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The Examination of the User Engagement Scale (UES) in Small Medium Enterprise Social Media Usage: A Survey-Based Quantitative Study

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Abstract

Social media has proven to be an essential marketing tool for the success of any product, service, or business. User involvement affects the increase in revenue gain and creates long-term profit. The User Engagement Scale (UES) is one of the tools developed to measure user engagement and has been used in various digital domains. UES intends to compute six engagement dimensions: aesthetic appeal, perceived usability, focused attention, novelty, felt involvement, and endurability. This study investigates and verifies the three-factor structure of the UES. We used PCA to perform the analysis. The original data will be reanalyzed using UES, which consists of 220 valid responses. The result shows that the UES examination indicates good reliability in three factors: Factor 1 encompasses felt involvement (FI), aesthetic appeal (AE), novelty (NO), and endurability (EN). Factor 2 aggregates the perceived usability (PU) items. Factor 3 pertains to focused attention (FA) items. Our findings indicate that the User Engagement Scale is a valuable and suitable measurement tool for assessing user engagement in the context of social media within small and medium enterprises.

Keywords: social-media; PCA; user engagement scale; user engagement; quantitative research; small medium enterprise

1. Introduction

Social media is a collection of Internet-based apps that build on the conceptual and technical roots of Web 2.0 and allow for the production and sharing of user-generated content [1]. Users alter, distribute, and repurpose information on social media regardless of its initial intent or goal. Social media meets the needs and interests of users, and it is also helpful as a smart advertising and marketing medium for an organization. The role of social media becomes crucial in the interaction between different social groups. Not only that, but social media is also a connecting medium for people who have similar interests.

The different functions of social media include network facilitator, marketing tool, engagement tool, education and learning tool, and a platform that affords career planning and entrepreneurial chances [2]. In addition, social media as a marketing medium involves various platforms, such as Facebook, Twitter, Instagram, TikTok, and LinkedIn, to reach consumers innovatively.

Social media has been demonstrated to be an essential marketing tool in determining the future of any product or service, or business [3][4]. At the beginning of the 21st century, social media usage has become the most prevalent business approach, particularly among Small and Medium-Sized (SMEs) Businesses [3], [5], [6]. There are several advantages of using social media to promote SMEs. For example, social media represents one of the primary motivating elements for small and medium-sized enterprises (SMEs) to maintain company development, increase product sales, interact with consumers, and broaden their market connections.

Research has proven that social media is essential for Micro, Small, and Medium Enterprises (SMEs) [7]. Over 90 million SMEs are currently on Facebook. Furthermore, the number of social media users in Indonesia was 191 million in January 2022, an increase of 21 million or 12.6 percent from 2021. YouTube is Indonesia's most popular social media platform, with 139.0 million users. The second most popular social media is Facebook, which has 129.9 million users, then Instagram, with 99.15 million users. TikTok has 92.07 million users aged 18 years and over, and Twitter has 18.45 million. SMEs could promote their business through social media, ensure massive communication with buyers, and increase sales because consumers spend most of their time on these platforms. These could provide an excellent opportunity to reach consumers anywhere and anytime.

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The primary objective of all forms of social media is to engage users [1], [8], [9], wherein in a business organization, the involvement of people can generate profits. User involvement increases revenue and long-term profits. Using Facebook's 'like' function, for instance, may facilitate the distribution of promotional content in a manner that conventional techniques cannot [10]. Utilizing Facebook additionally promotes visitors to a company's website, boosting its exposure and search engine rating. In addition, marketing events may offer products and services to a broader audience [10]. Therefore, social media is very practical when applied to SMEs, as shown in the research by Geho et al. [11]. The research analyzes the effect of user engagement when ordering coffee online via Twitter, followed by research conducted by Lacho and Marinello [10], which investigated the effect of user engagement on special lunch offers, including food preparation videos, via Facebook.

