When Fashionology meets Healthology: Examining the Impact of User Engagement on Brand Advocacy and Loyalty for Smart Wearables

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Abstract

COVID-19 has accelerated the use of technology and consciousness of individual and community health. The upsurge in consumption trends for smart wearables during the pandemic draws attention to technological innovation and user behavior. Smart wearables are no longer driven solely by the need for fitness but also by fashion choices. Studies on user engagement involving interactive technology have been limited to examining functionality, which points to the need to consider other motivations. To address this gap, this research examines the influence of users' extrinsic and intrinsic motivational dimensions which includes functionality, healthology, hedonism and self-congruity on users' engagement with smart wearables, further hypothesizing that engagement with smart wearables influence brand loyalty and advocacy. Data was collected during the COVID-19 pandemic from 177 respondents in India and abroad. This article develops and empirically tests a comprehensive research model using path analysis. The results indicate that both extrinsic and intrinsic motivations have significant and positive impact on user engagement which, in turn, influences brand loyalty and advocacy. These outcomes are explained by borrowing theoretical insights from the Technology Acceptance Model (TAM). The results find support in the diffusion of innovation and trickle across theories. The concept of fashionology is integrated with healthology to study consumer engagement. The study posits that gamification can influence users' behavior through meaningful integration of technology. The study concludes that the users' motivations for smart wearables driven by innovative technology points to technology adaption in keeping with the fitness and fashion-conscious image. This research contributes to the body of knowledge on the role of self-congruity in positively affecting user engagement with smart wearables.

Keywords: User engagement, smart wearables, brand loyalty and brand advocacy, extrinsic and intrinsic motivations, gamification, Technology Acceptance Model (TAM), trickle-across theory

Introduction

The global shutdown provoked by the COVID-19 pandemic leading to enforced sedentary lifestyles has seen arise in health and fitness regimes. Trackers like Fitbit and smartwatches have become modes of measuring physical workouts and calorie tracking. There has been accelerated growth in technology driven innovation especially with wearable devices defined as "electronic technologies or computers that are incorporated into items of clothing and accessories which can comfortably be worn on the body" (Wright and Keith, 2014, p. 204). While the major technology players continue to evolve ways of engaging users through innovative digital platforms, the increasing popularity and commercialization of smart wearables have attracted significant academic and industry attention (Oh and Kang, 2020). Through the efficient use of gamification, the smart wearable industry has been continuously developing technology to ensure that users smoothly adapt and uninterruptedly interact with devices and integrate them into their daily routines for a seamless experience. Gartner Inc. predicts that worldwide spending on wearable devices will reach USD 93.83 billion in 2022, an increase of 36 percent from USD 69 billion in 2020 (Rimol, 2021). This upsurge is attributed primarily to the rise in remote work and interest in health monitoring devices. Referring to research by International Data Corporation affirming India's position as the third largest market for smartwear, The Indian Express reported a triple digit growth of 144.3 percent (March 4, 2021) in the wearables market dominated by smartwatches.

Smartwatches are defined as "wearable computers that can perform various daily tasks to help users to deal with their daily work" (Hsiao and Chen, 2018, p.104). The prediction based on the analysis by McKinsey & Co. (2021) estimates that smartwatches will capture an additional USD 1.3 billion in revenue from the mid-market segment by 2025 from young consumers who are likely to opt for smartwatches as their first purchase, instead of traditional watches. The pandemic has significantly fast-tracked smart wearable usability primarily due to tangible benefits such as health and sports tracking. Despite its growing importance, human-computer interaction (HCI) and user engagement have received little attention (O' Brien and Toms, 2008; Oh, Bellur and Sundar, 2018), and have provided limited insight into the factors that drive consumers

towards the engagement and conative outcomes, thereof. This study aims to fill this research gap by developing and testing a comprehensive research model that examines the factors that influence users' engagement with smart wearables resulting in behavioral outcomes.

