	<i>1 alternative image</i>			24	24.7			11	14.1
	<i>2 alternative images</i>			28	28.9			19	24.4
	<i>3 alternative images</i>			28	28.9			13	16.7
	<i>4 or more alternative images</i>			8	8.2			35	44.8
	Presented on mannequin	78	80.4	19	19.6	70	89.7	8	10.3
	Presented on model	28	28.9	69	71.1	10	12.8	68	87.2
	Presented on hanger	97	100.0	0	0.0	74	94.9	4	5.1
	Presented drawing	97	100.0	0	0.0	76	97.4	2	2.6
	Presented as flat	66	68.0	31	32.0	56	71.8	22	28.2
	Fabric swatches	40	41.2	57	58.8	75	96.2	3	3.8
	Close-ups for fabric swatches	43	44.3	54	55.7	75	96.2	3	3.8
	Alternative color view	42	43.3	55	56.7	13	16.7	65	83.3
	Suggestions for items								
	<i>Unavailable</i>	28	28.9			12	15.4		
	<i>Alternative products</i>			8	8.2			33	42.3
	<i>Matching products</i>			25	25.8			2	2.6
	<i>Both</i>			36	37.1			31	39.7

online and then visit a physical retail store to make a purchase. However, the observed decline in this aspect of e-service may reflect a changing trend in an omni-channel environment. According to eMarketer (2015a), 73.4% of U.S. Internet users have smartphones. Consumers can easily save the product image on their smartphone or pull up the product page at the store. Thus, a printer friendly option may no longer be an essential attribute for today's tech savvy consumers.

Table 3. A Chi-square Goodness-of-Fit test results

E-Service Attributes		Chi-Square Goodness-of-Fit
<i>Product Description Attributes</i>		
	Size chart	$X^2 (3) = 63.34^{***}$
	Wish list (my save)	$X^2 (1) = 12.67^{***}$
	Printer friendly option	$X^2 (1) = 4.06^*$
	Size request	$X^2 (1) = 7.73^{**}$
	Store availability	$X^2 (1) = 37.98^{***}$
	Reserve at a store	$X^2 (1) = 14.60^{***}$
	Interactive shopping aid	$X^2 (4) = 18.09^{**}$
	Model measurement	$X^2 (1) = 14.60^{***}$
	Fit predictor	$X^2 (1) = 6.40^*$
	Customer review and rate	$X^2 (1) = 122.42^{***}$
	Shipping & return info	$X^2 (1) = 60.36^{***}$
<i>Product Presentation Attributes</i>		
	Quick view	$X^2 (1) = 73.01^{***}$
	Back view	$X^2 (1) = 29.56^{***}$
	Side view	$X^2 (1) = 14.25^{***}$
	Larger view	$X^2 (1) = 74.91^{***}$
	Close-ups	$X^2 (1) = 7.69^{**}$
	Magnified view	$X^2 (1) = 62.41^{***}$
	Full screen	$X^2 (1) = 54.41^{***}$
	Zoom function	$X^2 (1) = 4.10^*$
	Video presentation	$X^2 (1) = 73.01^{***}$
	# of alternative images	$X^2 (4) = 35.36^{***}$
	Presented on model	$X^2 (1) = 6.55^*$
	Presented on hanger	$X^2 (1) = 5.09^*$
	Fabric swatches	$X^2 (1) = 57.87^{***}$
	Close-ups for fabric swatches	$X^2 (1) = 49.84^{***}$
	Alternative color view	$X^2 (1) = 14.23^{***}$
	Suggestions for items	$X^2 (3) = 40.02^{***}$

Note: Showing significant results only

Size request is a new e-service attribute available on the 2016 e-retailers' websites with the rise of omni-channel retailing trends. This e-service attribute was not offered on the websites in 2011. When a particular size of an item a customer is looking for is not available online, the customer sends a request to the retailer to find the availability of the item at physical stores. Despite its advantage, only about one-tenth of the 2016 apparel e-retailers analyzed provided this e-service attribute.