User engagement describes how and why an application can attract people to use it [12]. According to O'Brien and Toms's research, engagement is the excellence of the user experience that is determined by several factors. These factors include the aesthetic appeal, novelty, usability of the system, the user's ability to be present and involved in the experience, and the user's overall evaluation of the significance of the experience [13]. Furthermore, the level of engagement a user has is determined by the amount of involvement they can achieve in each facet of an experience.

The previous research conducted by Webster and Ho [14] and Jacques et al. [15], who investigated engagement in educational multimedia systems, served as the foundation for the development of the User Engagement Scale (UES). The two researchers designed and administered a survey that covered several engagement characteristics (e.g., user perceptions of challenge, concern, evaluation, variety, eagerness, and personal interests). O'Brien then emphasizes the multidimensional characteristics of UE. Research reveals that six attributes— focused attention (FA), felt Involvement (FI), aesthetic appeal (AE), novelty (NO), perceived usability (PUs), and endurability (EN)— are given as criteria for defining the user experience during the interaction between human and computer.

Aesthetic Appeal (AE): The user's impression of a computer application interface's aesthetic appeal. Endurability (EN): Evaluation of the user's overall experience, perception of the app's success, and whether or not they would recommend it to others. This factor integrates the concepts of user return probability [16] and system success assessment [17]. Felt Involvement (FI): The user is captivated, intrigued, and enjoying the conversation. Focused Attention (FA): Attention of mental activity [18]; incorporates several components of flow, including focused concentration, absorption, and temporal dissociation [19]. Novelty (NO): The user's degree of interest in the work and curiosity about the system's contents. The user's emotional (e.g., annoyance) and cognitive (e.g., effort) reactions to the system.

The User Engagement Scale (UES) is a well-grounded and reliable tool for evaluating perceived user engagement. The original UES contained 30 items and six criteria. However, later research excluded elements from the first analysis because they needed more contextual or system relevance [21]. Researchers have also identified a four- or five-factor structure [22]–[24] despite the evidence implying that the UES is a reliable and valid method for measuring perceived user engagement across several domains. In the previous research, there is no investigation regarding user engagement on SME social media.

User Engagement Scale (UES) is a measuring instrument designed for the UE to produce interesting results [23], [25], [26]. However, designing for the UE in an SME social media environment may differ. From instant messaging to social networking sites, social media apps enable people to engage, interact, and talk to each other [27]. This application seeks to develop, start, and share new online sources of information on customers' product, brand, and service experiences. Furthermore, it concerns enabling them to "share," "tagged," or "post" online [9]. People Involvement is the main goal of all types of social media [1], [8], [9], which may be advantageous for organizations. This situation indicates that organizations must optimize their use of social media. This circumstance necessitates firms investigating how to identify and capitalize on the commercial value generated via user engagement in social media use.

Various methods, including Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA), and Path Analysis (PA), were used by earlier researchers to undertake the User Engagement scale assessment. For example, O'Brien and Toms [13] employed Confirmatory Factor Analysis (CFA) and Path Analysis (PA) to demonstrate the reproducibility of the factor structure compared to the original and to analyze the interactions between the components, respectively. Using this approach, the user engagement scale in e-shopping would be accurately quantified. On the other hand, O'Brien et al. [28] utilized PCA analysis to get insight into possible difficulties with the factor structure of the UES in the news domain. It shows that Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA), and Path Analysis (PA) are reliable measurements to test the User Engagement scale components.

The problem arises when majority of SME utilize social media to promote their product, especially since pandemic. Around 10-11 million SME has joined the

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digital ecosystem. The User Engagement Scale (UES) is a widely used tool to assess engagement in various contexts, including information retrieval, online news, online video, education technology, consumer apps, haptic technologies, and video games [20]. As far as we know, there has been no prior research on UES in the context of social media among SMEs. This study aims to fill this gap by evaluating the User Engagement Scale in small and medium enterprises social media.

