

Original Research Article

INVESTIGATING THE EFFECTS OF BRAND EQUITY AND WEBSITE QUALITY ON CONSUMER PERCEPTIONS AND BEHAVIORAL INTENTIONS TOWARDS M-COMMERCE ADOPTION IN THE APPAREL RETAIL INDUSTRY: AN EXTENDED TECHNOLOGY ACCEPTANCE (TAM) PERSPECTIVE

Abstract

The present study draws on the extended Technology Acceptance Model (TAM2) to empirically examine the effects of website quality and brand equity on consumers' perceptions towards, and behavioural intentions to utilize apparel m-commerce. Data is collected from 421 Ghanaian customers and analyzed using the structural equation modeling technique. The study finds that website quality and brand equity are germane to consumers' perceptions of the usefulness and ease of use of websites, which in turn influence their attitudes and behavioural intentions to adopt apparel m-commerce. The study also discovers that Covid-19 moderates the relationship between perceived usefulness and customers' behavioral intention to use apparel m-commerce. The study provides managerial and theoretical insights into understanding TAM2, brand equity, website quality, and consumers' propensity to shop for apparels on mobile platforms. By integrating these key factors, the study offers a comprehensive understanding of the complex dynamics that shape consumer behavior in the context of mobile commerce, providing valuable insights for academics, practitioners, and policymakers aiming to enhance the success of m-commerce initiatives in the rapidly evolving digital marketplace.

Keywords: Brand equity; Perceived usefulness; Perceived ease of use; M-commerce; Website quality

1. Introduction

The rapid growth of e-commerce and the increasing penetration of mobile devices have led to the emergence of m-commerce as a prominent channel for conducting business transactions. In recent years, the apparel retail industry has witnessed a significant surge in mobile commerce

activities, as consumers increasingly utilize mobile devices to browse, purchase, and interact with apparel brands online. Understanding the factors that influence consumer perceptions and behavioral intentions to use m-commerce platforms in this industry becomes crucial for apparel retailers to stay competitive and sustain their growth.

Business transactions can now be undertaken on a greater scale due to the expansion of individual, intra-, and inter-firm collaboration allowed by mobile commerce and mobile payment (Akanferi et al., 2022; Kim and Law, 2015). "Mobile commerce," or "m-commerce," refers to any financial transaction carried out through a mobile device like a smartphone or tablet. A mobile phone or tablet allows users to trade in goods as well as services from any location, which is a significant advancement in e-commerce (Sim et al., 2021). Mobile money transfer is one of the most recent additions to the electronic commerce product line. Mobile tickets, mobile vouchers, discounts, and loyalty cards are also new additions.

The terms "mobile payment," "mobile money," "mobile money transfer," and "mobile wallet" refer to financial payment services performed from or through a mobile device. Customers can now use their mobile phones to pay for a variety of essential services and tangible or digital supplies/goods instead of cash, checks, or credit cards. In Ghana, for example, mobile phones are frequently used to send money from one person to another, to purchase goods and services for instance airtime, energy, and utility bills, as well as some workers' paychecks, taxi fares, micro-credit, savings, and micro-insurance (Akanferi et al., 2022). Both e-commerce and mobile payments have experienced significant growth. According to the Global System for Mobile Communications Association's (GSMA) 2021 State of the Industry Report on Mobile Money, there are now 1.21 billion registered accounts worldwide, a 12.7% increase globally.

Studies have found that customers are using their accounts more frequently: however, it has been found that they use them for novel and more complex tasks, demonstrating a shift away from the perspective of financial institutions and toward increasingly digital lifestyles. Similarly, global transaction volume increased to \$2 billion per day, with a projected increase to \$5 billion per day by 2024. (GSMA, 2021). According to the Bank of Ghana (2021), mobile commerce and mobile payment provide users with convenience, speed, flexibility, and affordability, among other benefits. It also shows an increase in financial inclusion and the development of a cashless society (Bank of Ghana, 2021).

The m-commerce industry's rapid development has piqued the interest of both scholars and experts in recent years because of its positive effect on the economy, business, and customers (Marriott et al., 2017). Contrasting with conventional desktop computer-based e-commerce, movable devices linked to a wireless telecommunications network enable transactions to occur at any time and from any location. This one-of-a-kind feature has provided online customers with unparalleled convenience and flexibility.

Numerous experts have proposed that specifying product mobile-commerce research may provide more useful conclusions whilst reducing the confusion caused by combination of many products (Sun and Chi, 2018). According to academics and marketing professionals, mobile commerce may offer an additional profitable trade network for the apparel industry (McKinsey and Company, 2013). Consequently, there is significant room for expansion, as clothing now constitutes a sizable portion of Ghana's m-commerce sales revenue, particularly since the emergence of Covid-19 (GSMA, 2021).

Relevant research is required to comprehend consumer m-commerce adoption behaviour as customers grow in tandem with mobile technological advancements and the proliferation of digital purchase channels (Yin and Xu, 2021). Because of the exceptional features of the products, this is especially positive for apparel mobile commerce (Sun and Chi, 2018). Park et al. (2015) reckons that customer apparel purchasing decisions in traditional channels are heavily influenced by store image and interior quality. Online apparel retailing websites are also important because the quality of the website influences customer fulfillment and, consequently, purchase intention.

Previous research has examined how important perceived website quality is to consumer m-commerce adoption and satisfaction (Yin and Xu 2021; Akram et al., 2018; Chi, 2018; Tsao et al., 2016). Equally, prior investigation has emphasized brand equity's importance in shaping consumers' mobile shopping habits (Van Thuy et al., 2022). Increased customer consciousness, favorability, and purchasing intention for a mobile web site are all influenced by improved brand image, brand loyalty, brand quality, and brand association (Van Thuy et al., 2022). To this end, Magrath and McCormick (2013) contend that as clothing manufacturers strive to gain online space availability, brand uniqueness possibly will be translated into higher purchase intention mid consumers looking for new purchasing avenues.