Store availability and reserve at a store were other e-service attributes newly available on the 2016 websites. As the boundary between online and physical retail stores becomes blurred with the

emergence of omni-channel retailing, these e-service attributes facilitate online and offline channel integration. Using these e-service attributes, online shoppers can easily determine if the item offered online is available at a physical retail store and choose to pick up the item at a physical store. Also, online shoppers can avoid paying for shipping charges and they do not need to wait for several days to receive the item. Despite the enhanced convenience benefit for customers, store availability was offered on only one-third of the 2016 retail websites and the reserve at a store option was rarely available.

Despite over a 10% increase in its availability, an interactive shopping aid was still largely unavailable (e.g., approximately 70% of the 2016 e-retailers' websites). This e-service attribute allows consumers to have a live chat or instant call with a retailer to get immediate help. According to Business Insider (2016), live chat helps a retailer interact with customers during the shopping process so the retailer can quickly and efficiently address customers' needs, which leads to the likelihood of increased sales. Although more websites offered interactive shopping aids than in 2011, availability appears far too limited when competitors are only one click away.

Model measurement is also a new e-service attribute added, thus not available in the 2011 list. Model measurement shows the body measurements of the model and the size of the clothing the model is wearing. Based on the given model measurement information, consumers can have a better idea of what size they need to order and how clothes are likely to fit them, thus decreasing their perceived product performance risk. Model measurement was available on only 14% of the 2016 e-retailers' websites.

Fit predictor is another new e-service attribute that did not exist in 2011. Using a fit predictor attribute based on the consumers' previous purchases, the retailer can suggest to the consumer the right size to order and assist them with size determination. Despite the advantage of decreasing the consumer return rate associated with wrong sizes, this attribute was rarely available on the 2016 retailers' websites; only 5 out of 78 websites (6.4%) analyzed offered fit predictor.

Customer review and rate is another new e-service attribute and was available on four-fifths of the 2016 websites. According to a recent study, 90% of consumers read online product reviews before making a purchase decision (Rudolph, 2015), thus customer review and rate is a vital attribute to online shoppers. Sahoo, Dellarocas, and Srinivasan (2015) indicated that customer product reviews help consumers make better decisions about purchasing products and contribute to the reduction of product returns.

Shipping and return information on the product page was available on approximately half the 2016 websites. In 2011, this information was available, but not on the product page. Shipping and return information was previously found under Sitemap or on a separate page making shoppers leave the product page to find shipping and handling information. In the 2016 data, shipping and return information was available on the product page and about half the websites analyzed offered such information. Providing the information on the product page improves convenience and facilitates a positive shopping experience.

Product Presentation Attributes (PPAs)

Of the 20 attributes coded into this category, 16 attributes were significantly different between the two data sets (see Table 3). Quick view is a new e-service attribute added to the 2016 websites. Quick view saves consumers' browsing time and provides convenience by allowing them to have a preview of the necessary product information on the main product list page, eliminating the need to move to an individual product information page. More than half of the 2016 websites provided it to their customers.

Visual product presentation, which consists of various formats such as side view and zoom, showed significant differences between the two data sets with mixed results. For back view and side view, the results suggest improvement over time, whereas substantial declines were observed for other

visual presentation attributes such as larger view and close-ups. The 2016 data showed that more than two-thirds of the women's websites analyzed provided back view, a 41.1% increase over 2011. Side view was available on approximately one-third of the 2016 websites, a 20.7% increase compared to the 2011 data. On the other hand, larger view that was available on over 90% of the websites in 2011 was available in 2016 on less than one-third of the websites, a 63.8% decrease. Similarly, close-ups that used to be available on about 48% of the websites were available on less than one-third of the 2016 websites, a 20.9% decrease. Zoom function was available on less than one-third of the 2016 websites, a 14.6% decrease. The decreased rates of larger view, close-ups and zoom function appear to be a result of the addition of new improved visual attributes such as magnified view and full screen. Unlike the zoom function that consumers need to manually zoom in to get an enlarged (or a close-up) image of a product, magnified view allows consumers to zoom in on the product by moving their mouse over the product image. Compared to larger view, full screen allows consumers to see a much larger full-sized product image in a new window. Both magnified view and full screen were available on about half of the 2016 websites analyzed.