This research measures user engagement on social media in micro, small, and medium enterprises using Confirmatory Factor Investigation (CFA), Path Analysis (PA), and principal component analysis (PCA). Confirmatory factor analysis is beneficial for examining the robustness of the UES in general, especially in new contexts, with new populations in other research topics. CFA was used to evaluate the structure of the factor scale. PA is used to study the interactions between the components, whereas PCA is used to analyze the UES items' factor structure. The PCA approach was utilized in this study since the user engagement scale contains many correlated factors. This research aims to provide a valid and accurate instrument for measuring how well small and medium-sized enterprises (SMEs) utilize social media in relation to user engagement. In the following sections, we measure user engagement in social media SMEs, describe ongoing research, and then review the results. In this research, we discuss validation and user engagement scales.

2. Research Methods

This section assesses the new user engagement scale on SME social media. This research evaluates user involvement and verifies its reliability and validity related to SME social media. The goal of this research is to provide an assessment of the new scale employed in social media usage in SMEs. This study gathered several questionnaires for SME customers from the previous literature review. Further validation will be by applying user engagement in SMEs' social media. The evaluation is done by Reliability and Validity analysis. The consistency of essential element subscales is evaluated using reliability analysis [29]. A data reduction approach discovers and organizes the most cost-effective elements into six underlying factors or variables. The research flow is shown in Figure 1.

A sample of 220 respondents was utilized to assess the validity and structure of the scale factor. First, Confirmatory Factor Investigation (CFA) and Path Analysis (PA) are performed using Structural Equation Modeling (SEM). The CFA seeks to validate the structure of the six-factor scale, while the PA investigates the interactions between the components. Then, using principal component analysis (PCA), the factor structure of the UES items was explored.

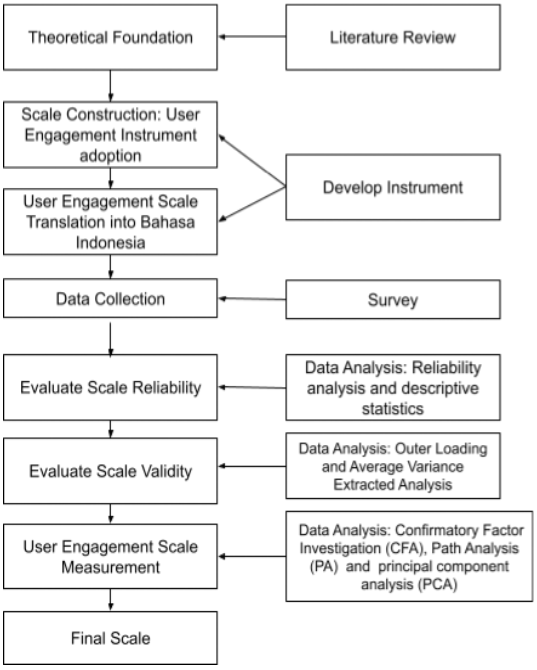

Figure 1. Research Flow

2.1 Data Collection

Google form was used to gather data, which was then disseminated utilizing social media: Instagram, Twitter, Facebook, and chat messengers such as WhatsApp.

2.2 Procedure

There are five stages in this survey. First, the user engagement scale was translated into Indonesian and checked by three lecturers and two students for the validity of the translation of each item. Second, for content validity, expert reviews are invited to revise each item in the context of social media SMEs. The experts are four SME consumers who have purchased SME items through social media and used social media for over ten years. The four experts were chosen because they have extensive experience with social media and understand how to utilize it. The expert revises each item; the initial item is a question for the e-shopper domain, and the question still needs to be particular to social media; following a review with the expert, the question item is modified to reflect the social media domain. Third, all measures were applied to a small group of respondents (n = 30) interactively, and each item was checked to determine whether the target group understood the item. Fourth, a research questionnaire was prepared and distributed to the respondents, including a brief explanation of the research objectives and demographic questions. Finally, Validity, Last reliability, Confirmation Factor Analysis (CFA), Pathway Analysis (PA), and Principal component analysis (PCA) is used to investigate the factor structure of the UES items and the relationships between factors.

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2.3. Questionnaire

The questionnaire was adopted from O'Brien et al [28] and adapted to the context of social media SMEs. There are 30 research instruments consisting of six constructs, namely: Focused Attention (FA), Novelty (NO), Felt Involvement (FI), Aesthetic Appeal (AE), Perceived Usability (PUs), and Endurability (EN). Table 1 shows the question instrument in this study.

