International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 6, 2025
https://theaspd.com/index.php

Enhancing Users' Behavioral Intentions and loyalty via Consumer Brand engagement in Gamified mobile apps: A TAM Model Application

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Abstract
Technology advancements and users' enhanced access to mobile Technology have impelled multinationals to embrace gamification strategies to engage with users. Quite many previous research studies have empirically proved consumer brand engagement as one of the potential outcomes of gamified marketing activities, but still, the focal construct was either studied as a one-dimensional or multifaceted construct (encompassing only three dimensions). Therefore, it has become imperative to focus on the crucial role played by consumer brand engagement in gamified mobile applications context. The current study aims to investigate the proposed relationships among perceived ease of use, perceived usefulness, consumer brand engagement, behavioral intention to use, and customer loyalty in the context of gamified mobile applications. The Technology Acceptance Model (TAM) has been employed. The proposed hypotheses were empirically tested by evaluating the data collected from 200 respondents. Structural Equational Modelling via AMOS software was used for analyzing the collected data. Results confirm that both perceived usefulness and perceived ease of use significantly influence consumer brand engagement concepts and subsequently also positively influence intention to use the mobile app in question. At the end after the discussion section implications have been proposed to conclude the study.
Keywords: *mobile Technology; gamification; consumer brand engagement; mobile app; Technology Acceptance Model.*

INTRODUCTION

Consumer brand engagement has gained a lot of limelight in the marketing domain owing to its association with consumers' behavioral outcomes such as behavioral intention [1] and brand loyalty [2]. Many big-notch multinationals like Starbucks, P&G

and many more alike have also integrated consumer brand engagement into their policy [3]. Some notable research studies have corroborated continued behavioral intentions and loyalty as possible outcomes of consumer brand engagement in gamification-enabled applications [4].

Additionally, theoretical models such as the Technology Acceptance Model (TAM) unfold the power of technology in shaping and driving consumer brand engagement. TAM model is by how consumers adopt and embrace technology, which furthermore makes their lives easy [5]. The technology-enabled mobile services fortified with gamification emerge as a promising factor in engaging consumers profusely. These technological advancements in mobile technologies have urged multinationals to develop gamified apps. Additionally, these mobile apps resemble a continuous service rather than a monotonous solo fixed good. The emergence of digital technologies such as smartphones built with 4 G and 5G internet connections has made gamification a fast-developing practice in the marketing field. To better attract, engage, and build a loyal pool of customers, rendering gamified mobile apps has become an indispensable feature . These gamified mobile apps attract millennials a lot as that cohort are hefty users of mobile phones and are also fond of games.

The gamification strategy involves the employment of game elements in non-game settings [6]. To strengthen the information systems, gaming elements like mechanics, and design thinking are made to run on non-game contexts this, in turn, engages users intensely. Gamification has been identified as a new aged technology-based system that provides a platform to integrate branding messages that are neither time nor space limited [7]. The incorporation of gamification strategies in the marketing area offers enjoyable, interactive, and immersive consumer experiences. Gamification allows practitioners to generate and deliver value by encouraging consumer brand engagement via personalized marketing messages. With an application of the TAM model, I aimed to examine the influence of consumer brand engagement construct on consumers' behavioral intents in gamified mobile applications context.

THEORY BUILDING AND HYPOTHESES DEVELOPMENT

Technology Acceptance Model (TAM) predominantly concentrates on the apparent features of the novel technological method i.e. its usability and accessibility as significant variables. In one the study, [8] reported that users tend to adopt new technologies or play games only if they feel it is enjoyable and easy to use. TAM has been identified as one of the useful models as far as its applicability is concerned.

Self Determination Theory (SDT)

Theory identifies two types of motivation i.e. intrinsic and extrinsic for technology adoption and acceptance. Getting engrossed in gamified mobile apps aims at addressing extrinsic motivation of the users as individuals get driven enough by the ease of use and activity points, they can earn from them [3].

Gamification

Gamification has gained significant attention among practitioners and academicians. Several research studies have empirically proved that gamification engages consumers and in turn, generates a pool of brand loyal consumers.