Although some research on apparel mobile commerce has been conducted (Yin and Xu 2021; Akram et al., 2018; Chi, 2018; Magrath and McCormick, 2013), there appear to be some gaps that have yet to be filled. For instance, previous research has not paid much attention to examining how consumers' brand awareness of the apparel brand (as a dimension of its brand equity) and website quality may influence their brand behaviour. Similarly, only a few studies have used the expanded TAM approach to investigate how customers use apparel mobile commerce (Chi, 2018). In the Ghanaian context, there appear to be very few studies in this area. Moreover, while research has found and argued that Covid-19 has significantly altered the way businesses are done, particularly how consumers make purchase decisions (Vinerean et al., 2022), there appears to be little research done in assessing the moderating role of Covid-19 in influencing consumers' apparel purchase decision-making from an m-commerce perspective. These are scholarly gaps that have yet to be filled.

Accordingly, the present study, which is based on the extended TAM model, seeks to determine how brand equity and mobile website quality influence consumers' perceptions and experiences with apparel m-commerce, and how these affect their attitudes and behavioural intentions to use apparel m-commerce. The paper also assesses the moderating effect of Covid-19 in the same nexuses. Through this proposed and affirmation of the validity of extended technology acceptance model (TAM), our study provides a better understanding of buyers' m-commerce adoption behaviour from a lens of website quality and brand equity. To that end, our study adds significantly to knowledge in the following ways: first, it proposes an extended technology acceptance model-based research framework for analyzing the influence of apparel brand equity and mobile website quality on Ghanaian consumers' acceptance of apparel m-commerce; second, it investigates the psychometric variables of the proposed framework using a consumer survey as the primary data collection instrument in Ghana; and finally, it underscores the critical role covid-19 plays in influencing consumers' perception and attitude towards apparel m-commerce, while proposin an extended technology acceptance model-based research framework for analyzing the effects of apparel brand equity and mobile website quality behavioural intentions. The findings of this study will provide valuable insights for apparel retailers operating in the Ghanaian market, enabling them to develop effective strategies to enhance brand equity, improve website quality, and ultimately drive consumer adoption of m-commerce. Additionally, the study contributes to the theoretical understanding of consumer behavior in the context of m-

commerce in emerging markets, shedding light on the unique factors that shape consumers' perceptions and intentions in this rapidly evolving industry.

2. Theoretical Background

The TAM (Technology Acceptance Model) proposed by Davis (1986) is a widely used theoretical lens for studying and predicting technology acceptance and use. Other innovative models have been developed, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), the Theory of Planned Behaviour (TPB) by Ajzen (1991), and the Theory of Diffusion and Innovation (DOI). To address the gaps in TAM, Venkatesh and Davis (2000) proposed the Extended Technology Acceptance Model (TAM 2), which we believe will be useful in studying apparel m-commerce and has thus been adopted in this study.

2.1 Technology Acceptance Model (TAM)

The Theory of Reasoned Action, developed by Fishbein and Ajzen (1975), serves as the foundation for TAM. Fishbein and Ajzen (1975) argue that, attitude and subjective norms influence behavior. While attitude refers to positive or negative thoughts about behavior, subjective norm refers to a person's social circle and their acceptance of the activity. In the work of Venkatesh and Davis (1996), TAM model has been approved to investigate how people accept novel technology. TAM has been shown to be effective in explaining user behavior when using technology (Teo, 2010). This model depicts the relationship between perceived ease of use (PEU), perceived usefulness (PU), attitude toward usage (AT), and intention to accept and adopt technology (BI). Attitude toward technology usage influences behavioral intention (Davis 1989) which is influenced by both perceived usefulness and ease of use, both directly and indirectly. Similarly, perceived ease of use has a direct impact on perceived usefulness, but not vice versa. Actual behavior and intention to use are inextricably linked (Kiraz and Ozdemir, 2006). It influences a user's proclivity to perform a specific action (Ajzen, 1991). The authors believed it would be preferable to use "intention to use" as the dependent factor because asking respondents to state their actual use of a new technology may discourage them from participating in the study (Teo, 2010). Actual usage is a more progressive dependent variable than behavioral

intention to use. Consequently, the current study adopts “behavioural intention to use” as the dependent variable.

We apply TAM in the current study to authenticate the elements that induce customers' willingness to use apparel mobile commerce. We examine how perceived usefulness and perceived ease of use influence customers' attitudes toward apparel mobile commerce, and how this influences consumers' behavioral intention to use apparel mobile commerce.

3. Literature Review and Hypotheses Development

3.1 Expanding on TAM

3.1.1 Brand and Brand Equity

A brand development has the potential to significantly increase business competition and consumer engagement (Gupta et al., 2020). Branding refers to the use of specific images, icons, names, or other characteristics to distinguish one product or service from others (AMA, 2016). Brand attributes influence how consumers perceive and use a company's goods and services, so they are indispensable (Shin et al., 2019; Zheng and Chi, 2015; Amenuvor, 2015). The extant literature has highlighted that, branding initiatives can be found in a variety of purchasing channels (Jiang et al., 2016). Accordingly, as purchasers shift from traditional channels/outlets to online channels, particularly mobile commerce platforms, major branding strategies are required for online outlets/channels (Ashraf et al., 2017). In accordance with the American Marketing Association (AMA) (2016), brand equity is the bundle of values that buyers ascribe to proprietary products and/or services built on positive sentiments and brand usage. In research on multiple-channel branding activities relative to creating shop brand equity, White et al. (2013) discovered that traditional and online services positively influence buyers' views of brand equity. Their research further discovered that online and offline services were independently evaluated, emphasizing the need for branding strategies to enhance online brand equity (White et al., 2013). Website brand equity is one of the burgeoning concepts, yet it has grown into a tool for businesses to distinguish their products in the online space (Magrath et al., 2013). Severi et al. (2014) argue that as brand equity grows, product information search for consumers becomes easier, as does comparison and making more informed purchase decisions. Website brand equity

can successfully lower the costs of search and evaluation for consumers by leveraging on inferences of the previous product acquired.

Metrics for website brand equity include, among other things, brand awareness, brand image, and brand loyalty. The metrics have long been used in marketing research and are now being used in internet commerce studies (Yuan et al., 2022). Brand loyalty is exemplified by users' consistent purchasing patterns for a period with a positive biased affective, evaluative, and/or behavioral preference for a branded alternative or product selection (Suki, 2015). The adoption of a brand by consumers to represent their unique sense of consumption and self-expression is known as brand image (Sasmita and Suki, 2015). Customers are more likely to test a brand's online channel if they are familiar with its image. The prospective customers' ability to identify and remember a brand as being related to a specific product is known as brand awareness.