User engagement

There are diverse definitions of user engagement across academic disciplines. Hollebeek (2011, p.787) defines customer engagement as a two-way interaction between the consumer (user) and the object (brand) defining it as "…the level of an individual customer's motivational, brand-related and context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioral activity in direct brand interactions". User engagement in using smart wearables results from utilitarian (usefulness), hedonic (pleasure) and social motivations. This article studies a specified area of user engagement in relation to customer engagement, and hypothesizes how engagement of customers within the category of smart wearables, both intelligent and interactive, is affected by both intrinsic and extrinsic factors, brand loyalty and advocacy. Asimakopoulos, S., Asimakopoulos, G. and Spillers (2017) discuss how wearable devices are increasingly being used to track health, and how the user experience affects long term loyalty. With the expansion in the market for smart wearables, researchers are looking at Technology Acceptance Model (TAM) and engagement within the user communities. Kim, Y., Kim, D., and Wachter (2013, p.361) explain how "…engagement is related to user experience characterized by attributes of challenge, positive affect, attention, feedback, novelty, interactivity, perceived user control, and others. Thus, engagement is beyond the concept of acceptance that is a subset of engagement." Engagement embodies several dimensions that are affective, cognitive, experiential and co-creative, where embracing new technology adds to the overall engagement. In a similar vein, Xiao, et al. (2021) present gamification as a strong contributor to increasing user engagement across platforms. Stages of user engagement are introduced as engagement-disengagement-re-engagement, wherein as "...compared with traditional instruction, gamified/gameful impartation can provide contextualized, interactive learning contents and was reported to contribute to self-efficacy and a longer retention of knowledge" (ibid., p.4808).

Fashionology

The pandemic has altered behavior and shifted consumption patterns. Smartwatches as smart wearables, are not only recognized and used for their technological benefit

but also as fashion accessory (Hein and Rauschnabel, 2016). This leads into the terrain of fashionology, defined by Yuniya Kawamura (2005, p.40) as "…a sociological investigation of fashion [that] treats fashion as a system of institutions that produces the concept as well as the phenomenon/practice of fashion". Kawamura further relates how, "…fashionology integrates both micro and macro levels of social theory i.e. symbolic interactionism and structural functionalism" (ibid., p.40). Structural functionalism operates around the institutionalized systems of manufacturing, supply chain and consumption. This article works within the perspective of 'symbolic interactionism', a term coined by Herbert Blumer (1986) to explain the basic premise on which individuals interact with objects based on the meanings ascribed to the latter which, in turn, emanate from interactions with society, and are interpreted by them when dealing with objects in specific circumstances. Individuals aligned with their self-image developed over a period and the external world through interactions with objects of their liking. These interactions align with the consumer's self-image developed over a period in relation to the object in question. The theoretical approach of symbolic interactionism supports the perceived connection between individuals and their liked objects, which can, in turn, lead to the creation of self-identity by the individual. This theory is extended to view the ways in which the consumer has agency over purchasing decisions incongruence with perceived self-image to create a social identity that may be mirrored using the social value of smart wearables notably smartwatches.

Smartwatches are purchased by consumers not only for their utilitarian benefits of computing personalized information for health-related metrics but are also perceived as a lifestyle-driven acquisition considered nothing short of a fashion accessory. Symbolic association with the brand of a smartwatch acts as a subtle sign for wearers to distinguish themselves from others through their health-laden purchases. Yet, consumerism is so deeply embedded in the tendency to identify with products and brands that a smartwatch on the wrist signals the implicit value of having 'arrived'. This study posits fashionology as an underlying reason for the use of smart wearables which extends beyond its association with fitness. Further, examining fashionology as a contributing factor towards brand advocacy and loyalty for smart wearables can be valuable to brands. Similar to psychology of fashion consumers, smart wearables produce both intrinsic and extrinsic motivations leading to user engagement. Fashionology as a contributing factor for stronger brand advocacy and loyalty adds new knowledge to academic text on smart wearables and consumption patterns.