[9] revealed the significance of embedding game elements in flyer programs on travelers' loyalty in an aviation context. [9] endeavored to explore the relationship among gamified experience, consumer brand engagement, online engagement intention, and brand loyalty in the Indian context. The authors found that gamified experience exerts a positive effect on millennials continued online engagement intention, which in turn was found to be positively associated with customer brand engagement and brand loyalty. A recent study by [10] examined the effect of reward gamification on brand relationship quality (BRQ) in mobile banking settings. The author empirically proved that gamification significantly influences consumer brand relationships. It was further suggested that banks must design reward-empowered plans to augment BRQ. The multidimensional nature of the gamification construct was disclosed which directly influences end-user engagement levels. In another research study, the influence of gamification was explored in the mobile App context. Gamified Mobile Apps facilitate consumer company interaction and high engagement levels with apps. Companies need to focus more on providing hedonic benefits to induce incessant use of mobile apps [5]. After doing an extensive and exhaustive review of the research studies, it was observed that there exists a dearth of studies related to gamification in marketing literature.

Consumer Brand Engagement in Gamified Mobile Apps in Virtual Settings

Though consumer brand engagement has earned eminence in the marketing literature both from academicians and practitioners [11] still the focal construct's conceptual clarity and dimensionality is debatable and requires in-depth investigation. CBE has been taken as a second-order construct embracing cognition, emotions, behavioral, and social connections as its first-order attributes in emerging economies i.e., in India. The Technology Acceptance Model (TAM) is one of the most influential and extensively used models that predominantly concentrates on the identified characteristics of the technical method i.e. detected usefulness and ease of use as its significant variables [5]. Therefore, by employing TAM, we intended to investigate technology-related features and their influence on consumers'/individuals' behavioral facets in the development of the theoretical framework. Figure 1 depicts the proposed model tested in a gamified mobile applications context.

We next develop our research hypotheses. Below Figure, depicts the conceptual framework.

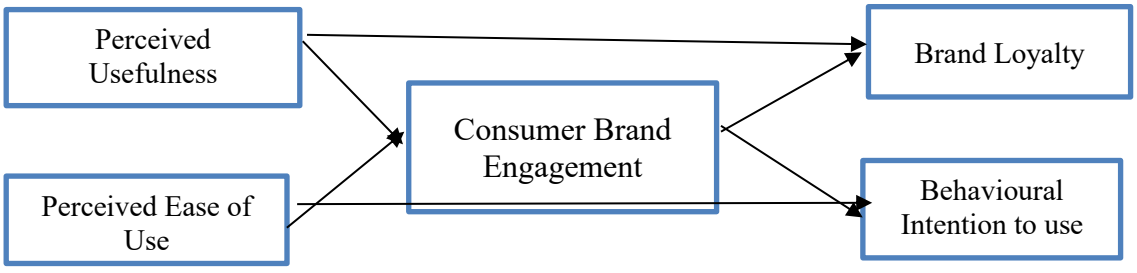

Figure 1: Proposed Conceptual Model

Influence of Perceived Usefulness's on Brand Loyalty and Consumer Brand Engagement

Perceived usefulness has been defined as "the degree to which an individual thinks that technology will be useful to him/her" [12]. Additionally, perceived usefulness has been identified as an important determinant that in turn influences customer's intent in embracing novel technologies [5]. [13] found out that perceived usefulness significantly and positively influences customer loyalty among Chinese computer users. Thus, it has become mandatory for multinationals to work effectively on the designing of mobile apps. Gamified mobile apps become more interesting in enhancing user engagement and experience. Thus, we posit that

H1: Perceived usefulness significantly and positively affects brand loyalty in the mobile app context.

H2: Perceived usefulness significantly and positively affects consumer brand engagement in the mobile app context.