Prior research on the effects of brand equity on customer purchase intention suggests that brand equity may have an impact in the online space. Buil et al. (2013) posit that brand equity has a significant impact on shoppers' attitudes and stimulate positive brand adoption. Similarly, Hahn and Kim (2009) discovered that traditional/physical store trust significantly improved perceived belief in searching for information online and then purchasing from virtual shops. Buyers are less likely to engage in virtual shopping when they are unfamiliar with a brand (Norazah (2013). Because businesses work to establish their market presence in mobile networks/outlets, the forgoing demonstrates potential research in the online branding context. Previous research has shown that brand equity has a significant impact on consumers' perceptions of mobile commerce (Porral et al., 2015). Customers, therefore, use parent brand equity to form preferences across multiple purchase outlets. Brand experiences have also been investigated in relation to mobile outlet usability in order to determine the impact on buyers' usage knowledge and fulfillment. Based on the foregoing, we propose the following hypotheses:

H1: Consumers' perceived usefulness of apparel m-commerce will be positively and significantly affected by brand equity, made up of brand loyalty (H1a), brand awareness (H1b), and brand image (H1c).

H2: Consumers' perceived ease of use of apparel m-commerce will be positively and significantly affected by brand equity, made up of brand loyalty (H2a), brand awareness (H2b), and brand image (H2c).

3.1.2 Website Quality

A relatively new concept that is underutilized in m-commerce research despite being extensively researched in the conventional e-commerce setting is the perception of website quality (Ahmad and Khan, 2017). According to Pantano and Priporas' (2016) qualitative study, the following characteristics must be provided to customers to encourage them to use m-commerce: pricing benefit, shopping effectiveness, transactional safety, and service quality. Each of these factors influence the quality of a website. The term "website quality" refers to a multidimensional interface that elicits positive or negative user responses as a result of user-website interaction (Gao and Bai, 2014). Prior research has assessed the quality of websites using information quality, system quality, and service quality (Chi, 2018; Zhou, 2011). Information quality highlights the availability of content on a website that is thorough, customized, pertinent, safe, and easy to understand for users. A web system's usability, accessibility, dependability, responsiveness, and flexibility are all indicators of system quality. Service quality refers to the level of assistance a client receives from an online service provider (Gao and Bai, 2014; Amenuvor and Tark, 2020).

Floropoulos et al. (2010) found that quality information, quality service, and system quality all had a significant impact on users' perceptions of usefulness in the work of electronic government services. Zhou (2011) studied the relationship between website quality and perceived usefulness as well as value in a mobile setting. All three website quality criteria were found to have a positive influence on perceived usefulness and ease of use. According to Tsao et al. (2016), system quality, service quality, and information quality all have positive and significant effects on consumers' perceptions of the usefulness of m-commerce. To that end, Akram et al. (2018) avers that, the quality of a website influences users' impulsive online purchasing decisions. Similarly, Izogo and Jayawardhena (2018) contend that the quality of service rendered by an online retailer is an important factor in influencing trust of the customer, positive word of mouth, and, ultimately, a pleasant shopping experience. Consequently, we suggest that:

H3: Consumers' perceived usefulness of apparel m-commerce will be positively and significantly affected by the website quality made up of the website information quality (H3a) and website service quality (H3b).

H4: Consumers' perceived ease of use of apparel m-commerce will be positively and significantly affected by the website quality made up of the website information quality (H4a) and website service quality (H4b).

3.2 Behavioural Intention to Use Apparel M-Commerce

According to TAM2, buyer behavioral intention influences actual behavior because, in general, consumers act in a way that advances their goals within the context and time constraints that are available (Davis, 1989). The behavioral objective assesses a person's readiness to carry out a specific activity based on the expected outcome and ultimate goal (Faqih and Jaradat, 2015; Amenuvor et al., 2019). When a person has a positive attitude toward a behavior, they are more likely to engage in it to obtain specific benefits (Davis, 1989). Despite recent impressive growth, the mobile apparel shopping industry is still in its nascent stage (Sun and Chi, 2018). The transition of consumers to mobile digital payment represents a change in lifestyle (Bailey et al., 2017). Possible users of the new technology and the key drivers impacting the future are more important to industry professionals and academics than actual apparel m-commerce use (Sun and Chi, 2018). Previous research suggests that people's usage intentions may indicate how they will use new information technology such as smart phones, m-commerce, e-wallets, and e-commerce (Zhou, 2011; Bailey et al., 2017; Sun and Chi, 2018). Accordingly, this study examines consumers' intentions to use apparel mobile commerce.

3.3 Attitude

According to Ajzen (2012), an attitude is defined as evaluating the traits that determine the belief of an object's characteristics. In TAM2, attitude as a predictor of behavioral intention was found to be strongly predictive of user adoption of information technology (Bailey et al., 2017; Sun and

Chi, 2018). Previously, attitude was frequently used in research to replace traditional measures of customer satisfaction. Shiau and Luo (2012) conceptualize attitude as a customer's level of fulfilment in their online shopping practices. According to their findings, the most important factor in determining a consumer's proclivity to shop online in the future is a happy attitude. Pookulangara et al. (2011) discovered similar results, finding that attitude had a significant impact on consumers' intentions to switch purchasing channels. Consumer attitudes, according to Izquierdo-Yusta et al. (2015), influence their tendency to engage with mobile advertising. Customers' intentions to use m-commerce for clothing were influenced by their perception of perceived satisfaction, according to Sun and Chi (2018).

3.4 Perceived Usefulness

The perceived usefulness (PU) of information communication technology is examined in terms of consumer views of its potential to improve job performance. Consumers are very likely to accept and implement information communication technology if it is believed to have improved their tasks execution without sacrificing usability (Davis, 1989). Recent mobile commerce studies have found a strong correlation relating PU and consumer attitudes regarding using mobile commerce. Evidence from prior studies, for example, Zhang et al. (2012) discovered that PU positively influenced the development of consumer attitudes regarding the adoption of m-commerce. A study involving the drivers of information communication technology acceptance, Jeyaraj et al. (2006) discovered a significant relationship between PU and consumer's choice to accept and use an innovation/information communication technology. According to Lu et al. (2005), perceived usefulness was a significant predictor of customers' willingness to engage in mobile commerce or any other mobile virtual transactional activity. Faqih and Jaradat (2015) found that perceived usefulness is a strong determinant of consumers' willingness to engage in mobile commerce.