Gamification

User experience is translated through gamification in smart wearables. With increasing interdisciplinarity among technology, culture and society, innovative strategies of user engagement and experiences emerge. Gamification "…broadly refers to technological, economic, cultural, and societal developments in which reality is becoming more gameful, and, to a greater extent, can afford the accruing of skills (e.g., skills related to problem-solving, organization, mood regulation, leadership, and empathy); motivational benefits (e.g., intrinsic motivation, goal commitment, self-regulation, and developing a long term view); creativity; playfulness; engagement; and overall positive growth and happiness" (Hamari, 2019, p.1). Gamification gives a glimpse of how systems and strategies for engagement are on the turn. Gamification in enhancing user engagement is gaining popularity amongst marketers who are using it to lure potential consumers (Yang, Asaad and Dwivedi, 2017). Oh and Kang's (2020) study on user engagement in newer platforms/devices through user interface design (gamification) and interaction with the system, TAM expands the scope of user engagement. A study by Vanduhe, Nat and Hasan (2020) shows the addition of gamification on Moodle, an open-source learning platform, leads to increased user engagement originating from usability as well as ease of using technology, confirming the relevance of TAM in analyzing how gamification can draw attention.

Gamification helps shape behaviors and may nurture increased activity and engagement of the user, which could prove beneficial for various organizations. Yang, Asaad and Dwivedi (2017, p.461) relate how "…gamification with multi-media can also have special characteristics of interactivity among users and sensory immersion, which makes it livelier and closer to audiences than other media". Gamification offers rewards and therefore, motivates users to engage with the interface on intrinsic as well as extrinsic levels, as they undergo an experiential journey. This may result in the users' evaluation of the brand (Herrewijn and Poels, 2013) in use and act as "…catalyst to improving their loyalty to a brand, product or service" (Yang, Asaad and Dwivedi, 2017, p.461). Gamification is the underlying key mechanism for enhanced user experience in smart devices that enables assessment of user engagement. Brands such as Apple, Samsung, Fitbit, MI and Oppo are increasingly using gamified user interfaces for easy adoption of technology resulting in improved user engagement. This also leads to consumer-related attitudinal and behavioral outcomes including brand loyalty and advocacy.

Technology Acceptance Model (TAM)

Developed in 1989 by Fred D. Davis, Richard P. Bagozzi and Paul R. Warshaw, the Technology Acceptance Model (TAM) is based on behavioral intention (BI) of users and relates to how users change their attitude towards new technology. Several factors influence user's acceptance of new technologies, of which two core constructs are notable: perceived *usefulness* which is defined as degree to which the user anticipates a positive enhancement in their suggested task performance; and perceived *ease of use* which refers to the degree to which a person believes that using a particular system would be free of effort. Lesser the effort in its use, higher is the degree of acceptance and adoption of technology (ibid.). TAM has widely been used for disciplines such as education, product development, user interface design and innovation. Segars and Grover (1993) extended TAM for studying technology adoption amongst users for effectiveness, usefulness, and ease of use. Later, Davis and Venkatesh (2000) revisited TAM to test the voluntary and mandatory settings in which the user is situated. Their findings led to modifications encapsulated in TAM 2. Subsequently, Venkatesh, et al. (2003) posited a unified theory of acceptance and use of technology (UTAUT) which has been used extensively in information systems.

TAM is applied to the current study as it facilitates understanding of user behavior towards smart wearables as a new form of technology integrated with their everyday activities. The model sheds light on user perception of the usefulness of technology used in smart wearables for recording health-related activities. It also helps to understand how user interface designed by different brands lead to varying outcomes in user satisfaction, loyalty, and word-of-mouth referrals. The research model is conceptualized and tested in three stages. The first stage proposes the functional, health-related, hedonic and self-congruity dimensions to examine their linkages with user engagement of smart wearables such as Apple smartwatch, Samsung Galaxy watch, Fossil smartwatch, Fitbit, MI smartwatch, Oppo smartwatch and Huawei smartwatch. The second stage hypothesizes the relationship between engagement with brand loyalty and brand advocacy. The third and final stage posits that user loyalty to smart wearables influences brand advocacy. Five hypotheses are proposed at different stages of this study. Three central questions are addressed:

– Do extrinsic and intrinsic motivations influence users' engagement with smart wearables?