Influence of Perceived Ease of Use on Consumer Brand Engagement and Behavioral Intention to Use

Perceived ease of use has been delineated as "the degree to which an individual conceives that employing technology-enabled gamification apps on a mobile phone doesn't tax their cognitive abilities" [14]. Predominantly, perceived ease of use has been reliant on suitability and effortless adaptation of gamified mobile applications. The interactive participation engages consumers deeply and also influences their behavioral intention and loyalty. Therefore, we propose that

H3: Perceived ease of use significantly influences consumer behavioral intention in the mobile app context

H4: Perceived ease of use significantly positively impacts consumer brand engagement in the mobile app context.

Consumer Brand Engagement's Influence on Brand Loyalty

[15] delineated brand loyalty as "a deeply held commitment to rebuy or re-patronize preferred brand/service/product constantly in the future despite other marketing stimuli that lures customers towards switching behaviors". Previous research studies demonstrate brand loyalty as an outcome of consumer brand engagement [11]. We propose that engaged customers strengthen the loyalty of customers in gamified mobile app settings.

H5: Consumer engagement of gamified mobile apps positively influences brand loyalty.

Consumer Brand Engagement's Impact on Users' Behavioral Intention to Use

Consumers' behavioral intention to utilize novel technology has been proposed as an outcome/dependent variable. As divulged by several researchers the pertinence of gamification in mobile apps in quenching users' hedonic, communal, global, and local needs encourages their intention to use apps [16]. Therefore, we propose that

H6: Consumer engagement of gamified mobile apps positively affects users' behavioral intention to use.

Consumer Brand Engagement as a mediator

[17] found out that perceived usefulness and perceived ease of use seems to have stronger relationship with shopper engagement. The authors also empirically proved the mediating role of shopper engagement in the perceived usefulness, ease of use and behavioral intention. This in turn implies that perceived usefulness and ease of use of using gamified mobile apps engages users more intensely and in turn influences users' behavioral intention to use application also. Therefore, we hypothesize that

H7a. Consumer Brand Engagement mediates the relationship between Perceived usefulness and Brand Loyalty

H7b. Consumer Brand Engagement mediates the relationship between Perceived ease of use and Behavioral Intention to Use.

RESEARCH METHODOLOGY

Sample and Data Collection

The study endeavored to examine the influence of gamified mobile applications in nurturing consumer brand engagement. Here, we have taken consumer brand engagement as a second-order construct [11].

The research methodology has been divided into two phases. In the first phase, pilot testing was conducted to find out the flaws in the research instrument. In the second phase, exploratory factor analysis (EFA) was performed construct-wise. Then, Confirmatory Factor analysis was conducted to confirm the proposed model followed by path analysis to test the proposed relationships.

Measures

16-item- CE scale was used to measure the consumer engagement construct [18]. The measures of brand loyalty were derived from [19]. Perceived usefulness and perceived ease of use measures were taken from [20]. The six items were taken from [21] and were altered for measuring Behavioral intention construct. Table 1 enlists the latent variable and its corresponding items.

Table 1: Latent Variables and its measures

latent variables	Measures
Consumer Brand Engagement: Cognition	CN1: I like to know more about GMA's. CN2: I personally like events available on GMA's. CN3: I myself like to learn GMA's. CN4: I pay a lot of attention to anything related to GMA. CN5: I myself keep up updated with things related to GMA. CN6: Anything related to GMA attracts me.
Consumer Brand Engagement: Emotion	E1: Getting involved with GMA makes me feel happy. E2: I myself feel the experience on GMA to be pleasurable. E3: Looking and surfing GMA satisfies me.