3.5 Perceived Ease of Use

The perceived ease of use (PEU) of information communication technology predicts the perceived determination required to use it. Consumers may probably adopt user-friendly information communication technology (Davis, 1989). Extant literature has provided the

evidence that many research works have been conducted to investigate the effects of PEU on buyers' perceptions and acceptance of mobile commerce or electronic commerce (Pedersen, 2002; Sun and Chi, 2018; Lee and Chung, 2011). Pedersen (2002) surmises how PEU improves consumers' perceptions of using mobile technology services. According to Agrebi and Jallais (2015), PEU positively impact consumer's attitudes regarding mobile commerce, and subsequently influences their intention to use it. Sun and Chi (2018) found that PEU and PU were the most effective determinants of consumers' favorable views of m-commerce. Additionally, PEU can indirectly influence consumer perceptions of m-commerce via PU (Agrebi and Jallais, 2015). People who find technology easy to use will be able to complete more tasks in the same amount of time and will thus value it (Sun and Chi, 2018). Earlier empirical research findings indicate that PEU may help to reinforce PU (Agrebi and Jallais, 2015; Sun and Chi, 2018). Based on the preceding discussions, the following hypotheses are advanced:

H4: Consumers' perceived ease of use will have a significant positive effect on consumers' perceived usefulness of apparel mobile commerce.

H5: Consumers' attitude toward using apparel m-commerce will be significantly and positively impacted by perceived ease of use.

H6: Consumers' behavioural intentions to use apparel m-commerce will be significantly and positively impacted by perceived ease of use.

H7: Consumer's perceived usefulness will significantly and positively affect their attitude towards apparel m-commerce.

H8: Consumer's perceived usefulness will significantly and positively affect their behavioral intention to use apparel m-commerce.

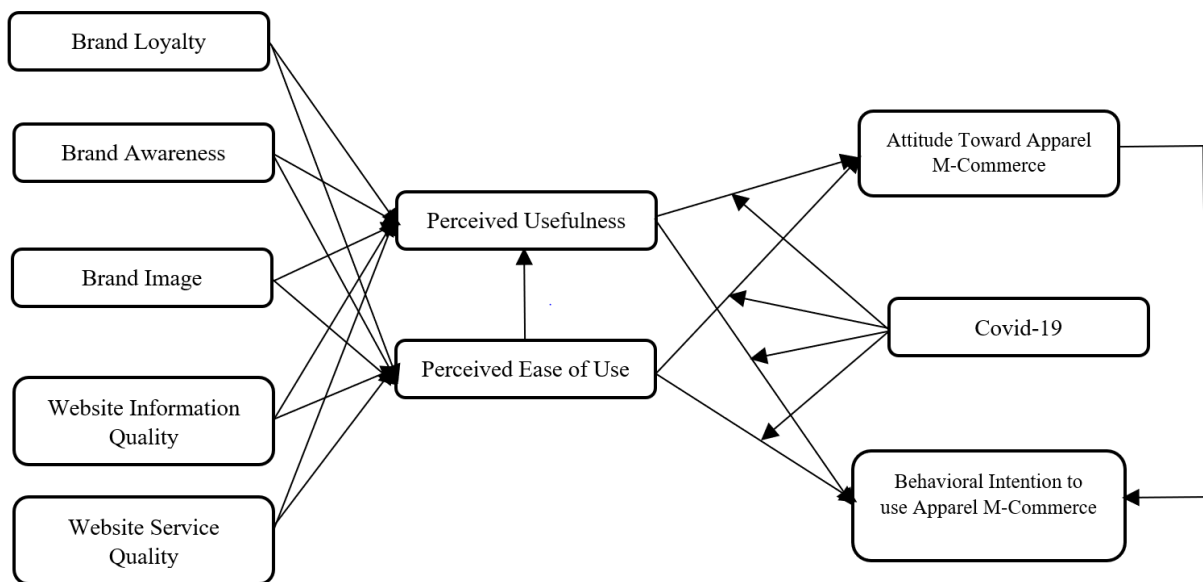
H9: Consumers' attitude toward apparel m-commerce will have a significant positive effect on their behavioural intention to use apparel m-commerce.

3.6 Moderating Effect of COVID-19

Technology acceptance does not occur naturally, but rather with time and social system, and should be disseminated through channels by individuals to members of their social system, where many factors influence the degree of acceptance and the time it takes for laggards and late

adopters to accept (Kim, 2020). Environmental influences, such as the COVID-19 outbreak, may influence attitudes toward and acceptance of innovation in addition to technology-related features, human characteristics, motivational facets, regulating variables, and so on (Verweijmeren, 2020). Nguyen et al. (2020) opine that, situational factors such as shop/store closures, the health risks associated with visiting such establishments for goods and services, the shift to online shopping, and related marketing initiatives undertaken by online stores to boost sales during the pandemic had an impact on online store purchases. Accordingly, the present study, in keeping with Nguyen et al. (2020), makes the case that COVID-19 has caused consumers to switch to mobile commerce as a result of factors such as physical store closures, increased advertising for online shopping, and health risks, which may influence their attitudes and behavioral intentions toward using apparel m-commerce. In light of the foregoing, we propose the following hypotheses:

H10: Consumers' perception of the presence of COVID-19 will moderate the relationships between perceived usefulness and attitude toward mobile commerce (H10a), perceived usefulness and behavioral intention to use apparel mobile commerce (H10b), perceived ease of use and attitude toward apparel mobile commerce (H10c), as well as perceived ease of use and behavioral intention to use apparel mobile commerce (H10d).