– Does satisfied user experience directly lead to brand advocacy for smart wearables?

– Is self-congruity an instrumental dimension toward engagement in the context of smart wearables?

Literature Review and Hypotheses Development

The article develops and tests theoretical explanations emerging from extrinsic and intrinsic rationales on user engagement with smart wearables, and empirically examines the role of user engagement on brand loyalty and brand advocacy.

Influence of extrinsic motivations (functional and healthology) on user engagement

User behavior towards the adoption of smart wearable is, at its helm, driven by both intrinsic and extrinsic motivational factors (Ryan and Deci, 2000). Extrinsic motivation in physical activities characterizes behavior that is centered on tangible benefits such as an individual's physical health, appearance, fitness, usability, and social approval. Further health benefits may affect the adoption of smart wearables. Adam Greenfield (2006) developed the concept of 'everyware' to describe ubiquitous technologies as a pervasive trend of smart technologies transcending human lives while converting experiences into computational data. Gilmore (2016) extends the concept of everyware to further study smart technology for wearable fitness devices. Dehghani, Kim and Dangelico (2018) conjoined health and technology to coin the term 'Healthology'. Chuah (2019, p.3) gives an account of consumers who use smart wearables for health benefits, relating how "…wearables give them instant motivations to progress towards their goals through the personal data-based insights (e.g., sleep, eating, and exercise)". In addition, Clinch, Meztger and Davies (2014) have asserted that the functional aspects such as usability and ease of use for smart wearables may contribute to initial consumption patterns among users and create long term changes in users' behavior towards health benefits, will require habitualization. Gilmore (2016, p.10) explains, "…habits can only exist, it seems, when quantifiable data [as recorded by smart wearables] and qualitative experience [user engagement] mutually reinforce each other, be it in observably shaping one's body to a more normative measure of 'fit' or experiencing more of their everyday surroundings and spaces". In a world where users are continuously documenting their experiences and/or allowing smart technologies to record their data, functionality and healthology become motivating factors for increased user engagement using smart wearables. Hence, the following hypothesis is proposed:

H1: *Extrinsic motivations will lead to user engagement with smart wearables.*

Influence of intrinsic motivations (hedonic and self-congruence) on user engagement

Intrinsic motivation relates to engagement in any physical activity that characterizes pleasure-seeking and psychological satisfaction (Ryan and Deci, 2000). With the

introduction of concepts of self-image and brand image by Gardner and Levy (1955), theories of self-congruence gained popularity. Self-congruence is the match between the perceived self-image of the consumer and the constructed product image by brand marketers (Sirgy, 2015). Japutra, Ekinci and Simkin (2019, p.5) argue, "…that practitioners [marketers] use self-congruence to build strong emotional brand attachment". A study on smart wearables by Said, et al. (2021, p.16) relates the factor of self-congruence to the consumption of smartwatches claiming that it "… often leads the general public to make inferences about the owner, and in the context of this study, the smartwatch would signal the status of the user. As an example, the main reason a person buys a Fitbit smartwatch is not to prevent from being late, but to show to the others that he can afford such a watch". Self-congruence has both direct and indirect implications on brand loyalty. Kressmann, et al. (2006, p.962) acknowledge that "…the direct effect from self-congruity on brand loyalty equals the predictive power of functional congruity and brand relationship quality on brand loyalty".