Consumer Brand Engagement: participation	PR1: Myself enjoys spending free time on GMA. PR2: Myself deeply engrossed into GMA. PR3: I am ardent about GMA. PR4: I also taken out time from my schedule to access GMA.
Consumer Brand Engagement: Social	S1: Myself and my friends love playing games on GMA together. S2: I personally use GMA for long duration when friends are around me. S3: GMA is more fun when other people around me also access it.
Perceived Usefulness	PU1: Learning to use the GMA is easy for me PU 2 - I find it easy to get things done via GMA's. PU 3 - I find the GMA to be flexible to interact with PU 4 - I find the GMA's easy to use.
Perceived Ease of Use	POU 1- It was easy for me to learn how to play that game via GMA. POU 2 - It was flexible for me to play that game using GMA. POU 3 - It was easy to access the game using GMA. POU 4 - Using the GMA's would make it easier to play game.
Behavioural Intention to use	INT 1- I think that I would use the GMA in the future. INT 2 - I like to use the GMA's. INT 3 - I tend to leave positive comments about the GMA's. INT 4 - I think the GMA's are the best out of all other apps. INT 5 - I would like to use the GMA in the future. INT 6 - I would recommend the GMA for my family and friends.
Brand Loyalty	BL1: I intent to keep on following GMA's. BL2: I will visit GMA more often when I open my mobile phone BL3: I am ready to spend more time on GMA BL4: I would reduce the usage of GMA in near future. BL5: I strongly like GMA.

	BL6: I am looking for types of GMA's.

Source: Author Own Work

Pilot Testing and Data Collection

In the first phase, a sample size of 50 respondents was selected for the purpose of pilot testing. In the second phase, the final data collection was done.

During the final data collection phase, respondents were screened based on gamified mobile apps being followed by them. Purposive Sampling technique was followed. The time period of the study was from January 2024 to May 2024. The questionnaire was administered to a sample of 275 tech-savvy respondents. However, only 200 usable questionnaires were collected. In the total sample (n=200), 97 (48.5%) were male and 103 (51.5%) were females. As far as, age is concerned 110 (55%) were between the ages 20-25 years, 55 (27.5%) between 26-30 years, and the remaining 35 (17.5%) respondents above 30 years. Of 200 respondents, 118 (59%) of the respondents were in their Post Graduate program, only 18 36 respondents (18%) of students were in Graduate courses and the rest were enrolled in doctoral programs me. For monthly Family Income, the majority of the respondents were in the bracket from Rs.15,001-25,000.

DATA ANALYSIS AND RESULTS

Measurement Model Assessment

AMOS 16 was employed to examine the reliability and validity concerns of the model and evaluate path analysis. Specifically, Confirmatory Factor Analysis (CFA) was carried out to check the validity concerns. Table 2 reveals each construct's Cronbach alpha which was found to be above the threshold level of 0.7 [22]. A good model fit was also ascertained between the measurement model and data set ($\chi 2$ = 1307.783 on 580 d.f., RMSEA = 0.079, CFI = 0.875, TLI = 0.864). All items are loaded on the measurement model.

Table 2: Reliability and Convergent Analysis

Construct	Factor Loadings	AVE	CR	Cronbach α
Consumer Brand Engagement:				.915
Cognition	.54			
CN1	.59			
CN2	.65			
CN3	.73			
CN4	.70			
CN5	.66			
CN6				
Consumer Brand Engagement:				.876
Emotion	.70			
E1	.75			
	.66	0.829	0.935	

E2 E3				
Consumer Brand Engagement: Social S1 S2 S3	 .68 .60 .67			.846
Consumer Brand Engagement: Participation PR1 PR2 PR3 PR4	 .65 .80 .78 .69			.910
Perceived Usefulness PU1 PU2 PU3 PU4	 .59 .65 .67 .68	0.648	0.880	.879
Perceived Ease of Use POU1 POU2 POU3 POU4	 .72 .70 .74 .67	0.708	0.906	.906
Behavioral Intention to use INT1 INT2 INT3 INT4 INT5 INT6	 .63 .63 .69 .60 .64 .65	0.639	0.914	.849
Brand Loyalty BL1 BL2 BL3 BL4 BL5 BL6	 .71 .71 .67 .67 .57 .64	0.555	0.867	

Source: SPSS and AMOS Output Analysis

Convergent Validity was exhibited through factor loading, average variance extracted (AVE), and composite reliability (CR). The minimum acceptable values for Average Variance Extracted (AVE) and Composite Reliability (CR) are 0.5 respectively [22]. Furthermore, Table 3 exhibits that the square root of AVE's for each construct was found to be greater than corresponding cross-loadings, representing acceptable discriminant validity for the model.