<Figure 1> Conceptual Model

4. METHODOLOGY

4.1 Measurement of Variables

We adopted structured questionnaires as part of our quantitative research strategy. This method, according to Hair et al. (2010), allows for the analysis of real statistical measures of empirical data. Brand loyalty, brand awareness, brand image, website information quality, website service quality, perceived usefulness, perceived ease of use, attitude toward apparel m-commerce, behavioral intention to use apparel m-commerce, and Covid-19 are among the constructs in the questionnaire we designed. The statements used to assess these variables were measured on a 5-point Likert scale, with 1 indicating "strongly disagree," 5 indicating "strongly agree," and 3 indicating "neutral." Both dependent and independent directional components were operationalized using reflective measurements. We adapted the measures for brand loyalty from Kaur et al. (2020), items for brand awareness and brand image from Godey et al. (2016); items for website information quality and website service quality from Chi (2018); items for perceived usefulness and perceived ease of use from Davis (1989); items for attitude toward and behavioral intention to use apparel m-commerce from Davis (1989). The second section of the questionnaire focused on the respondents' demographic information. In keeping with King et al. (2014) and DeVellis' (2003) proposed scale development and purification techniques, we used confirmatory factor analysis to purify the scale items.

4.2 Sample and Data Collection

Data was collected from 450 Ghanaian customers after seeking their permission to take part in the study. To ensure that the respondents met the study's objectives, we made sure they had prior experience placing and paying for apparel orders and purchases via mobile commerce. Before distributing the questionnaire, marketing scholars and practitioners thoroughly examined the psychometric properties of the scale items (Bagozzi and Yi, 1988). 432 of the 450 questionnaires sent out were returned, with 11 having to be discarded due to errors. Consequently, 421 reliable

questionnaires with sufficient validity were used for the analysis, representing a final response rate of 93.5%.

4.3 Profile of Respondents

The distribution of the characteristics of the respondents demonstrated adequate representation. As shown in Table 1, 211 (50.1%) of the respondents were males, while 210 (49.9%) were females. The majority of respondents (48.7%) were between the ages of 21 and 25, followed by those between the ages of 26 and 30 (24.0%), 16-20 (11.4%), 31-35 (8.8%), 36-40 (4.3%), and 41-45 (2.9%).

<Table 1> Profile of Respondents

Category	Frequency	Percentage	
Gender	Male	211	50.1
	Female	210	49.9
Age group	16-20	48	11.4
	21-25	205	48.7
	26-30	101	24.0
	31-35	37	8.8
	36-40	18	4.3
	41-45	12	2.9
	46+		
Ordered & purchased	Actual purchasers	280	66.5
	Non purchasers	141	33.5

4.4 Analysis

We used structural equation modeling (SEM) to test the respective hypotheses. The proposed relationships among the study's constructs were examined using Partial Least Squares (PLS) with Smart-PLS software (Ringle et al., 2015). We chose the PLS as our analytical technique because it outlined the minimum requirements for the sample, measurement scale, and observable variable distribution. Moreover, it does not require data normality and is more appropriate for

both small and large samples (Falk and Miller, 1992). PLS path modeling is a popular method that first evaluates the measurement model's internal consistency, convergent validity, and discriminant validity (Wong, 2013).

4.5 Measurement Model

PLS bootstrapping was used to measure all variables. According to Hair et al's (2014) guidelines for determining the significance and relative importance of each item's factor loadings, only items with factor loadings of at least 0.5 were considered significant. Accordingly, we limited the components in our final measurement model to only these. According to Hulland (1999) and Magner et al. (1996), the lowest acceptable levels for composite reliability and average variance extracted are 0.7 and 0.4, respectively. Table 2 shows the constructs and their associated item loadings.

<Table 2 > Measurement Model Analysis

Constructs	Items	Loadings
Attitude towards Apparel M-Commerce	AT1	0.782
	AT2	0.855
	AT3	0.886
	AT4	0.885
Brand Awareness	BA1	0.877
	BA2	0.911
	BA3	0.879
Brand Image	BI1	0.873
	BI2	0.896
	BI3	0.811
Brand Loyalty	BL1	0.850
	BL2	0.862
	BL3	0.756
Behaviour al Intention to use Apparel	INT1	0.887

M-Commerce	INT2	0.928
	INT3	0.888
Perceived Ease of Use	PEOU1	0.835
	PEOU2	0.836
	PEOU3	0.870
	PEOU4	0.816
Perceived Usefulness	PU1	0.821
	PU2	0.830
	PU3	0.875
	PU4	0.808
Website Information Quality	WIQ	0.745
	WIQ2	0.786
	WIQ3	0.816
	WIQ4	0.693
	WIQ5	0.818
Website Service Quality	WSEQ1	0.858
	WSEQ2	0.836
	WSEQ3	0.872

Table 3 shows the results of the tests for construct reliability and validity. The constructs' composite reliability coefficients ranged from 0.863 to 0.928, with Cronbach's alpha values ranging from 0.762 to 0.884. These values exceeded the minimum threshold value of 0.7, indicating that internal consistency was achieved. Similarly, AVE values ranged from 0.598 to 0.812, which were greater than the 0.5 minimum threshold value (Hair et al. 2011). The VIF values as shown in Table 3 (which ranged from 1.347 to 3.270) met the maximum threshold level of 5 suggested by Hair et al. (2011).

<Table 3> Tests of Construct Reliability and Validity

Constructs	ITEMS	Cronbach's alpha	Composite Reliability	AVE	R ²	VIF
Attitude towards Apparel M-Commerce	AT1	0.874	0.914	0.728	0.523	1.643
	AT2					2.237
	AT3					2.746
	AT4					2.748
Brand Awareness	BA1	0.868	0.919	0.791		2.067
	BA2					2.660
	BA3					2.293
Brand Image	BI1	0.824	0.895	0.741		2.051
	BI2					2.208
	BI3					1.620
Brand Loyalty	BL1	0.762	0.863	0.679		1.763
	BL2					1.779
	BL3					1.347
Behavioural Intention to use Apparel M-Commerce	INT1	0.884	0.928	0.812	0.259	2.482
	INT2					3.270
	INT3					2.343
Perceived Ease of Use	PEOU1	0.86	0.905	0.705	0.531	2.048
	PEOU2					2.096
	PEOU3					2.335
	PEOU4					1.882
Perceived Usefulness	PU1	0.854	0.901	0.696	0.546	1.862
	PU2					1.982
	PU3					2.303
	PU4					1.819
Website Information Quality	WIQ1	0.831	0.881	0.598		1.716
	WIQ2					1.974
	WIQ3					1.987
	WIQ4					1.490
	WIQ5					1.879
Website Service Quality	WSEQ1	0.817	0.891	0.732		1.801
	WSEQ2					1.781
	WSEQ3					1.860

Table 4 shows the square root of AVE in diagonal cells and inter-construct correlations in off-diagonal cells. Fornell and Larcker (1981) proposed that for proper discriminant validity, the square roots of the AVEs (diagonal values) should be noticeably greater than the inter-construct correlation. Accordingly, all diagonal values (square roots of AVE) are greater than the corresponding inter-construct correlations. The square root of the AVE values for each construct

is noticeably greater than the correlations of the latent variables, indicating good discriminant validity. This means that the constructs are distinct from one another and have appropriate discriminant validity (Fornell and Larcker, 1981).