Another determinant in intrinsic motivation is the impact of hedonic motivations on consumption. Bentham (1986) described the primary motives of pleasure and pain as drivers and determinants of the behavioral experience. Kahneman and Riis (2005) furthered this as 'decision utility' (utilitarian) and 'experience utility' (hedonic). Hedonic motivation refers to a consumer's willingness to engage with a brand based on their pleasure derivation from it (Higgins, 2006). In the context of hedonic motivations for consumers of smart wearables, research indicates the role of innovative technology on providing pleasure had its positive effect on consumption (Kim and Shin, 2015; Hong, Lin and Hsieh, 2017). Dehghani, Kim and Dangelico (2018) also reiterate that hedonic motivation plays a positive role in long term use of smartwatches. The study of user engagement with smart wearables long term consumption pattern, requires the study of intrinsic motivations for both hedonic and self-congruence. Hence, the following hypothesis is proposed:

***H2**: Implicit motivations will lead to user engagement with smart wearables.*

Influence of user engagement on brand loyalty

Technology is becoming seemingly ubiquitous in our everyday interactions. Engagements that inevitably incorporate consumer experiences with technology are increasingly gaining currency to understand and decode behavioral patterns in consumption, experiences, and aesthetics (O'Brien and Toms, 2008; Attfield, et al., 2011; Oh and Kang, 2020). Through extensive multidisciplinary literature review and exploratory study of users engaged in web searching, online shopping, webcasting and gaming applications, engagement was defined in conceptual and operational terms in the previous segment on user engagement. Building on previous research, semi-structured interviews were

conducted with the users of four applications to explore their perception of being engaged with the technology.

The diminishing attention span of user interactions has informed designers to not only create systems for interaction but to lead them towards engaging experiences (Overbeeke, et al., 2002). O'Brien and Toms (2008) define engagement as positive attitude towards interaction through increased attention involving sensory capacities. Further, Lehmann, et al. (2012, p.164) define user-engagement as "…the quality of the user experience that emphasizes the positive aspects of the interaction, and in particular the phenomena associated with being captivated by a web application, and so being motivated to use it". A section of the academia has been engaged in deciphering the nature and extent of user engagement emanating from interactions via websites rather than smart-interactive technologies. In their study on user engagement and smart wearables, Oh and Kang (2020, p.316) postulate how "… users can be engaged with not only the content of the website but also its interface design and interaction with the system". It is interesting to observe how technology adoption creates a positive/negative impact on user engagement with the brand. If the interface allows for interactivity and plays on previously learned behavior in using a new design interface, the ease of use of TAM and usability for the consumer may be increased. With the growing demand of smart wearables, it is opportune to understand its impact in user engagement which, in turn, influences brand advocacy and loyalty. Borrowing from O'Brien's (2016) theoretical perspectives on user engagement, the User Engagement Scale (UES) is proposed to examine John Dewey's Philosophy of Experience (Archambault, 1974) and Mihaly Csikszentmihalyi's Flow Theory. While the Flow theory draws on flow as a state of experience which is "…characterized by enjoyment, challenge, intrinsic motivation, focused attention, positive reinforcement, clear goals, personal control, and temporal dissociation" (Csikszentmihalyi, 1990, p.10), it further takes into account the user who aligns their goals based on their biological needs with social and self-motivations. On the other hand, Dewey's philosophy of experience works on principles of continuity which is the idea of habit as an experience that modifies future experiences and engagements. It uses 'objective and internal conditions' wherein users interact with smart systems as informed by their needs and desires as well as social settings. The current paper utilizes these theoretical underpinnings to test the following hypotheses on the ways in which both extrinsic and intrinsic motivations affect user engagement which in turn, shape user behavior on brand loyalty and advocacy.