Video presentation also showed a significant difference between the two data sets with a 7.6% increase. Previous research indicated that dynamic product presentation formats, such as video presentation and 3D graphics, enhance the level of consumers' involvement with the product experience in comparison to static images (Elloumi et al., 2017; Roggeveen, Grewal, Townsend, & Krishnan, 2015). Verhagen, Vonkeman, and van Dolen (2016) found that a 360-spin rotation of a product provides a much clearer mental awareness of a product compared to static pictures of the product; it allows consumers to evaluate the product from various angles which eventually increases purchase intention. In comparison to a 360-spin rotation of a product, a video presentation is more effective because of its capability to show movement. In a video presentation, a human model wearing the product walks, turns around, and/or poses for the best possible views for shoppers to better assess fit and drape of the fabric. Despite the increase in availability and the value to customer purchasing decisions, still very few of the 2016 websites provided a video presentation.

The availability of both number of alternative images of products and color view were significantly different between the two data sets. Over four-fifths of the 2016 websites provided a greater number of alternative images of products and alternative color views, and almost half showed 4 or more alternative images, a 36.6% increase over 2011. Song and Kim (2012) suggest that multiple product presentations reduce consumer's mental intangibility and improve perceived amount of information. Various presentation formats are imperative for online apparel websites since they enhance consumers' mental imagery by helping them form a better mental picture of how the product would look on them.

The way apparel is presented on the websites showed positive improvement over time. More than 87% of the 2016 websites used human models to present apparel as compared to 71% in 2011 (16.1% increase) and less than one-third presented products laid out flat (3.8% decrease). Kim et al. (2009) found that consumers experienced more positive emotional responses and greater purchase intention when garments were presented on a human model compared to presented as flat.

Availability of fabric swatches and close-ups of fabric swatches significantly declined over the five-year period. These e-service attributes were rarely available on the 2016 retailers' websites (over 50% decrease). The real images of fabric and close-ups of the fabric were expected to give more vivid information to consumers, but were virtually unavailable.

Suggestions for items also showed a significant difference between the two data sets. Over 80% of the 2016 websites provided suggestions for items. Approximately half of the websites provided alternative products (34.1% increase), and 40% of the websites provided both alternative and matching items (2.6% increase).

CONCLUSION AND IMPLICATIONS

The current study explored how e-service performance of apparel e-retailers has changed over the five-year period by content analyzing e-service attributes of product-related information and further determined strengths and weaknesses in e-service performance related to product description and presentation. In order to fill a gap in the existing literature predominantly offering cross-sectional perspectives of e-service quality, the current study took a longitudinal assessment on e-service performance by replicating the research process employed by Kim et al. (2006, 2011). The data from Kim et al.'s 2011 study were used as baseline data to assess e-service performance trends.

Overall the findings of the current study show steady, but fairly slow improvement of e-service performance with some mixed results. For e-service attributes related to product descriptions, the results reflect shifting trends in different types of e-service attributes that have emerged or become obsolete during the past five-year period. For example, as e-retailing has progressed into an omni-channel retailing with technology advances, there were multiple new e-service attributes of product descriptions; size request, store availability, reserve at a store, model measurement, fit predictor, customer review and rate, and shipping and return information. On the other hand, an e-service attribute like printer friendly option has become obsolete, perhaps as a result of a wide adoption of smart phones among shoppers (eMarketer, 2015a). People can use their smartphones to look up images on websites rather than bringing a hard copy of images to stores. Existing e-service attributes related to product descriptions such as wish list and various interactive shopping aids showed positive changes over time. However, despite its potential benefits to online shoppers, the changes have been slow, lacking substantial progress.