Table 3: Discriminant Validity Analysis

	CR	AVE	MSV	MaxR(H)	BIT	PU	CBE	PEAseU	BL
BIT	0.914	0.639	0.612	0.914	**0.799**				
PU	0.880	0.648	0.635	0.882	0.779	**0.805**			
CBE	0.935	0.829	0.612	0.940	0.782				
PEAseU	0.906	0.708	0.635	0.908	0.710	0.797	0.672		
BL	0.867	0.555	0.007	0.911	0.039	0.083	0.069	0.047	

Source: AMOS Output analysis

Structural Model Analyses

HYPOTHESES TESTING

This study has employed AMOS 20.0 to inspect the structural model. The results illustrate that model fit indices are falling within an acceptable range, furthermore demonstrating that the proposed model fits the data well (SRMR .0631, CFI=.886, NFI= 0.809). The model predictive capacity has been revealed from the value of R^2 values varying between 0.83 and 0.59. The structural model was found to be statistically significant. Both perceived usefulness (β=.450, p<0.01) and ease of use (β=.246, p<0.05) positively and significantly influence consumer brand engagement, thus supporting H1 and H2. Consumer Brand Engagement was also found to be significant Behavior-affecting intention to use (β=.958, p<0.01). Furthermore, it was found that consumer brand engagement doesn't statistically influence Brand Loyalty (β=.104, p>0.01). Thus, H1, H2, H3 are found to be empirically supported. Table 4 reveals the hypotheses testing results.

Table No 4: Hypotheses Tests Results

Hypotheses	Path	Path Coefficient	SE	t-statistic	p-values	Decision
H1	PU->BL	.089	.169	.528	.598	Not supported
H2	PU->CBE	.550	.130	4.223	0.000	supported
H3	PEAU->BIT	.370	.080	4.621	0.000	supported
H4	PEAU->CBE	.273	.127	2.146	.032*	supported

H5	CBE->BL	.023	.159	.145	.885	Not supported
H6	CBE->BIT	.536	.082	6.500	0.000	supported

Source: AMOS Output, * significant at 5%

MEDIATION ANALYSES

In an attempt to examine the (full/partial) mediating effect of consumer brand engagement on perceived usefulness and brand loyalty relationship and also on perceived ease of use and behavioral intention to use relationship. As proposed by [23] , in full mediation, the driver will affect the outcome variable only through mediator. Though, in partial mediation, the driver will affect the outcome variable directly and also through mediator [11]. The results disclosed that perceived usefulness has only a significant indirect effect on brand loyalty through consumer brand engagement (γ=.754, p<0.01) thereby supporting H7a. Though, perceived ease of use has a direct positive effect on Behavioral intention to use (γ=.370, p<0.01) as well as indirect effect via consumer brand engagement (γ= .125, p<0.05) thereby supporting H7b. These findings reveal the influence of perceived usefulness on brand loyalty is completely mediated by consumer brand engagement but perceived ease of use and behavioral intention to use technology is partially mediated by consumer brand engagement.

DISCUSSION

This study indicated that Perceived usefulness and Perceived ease of use significantly and positively infl\uence consumer brand engagement. It was also found that the consumer brand engagement construct also influences individuals' intentions to use gamified mobile apps. These findings are in line with prior research [5,7]. However, the analysis also revealed that consumer brand engagement does not significantly influence brand loyalty which demands further investigation.

IMPLICATIONS

Theoretically, the study adds to the marketing domain via the use of the TAM model in gamified mobile apps settings. For multinationals, it has become imperative to focus primarily on satiating the functional needs of the users effectively so as to generate a pool of engaged users. In the Telecom Industry, there exists a cutthroat competition, therein to engage consumers and subsequently retain them is a big challenge. But, usage of gamification mechanics in mobile apps increases the interaction time between the user and the app. Multinationals need to do their home task of customizing the preferences of users, and then developing gamification mechanics that flawlessly integrate the core functionalities to create a gamified ecosystem. Marketers need to create successful applications that incorporate gamification mechanics tactfully and are intended to contribute to consumer brand engagement as an outcome that further drives consumers' behavioral intention to use the app.

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