H3: *User engagement with smart wearable will lead to brand loyalty.*

H4: *User engagement with smart wearable will lead to brand advocacy.*

Influence of brand loyalty on brand advocacy

The theory of self-congruity leading to brand loyalty is further exalted by loyal consumers through word-of-mouth engagement and advocacy for the brand (Lowenstein, 2011). As stated by Machado, Cant and Seaborne (2014, p.957), "… consumers fondly remember the memorable experiences and share them with peers and family, they could generate an increase in sales through the power of word-of-mouth and consumer loyalty". The theory of reasoned action (TRA) links individual attitudes, intentions, subjective norms, and behavioral outcomes. Sharing information i.e., brand advocacy transpires through intentional behavior motivators like attitudes and norms (Fishbein and Ajzen, 1975). Kemp, Childers and Williams (2012) suggest a model of self-brand connection conjoining self-congruence and brand advocacy to emphasize that attitude towards a brand is based on perceived brand quality and brand uniqueness that fosters a positive self-brand connection that may lead to consumers indulging in brand advocacy. Previous research in this area have focused on digital marketing strategy (Parida and Kumar, 2020), user engagement (Oh and Kang, 2020), motivations on fitness tracking (Asimakopoulos, S., Asimakopoulos, G. and Spillers, 2017). The current research examines the users' symbolic association with smartwatch brands.

Technology adoption may be understood as a sociological model that describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups. Adoption of new technology is explained by how users identify innovation as predicted by its use. Such a product is likely to gain popularity and witness an increased market share as it spreads from innovators to early adopters to early majority through positive word-of-mouth (Roger, 2003). Similarly, the trickle-across theory of fashion (Robinson, 1975) explains the swift dissemination of fashion styles among the consumers from similar socio-economic backgrounds, almost at the same time. In similar vein, it is argued that the spread of smart wearable among users is akin to the spread of newly introduced fashion style in the want of acceptance among the potential consumers of similar socio-demographic characteristics. Hence, the loyalty from satisfied consumers spreads rapidly through word-of-mouth referral or brand advocacy to potential consumers. Based on this, the following hypothesis is posited:

***H5**: Loyalty for smart wearable will lead to brand advocacy.*

Research Design and Methodology

Data collection process

Sampling frame

For this study, online data was collected from 177 users of smart wearables in India and abroad. At the commencement of data collection, consumers were screened through their active use of the product and were asked to provide responses based on the brand of the smart wearable owned by them. Seven brands of smart wearables were considered, namely Apple smartwatch, Samsung Galaxy watch, Fossil smartwatch, Fitbit, MI smartwatch, Oppo smartwatch and Huawei smartwatch. At the outset of the study, only those respondents who had purchased at least one of these seven brands were included. The second section of the questionnaire collected data on the respondents' demographic characteristics such as gender, nationality and age. Further sections of questionnaire included measures for examining (a) extrinsic and intrinsic motivations for smart wearables, (b) user engagement, and (c) the consumer's brand loyalty and brand advocacy.

Demographics of respondents

The average age of the respondents was 30 years. 69 percent of the total sample were men.

Psychometric evaluation of study measures

The study used established measures from apriori literature with minor modifications for adjustment to the context. Initial assessment of scales was performed by calculating the reliability scale with Cronbach's alpha reliability coefficient value which was 0.886 ($\alpha > 0.7$).

Exploratory factor analysis

The exploratory factor analysis (principal component analysis with varimax rotation method) yielded five distinct factor solutions that explained 69.58 percent of the total variance. The factor solution showed a KMO of 0.858 with statistically significant Bartlett's test at 1% level of significance. All the factors were found to have high level of internal consistency reliability measured using Cronbach's alpha.

Testing of Hypotheses and Results

Path analysis was used to test the hypotheses and the model fit (Table 1; Figure 1). The absolute measure of fit based on the non-centrality parameter suggested that data fit of model was close to the acceptable value.

Table 1: Path coefficients and fit indices

Hypotheses	Path coefficient	P-Value	Result	CMIN/ DF	RMSEA	CFI
H1	User Engagement <-- Functional and Healthology	0.001*	Supported	6.540	0.177	0.955
H2	User Engagement <-- Hedonic and Self Congruity	0.000*	Supported			
H3	Brand Loyalty <-- User Engagement	0.000*	Supported			
H4	Brand Advocacy <-- User Engagement	0.014**	Supported			
H5	Brand Advocacy <-- Brand Loyalty	0.000*	Supported			

Note: Standardized regression coefficients are shown along the path.