<Table 4> Discriminant Validity

	AT	BA	BI	BL	INT	PEOU	PU	WIQ	WSEQ
AT	0.853								
BA	0.495	0.889							
BI	0.446	0.656	0.861						
BL	0.485	0.631	0.616	0.824					
INT	0.622	0.432	0.41	0.391	0.792				
PEOU	0.553	0.601	0.626	0.513	0.421	0.84			
PU	0.717	0.556	0.529	0.568	0.495	0.673	0.834		
WIQ	0.525	0.652	0.768	0.62	0.418	0.64	0.616	0.773	
WSEQ	0.468	0.546	0.615	0.599	0.409	0.64	0.563	0.757	0.855

Note: AT = Attitude towards Apparel M-Commerce; BA = Brand Awareness; BI = Brand Image; BL = Brand Loyalty; INT = Behaviour al Intention to use Apparel M-Commerce; PEOU = Perceived Ease of Use; PU = Perceived Usefulness; WIQ = Website Information Quality; WSEQ = Website Service Quality

4.6 Model Fit and Hypothesis Test

The parameter estimations, as shown in Table 5, indicate the final results, which provide a better authentication to the study's findings in accordance with the hypotheses. The structural model's model fit indices suggested a good model fit (SRMR = 0.056; d_ULS = 2.098; d_G = 0.807; Chi-square = 1961.669; NFI = 0.799). With respect to the respective hypotheses, we found a significant positive relationship between AT and INT ($t = 9.294$; $p = 0.000$), a significant positive relationship between BA and PEOU ($t = 4.198$; $p = 0.000$), an insignificant relationship between BA and PU ($t = 1.217$; $p = 0.224$), a significant positive relationship between BI and PEOU ($t = 3.098$; $p = 0.002$), an insignificant relationship between BI and PU ($t = 1.332$; $p = 0.183$), an insignificant relationship between BL and PEOU ($t = 0.276$; $p = 0.782$), a significant positive relationship between BL and PU ($t = 3.277$; $p = 0.001$), a significant positive relationship between PEOU and AT ($t = 2.289$; $p = 0.022$), an insignificant relationship between PEOU and INT ($t = 1.44$; $p = 0.15$), a significant positive relationship between PEOU and PU ($t =$

= 7.415; $p = 0.000$), a significant positive relationship between PU and AT ($t = 12.078$; $p = 0.000$), an insignificant relationship between PU and INT ($t = 0.551$; $p = 0.582$), an insignificant relationship between WIQ and PEOU ($t = 0.922$; $p = 0.357$), a significant relationship between WIQ and PU ($t = 2.989$; $p = 0.003$), a significant relationship between WSEQ and PEOU ($t = 4.74$; $p = 0.000$), and an insignificant relationship between WSEQ and PU ($t = 0.007$; $p = 0.995$).

The study also found a significant positive moderating effect of COVID-19 on the relationship between PU and AT ($t = 1.988$, $p = 0.047$). In Smart-PLS, a moderating effect is deemed to be statistically significant if $p < 0.05$ (Hair et al., 2014).

<Table 5> Path analysis

Path	Original sample (O)	T statistics (O/STDEV)	P values	Decision
AT -> INT	0.555	9.294	0.000	Supported
BA -> PEOU	0.238	4.198	0.000	Supported
BA -> PU	0.075	1.217	0.224	Not supported
BI -> PEOU	0.217	3.098	0.002	Supported
BI -> PU	-0.11	1.332	0.183	Not supported
BL -> PEOU	-0.016	0.276	0.782	Not supported
BL -> PU	0.217	3.277	0.001	Supported
PEOU -> AT	0.128	2.289	0.022	Supported
PEOU -> INT	0.086	1.44	0.15	Not supported
PEOU -> PU	0.432	7.415	0.000	Supported
PU -> AT	0.631	12.078	0.000	Supported
PU -> INT	0.041	0.551	0.582	Not supported
WIQ -> PEOU	0.081	0.922	0.357	Not supported
WIQ -> PU	0.24	2.989	0.003	Supported
WSEQ -> PEOU	0.325	4.74	0.000	Supported
WSEQ -> PU	0.001	0.007	0.995	Not supported
COVID19S x PU -> AT	0.119	1.988	0.047	Supported
COVID19S x PU -> INT	-0.061	1.314	0.189	Not supported
COVID19S x PEOU -> AT	-0.095	1.586	0.113	Not supported
COVID19S x PEOU -> INT	0.039	0.811	0.418	Not supported

5. Discussion and Summary of Findings

The current study sheds light on how consumer perceptions of, and behavioral intentions toward apparel mobile commerce are influenced by brand equity and website quality. The study also investigates the moderating effect of COVID-19 in the relationships under consideration. The extended TAM served as the study's theoretical lens for examining these nexuses. The study discovered a significant positive relationship between brand awareness and perceived ease of use for the first portion of the factors influencing Ghanaian consumers' perceptions of the ease of use of apparel m-commerce. The study also discovered that brand image has a significant positive impact on perceived ease of use. The research also discovered a significant positive relationship between perceived ease of use and website service quality. However, there was no significant relationship between perceived ease of use and brand loyalty, nor between perceived ease of use and website information quality, according to the findings. This implies that brand equity, (made up of brand awareness and brand image, as well as website quality (made up of website service quality)), improve consumers' perceptions of the ease of use of apparel m-commerce. These findings are consistent with previous research (Chi, 2018), which claims that brand equity facilitates consumers' use of apparel brand m-commerce. These findings also underscore Chi's (2018) assertion that when websites are of high quality, buyers find it easier to use apparel m-commerce.