Among e-service attributes related to product description, new e-service attributes such as store availability and reserve at a store are clear manifestations of omni-channel integration across online and offline channels (E-tailing group, 2015). Also addressing inherent challenges associated with online apparel shopping in terms of lack of physical examination (Kim & Lennon, 2008; Klein, 1998; Weathers et al., 2007), new e-service attributes such as model measurement and fit predictor help facilitate size determination when shopping online. While these new e-service attributes are excellent additions that facilitate consumer decision-making in the context of e-retailing, these were still largely unavailable. Apparel e-retailers are encouraged to leverage these e-service attributes to facilitate consumer shopping in an emerging omni-channel retailing environment.

Customer review and rate is a new e-service attribute related to product description that not only has emerged recently, but also has been widely embraced by apparel e-retailers. Supporting the shifting consumer shopping behavior (Rudolph, 2015; Shaoo et al., 2015), customer review and rate was widely available. Another noteworthy improvement was the location of shipping and return information. In the early data set from 2011, this information was not available on a product page, but generally found on site map or elsewhere. This forced online shoppers to leave a product page and go to another page(s) to find information about shipping and return. In the 2016 analysis, shipping and return information was available on the product page for nearly half the websites analyzed. This is a simple and virtually cost-less change e-retailers can immediately implement to enhance consumer shopping experience and, thus, they are highly recommended to implement it.

Taken together, the findings of the study discussed above suggest critical needs to improve e-service performance of product-related description for the enhanced omni-channel experience. As omni-channel retailing has become a key trend in the retail industry, empowered consumers have higher expectations of seamless cross-channel shopping experience. Like many apparel e-retailers that quickly adopted customer review and rate to their website, apparel e-retailers also need to consider offering e-service attributes that improve channel integration and ultimately shopping experience.

Overall findings for e-service performance related to product presentation attributes also show generally positive, yet somewhat mixed results. Similar to product description attributes, steep

decreases in some e-service attributes (e.g., larger view and close-ups) appear to be reflections of new rich media such as magnified view and full screen. As another new attribute, quick view makes browsing and navigation easy and fast by reducing number of clicks and pages to download. Another positive change includes the increased availability of various views or visual tools including back view, side view, video presentation and number of alternative images. Nonetheless, the extent to which such attributes are available remain quite limited and, thus, need continued, but more rapid improvement.

One of the unexpected findings is the decline in the availability of visuals of fabric swatches and close-ups of fabric swatches. It is unclear whether consumer needs for fabric swatches have changed or are addressed via other visual presentation attributes. Although new visual tools such as a magnified view and full screen were added by some e-retailers, it is unclear if these new visual tools address consumer needs to getting tactile information through visuals of fabric swatches. It is also possible that consumer needs for tactile information may be satisfied by product description information or may have subsided with the maturity of online shopping.

Overall, e-service performance related to product presentation shows positive improvement over the five-year period. Nonetheless, these e-service attributes are still at unsatisfactory levels that need further improvement. Current apparel e-retailers need to give attention to e-service attributes on their sites to enhance e-service quality, improve the shopping experience, and increase consumer satisfaction.

The findings of the current study offer a longitudinal assessment of e-service performance related to product-related information in the context of apparel e-retailing in the U.S. Apparel e-retailers are encouraged to utilize the coding guide employed in this study to assess their current e-service performance focusing on product description and presentation. The coding guide used in this study captures specific and extensive e-service attributes related to product description and product presentation. Using this practical assessment tool, apparel e-retailers can identify areas of strength and weakness and develop a strategic plan for improvement. Even though this coding guide was originally designed and refined in the context of U.S. apparel e-retailing, it will offer an excellent starting point for website analysis in different countries. Future research content analyzing apparel e-retailers in different cultural contexts or different product categories will add to the e-service quality literature. The current study used a non-reactive research strategy of content analysis. In order to fully examine e-service performance of e-retailers, future research also needs to take consumer experience and evaluation into consideration.

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