**Significant at p ≤ 0.01; **Significant at p ≤ 0.05.*

Model with Path Coefficients

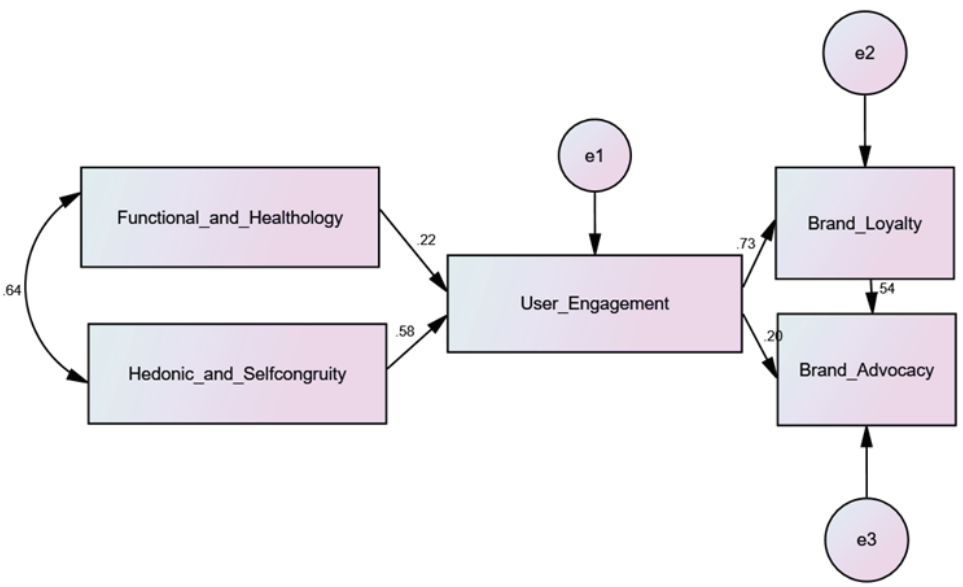

Figure 1: Depiction of conceptual model with standardized path coefficients

Conclusions

Theoretical implications

The present study is novel in its contribution to the three aspects related to consumer engagement for smart wearables. *First*, developing an understanding of the ways in which explicit and implicit motivations drive users' experience with smart wearables; *second*, testing the impact of users' engagement on brand advocacy for smart wearables during the pandemic when health concerns take predominance over other consumption choices; and *third,* establishing the relationship of users' psychological dimension with engagement for smart wearable thus bridging the gap of self-image with healthology. References to theoretical concepts of TAM, diffusion of innovation, and trickle-across theory explain the arguments, thus advancing the understanding of interactive and gamified technology, and consumer behavior. Dimensions of the users' self-image with engagement were examined and plausible results were found indicating a positive relationship between user engagement and brand advocacy. This makes meaningful contribution to both theory and practice in the realm of consumer behavior and product innovation.

Managerial implications

The findings show that functionality, health, hedonism and self-image jointly played a role in influencing how users evaluate engagement with smart wearables. Results of this study may be of use to producers for developing technology-driven innovative products focussing on the ease of use that results in enhanced engagement and adaption. It may help the industry to understand the form and design of communication through efficient gamification for successfully positioning their brand for smart users. Brand managers would benefit from differentiating the new product on the basis of its innovative features for health and appearance conscious consumers.

Limitations and Directions for Future Research

Some limitations have been identified in this study. *First,* data from a larger sample population may yield better findings. *Second,* the effects of mediation can be examined for understanding the indirect relationship between variables. *Third,* there is a need for developing a scale specifically for measuring user engagement with smart wearables. *Fourth*, the model may be tested for assessing additional antecedents of user engagement to evaluate differences in the results specifically in the context of users' attitudinal and behavioral outcomes. Future research can be conducted to study

the difference in outcomes of the engagement effect separately on gendered use of technology. Cross-cultural study can be undertaken for future research endeavors to determine the generalizability of the model.

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