Furthermore, we discovered that the quality of website information and brand loyalty have a significant positive impact on perceived usefulness. There was an insignificant relationship between perceived usefulness and brand awareness, brand image, and website service quality, as well as a negligible relationship between perceived usefulness and brand awareness, according to the study. These findings support previous research (Tsao et al., 2016; Chi, 2018) which posit that consumers will find apparel m-commerce useful if it is easy to use and allows them to complete more tasks in the same amount of time.

Although the study found no significant relationship between perceived usefulness and behavioral intention to use apparel m-commerce, it did discover that perceived usefulness has a positive and significant impact on consumers' attitudes toward same. The study also found that Ghanaian customers' attitudes toward apparel m-commerce have a positive and significant impact on their behavioral intention to use the service. These findings re-echo previous positions

that customers are more likely to use apparel m-commerce when they have positive feelings about it and believe it will increase their productivity (Chong et al., 2012).

The findings also revealed that perceived usefulness and ease of use significantly influenced Ghanaian consumers' attitudes toward using apparel m-commerce. These findings are consistent with previous research (Sun and Chi, 2018; Chi, 2018), which discovered that facilitating customers' use of mobile commerce and assisting them in performing better while doing so contribute to the development of positive sentiments among consumers regarding apparel m-commerce.

The moderating effect of Covid-19 on the relationship between perceived usefulness and attitude toward mobile commerce were investigated, and it was discovered that COVID-19 had a significant moderating effect on the relationship between perceived usefulness and attitude toward mobile commerce. However, COVID-19 had no significant moderating effect on the other relationships tested (stated in the hypotheses). This finding supports Vinerean et al's (2021) claim that consumer perceptions of COVID-19 in relation to their purchasing behavior will influence their attitude toward relying on m-commerce.

Overall, from an extended TAM perspective, the current study adds to knowledge and sheds light on practical and empirical aspects of m-commerce research. The current study sought to identify the critical elements - such as brand equity and website quality - that influence Ghanaian consumers' perceptions of their experiences with apparel mobile commerce, and how these influence their attitudes and subsequent intentions to use m-commerce. The study expands on the TAM by introducing new constructs (brand awareness, brand image, brand loyalty, website information quality, and website service quality) as external variables to the generic "perceived usefulness" and "perceived ease of use," and then investigating how these influence consumers' attitudes and behavioral intentions to use apparel m-commerce. Significantly, our research emphasizes the critical role of branding (brand equity) in the developing m-commerce apparel market.

It will be impossible to attract new customers and retain existing ones in the m-commerce market without brand equity and perception of brand value (Chi, 2018). Our research also underscores how important website quality is in meeting the needs of users seeking robust m-commerce usability. Learning how to continuously improve website quality is critical for online and mobile

retailers. The study's findings also show that customers in Ghana favor using mobile devices to shop for apparels due to their perceived ease of use and utility. These positive perspectives encourage Ghanaian customers to use mobile commerce more frequently. Finally, our study adds to the on-going discussions about how the COVID-19 epidemic has affected consumers' lives and shopping habits, causing them to develop favorable attitudes toward mobile commerce when deciding where to buy apparel.

5.1 Theoretical Implications

The study offers profound theoretical and practical implications. Theoretically, the study contributes to future research on customer acceptance patterns for apparel m-commerce and m-commerce in general. According to our findings, brand equity and website quality are both multidimensional factors that can be included in the TAM2 to better understand how consumers use and interact with apparel m-commerce. The findings support the importance of mobile app usefulness and convenience in fostering favorable customer attitudes toward apparel m-commerce, which is consistent with TAM (Davis et al, 1989).

Similarly, including COVID-19 as a moderator in the model enhances knowledge and can serve as an excellent first step in the formulation of theories that can be used in subsequent research. As previously intimated, the study broadens the TAM by incorporating new constructs (brand awareness, brand image, brand loyalty, website information quality, and website service quality) as external variables to the general "perceived usefulness" and "perceived ease of use," and assessing how these influence consumers' attitudes and behavioral intentions to use apparel m-commerce.

Also, integrating brand equity as a driver in the extended TAM model illuminates the significance of brand-related elements in influencing consumer perceptions and intentions toward m-commerce. This integration adds to the growing body of research that investigates the relationship between technology acceptance and brand-related characteristics, stressing the relevance of branding in the context of digital platforms.

The current study highlights the crucial role of website quality in influencing consumer perceptions and inclinations to use m-commerce platforms. This study highlights the value of

user experience, interface design, security, and other website-related components in influencing consumer behavior in the apparel retail industry through incorporating website quality as an essential driver.

The findings of this study have implications for the apparel retail industry, highlighting the relevance of brand equity and website quality in attracting and retaining consumers in the context of m-commerce. The theoretical insights gathered from this study can help retailers and practitioners develop successful ways to increase brand equity and website quality, ultimately leading to greater consumer acceptance and adoption of m-commerce platforms in the apparel sector.

5.2 Practical Implications

The study has highlighted the fact that customers' perceptions of the usefulness and ease of use of apparel m-commerce are significantly influenced by brand equity and website quality dimensions, among other things. This implies that Ghanaian consumers may base their use of apparel mobile websites on their perceptions of specific brands. Apparel m-commerce companies should therefore build stronger apparel brands with greater awareness and image in order to gain a competitive advantage. Managers can additionally focus on developing strong and favorable brand associations by effectively articulating their brands' unique value propositions. Apparel retailers can increase consumer trust and loyalty to their apparel m-commerce platforms by engaging in branding building activities such as brand image development, brand reputation management, and brand communication strategies (Keller, 2009).

The research emphasizes the importance of website quality in shaping consumer perceptions and intentions to utilize m-commerce platforms. Website characteristics such as user-friendly interfaces, easy navigation, fast loading times, secure payment gateways, and personalized experiences should be prioritized by retailers. Apparel retailers can improve customer satisfaction, trust, and engagement by regularly evaluating and upgrading website quality, boosting the possibility of consumers adopting and utilizing apparel m-commerce platforms.

Also, quality websites and user-friendly mobile website designs are indispensable. The appeal, simplicity, speed, efficiency, product information, quick response and loading times, error

notification, password recovery, user friendliness, and product classification of an apparel m-commerce company's website should constantly be improved. Additionally, to improve consumers' mobile shopping experiences for apparels, merchants should focus on developing a website that integrates information quality and service quality dimensions.

In addition, because consumer perceptions and intentions are influenced by their understanding and familiarity with m-commerce platforms, apparel retailers must provide user education and training. Retailers can provide tutorials, guidelines, and support tools to assist consumers in becoming more comfortable and proficient in the use of m-commerce apps or websites. By addressing potential technological impediments, apparel retailers may encourage good consumer feedback and boost the likelihood of adoption and continued usage of apparel m-commerce platforms.

Furthermore, given that perceived usefulness and ease of use had a positive and significant impact on consumers' attitudes toward apparel m-commerce, apparel m-commerce retailers should consider periodically making additional changes to their mobile websites to provide a memorable experience to their customers. Faster checkout options improved mobile website navigation capabilities, and mobile-specific benefits that improve customer perceptions and convenience are just a few of these enhancements.

It is also highly recommended that apparel m-commerce retailers should always keep an eye on general customer sentiments of their mobile websites because consumers' attitudes toward m-commerce influence their behavioral intention to use it. Moreover, retailers are encouraged to conduct ongoing usability testing to gather feedback from customers' experiences in order to ensure that mobile app users can purchase efficiently, quickly, and easily.

Moreover, apparel retailers can partner with app developers and service providers specializing in mobile commerce solutions to offer a seamless user experience and high-quality website performance (Ahmad and Khan, 2017). Apparel retailers may improve the usefulness, reliability, and security of their m-commerce platforms by engaging experts in app development, user interface design, and mobile payment systems. This collaborative strategy can lead to higher adoption rates by improving website quality, reducing technical difficulties, and increasing consumer satisfaction.

Finally, the fact that COVID-19 moderated the relationship between perceived usefulness and consumers' attitudes toward apparel m-commerce, implies that m-commerce retailers should prioritize delivering a seamless customer experience, increasing customer trust and satisfaction, and producing useful customer analytics as key strategies to address in the new m-commerce landscape. The most significant advantage of m-commerce applications is that they serve as a foundation for increasing customer loyalty and engagement. Apparel m-commerce retailers can engage their customers by creating entertaining app content and enhancing it with push notifications. Content personalization may also be an appropriate goal for every m-commerce retailer in order to improve the m-shopping experience.

5.3 Limitations and Future Research Directions

Our research has some limitations that future researchers should consider. The concepts incorporated in the TAM-based model can pose as a theoretical limitation of this research. To provide newer and fresher insights, fresh variables can be incorporated or integrated to the suggested model (particularly in conceptualizing brand equity and website quality). Furthermore, because this study was limited to Ghanaian consumers, future researchers should be cautious when applying the results to other contexts. Future research with a larger sample size may generate more intriguing results and improve the study's generalizability. Finally, future researchers can put our framework to the test in different contexts, with a particular emphasis on employing millennials as the study sample.

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Appendix 1

Scale Items

Construct	Codes	Items	Source
Attitude towards Apparel M-Commerce	AT1	I like the concept of buying apparel using a mobile device in the next 6 months.	Manchanda and Deb (2021),
	AT2	It's a good idea to use my mobile device for buying apparel in future.	
	AT3	Using my mobile device in buying apparel in the next six months is in the right direction.	
	AT4	Using my mobile device in buying apparel in the next six months is a wise idea.	
Brand Awareness	BA1	I am aware of apparel brands I prefer.	Godey et al. (2016)
	BA2	I quickly remember the characteristics of the apparel brand I prefer.	
	BA3	I can quickly recall the symbol or logo of the apparel brand I prefer.	
Brand Image	BI1	The apparel brand is well established	
	BI2	The apparel brand has a clear image.	
	BI3	The apparel Brand has a differentiated image as compared to other brands	
Brand Loyalty	BL1	I consider myself loyal to the apparel brand I purchase.	Kaur, Paruthi, Islam, and Hollebeek (2020),
	BL2	Apparel Brand I buy would be my first choice	
	BL3	I will not buy other apparel brands if the brand I prefer is available on the mobile websites	
Behavioural Intention to use Apparel M-Commerce	INT1	I anticipate purchasing apparel within the next 6 months using my mobile device.	Manchanda and Deb (2021),
	INT2	I plan to purchase apparel within the six months to come using my mobile device.	
	INT3	I am likely to buy apparel within the next six months using my mobile device.	
Perceived Ease of Use	PEOU1	It's easy to learn how to shop from apparel mobile websites on my mobile device.	Davis (1989),
	PEOU2	It is easy to navigate apparel mobile website to shop	
	PEOU3	It is easy to become skillful in purchasing from apparel mobile websites.	
	PEOU4	I got it easy to shop from apparel mobile websites.	
Perceived Usefulness	PU1	Apparel shopping with the mobile device enhances my shopping task	
	PU2	Shopping for apparel using a mobile device is more convenient.	

	PU3	My shopping task performance is improved by using a mobile device in purchasing apparel	
	PU4	Purchasing apparel with a mobile device reduces time-wasting thereby improving productivity	
Website Information Quality	WIQ	Apparel mobile website provides accurate information.	(Chi, 2018),
	WIQ2	Apparel mobile website provides up-to-date information.	
	WIQ3	Comprehensive information is provided by the apparel mobile website.	
	WIQ4	The apparel mobile website product presentations are very attractive.	
	WIQ5	Product presentations on the apparel mobile website are very informative.	
Website Service Quality	WSEQ1	On-time services are provided on the apparel mobile website.	
	WSEQ2	There is always a quick response to my questions on the apparel mobile website	
	WSEQ3	Professional services are provided on the apparel mobile website.	
Covid-19	Covid 19 Severity (moderator)	It will be severe if someone contracts covid-19.	Zenker, Braun, and Gyimothy (2021).
		It will be risky if anyone is infected with the COVID-19	
		Daily activities may not be managed well by COVID-19 infected person	