Table 1. Question Instrument

Construct	Item	Question instrument
Focused Attention	FA1	I am carried away when using the SME social media
	FA2	I enjoyed the experience of using this social media so much that I lost track of time
	FA3	I limit activities around me when I use the SME social media
	FA4	When I use social media, I lose track of the world around me.
	FA5	The time I spent using social media just flew by
	FA6	I feel focused on using SME social media
	FA7	While browsing social media, I let myself enjoy it
Perceived Usability	PU1	I feel frustrated using the social media
	PU2	I find social media confusing
	PU3	I feel irritated when I use social media
	PU4	I feel hopeless when using the social media
	PU5	Using social media is tiring
	PU6	The experience of social media browsing is troublesome
	PU7	I feel in control when I use social media
	PU8	I cannot do some of the things I need to do while using those social media
Aesthetic Appeal	AE1	Social media is interesting
	AE2	Social media is aesthetically attractive
	AE3	I like the graphics and images on social media
	AE4	Social media is visually appealing
	AE5	The layout of the social media is visually good
Endurability	EN1	Using social media is useful
	EN2	I feel like I can explore social media successfully/well
	EN3	The experience of using social media did not go as I had planned
	EN4	Experience in using social media is useful
	EN5	I will recommend social media to family and friends
Novelty	NO1	I continue to use social media out of curiosity
	NO2	The social media content arouses my curiosity
Felt Involvement	FI1	I am very interested in the experience of using social media
	FI2	I feel involved in the experience of using social media
	FI3	This experience of using social media was fun.
Focused Attention	FA1	I am carried away when using the SME social media
	FA2	I enjoyed the experience of using this social media so much that I lost track of time
	FA3	I limit activities around me when I use the SME social media
	FA4	When I use social media, I lose track of the world around me.
	FA5	The time I spent using social media just flew by
	FA6	I feel focused on using SME social media
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	PU5	Using social media is tiring
	PU6	The experience of social media browsing is troublesome

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Construct	Item	Question instrument
Aesthetic Appeal	PU7	I feel in control when I use social media
	PU8	I cannot do some of the things I need to do while using those social media
	AE1	Social media is interesting
	AE2	Social media is aesthetically attractive
	AE3	I like the graphics and images on social media
	AE4	Social media is visually appealing
	AE5	The layout of the social media is visually good
Endurability	EN1	Using social media is useful
	EN2	I feel like I can explore social media successfully/well

3. Results and Discussions

3.1 Participants

The research was conducted based on the application of a questionnaire developed in the context of thorough research on the scale of user involvement in small and medium enterprises. From May to July 2022, the researcher shared the questionnaires online. The questionnaire items use the Likert scale with 4 degrees of intensity (1 "Strongly Disagree" to 4 "Strongly Agree"). Questionnaires distribution is via Google Forms to customers who have purchased or used SME services. A total of 220 respondents filled out the questionnaire. The majority of respondents are 31-40 years old, and most of them are women. Table 2 presents the demographic characteristics of the respondents.

Table 2. Respondents' Demographic Characteristics (N = 220)

Variable	Characteristic	n%
Gender	Male	24.55
	Female	75.45
Age	21-30	70.45
	31-40	19.55
	41-50	6.82
	>50	3.18
Social Media	E-Commerce (Shopee, Tokopedia, Lazada, JD.ID)	15.91
	Facebook	12.73
	Instagram	51.36
	TikTok	0.45
	Twitter	3.18
	WhatsApp	15.45
	Youtube	0.91
Domicile	Banten	4.09
	Bengkulu	0.91
	DI Yogyakarta	0.91
	DKI Jakarta	4.55
	Jawa Barat	13.12
	Jawa Tengah	59.09
	Jawa Timur	3.64
	Kalimantan Selatan	2.27
	Lampung	1.36
	Nanggroe Aceh Darussalam	2.27
	Papua	0.45
	Sulawesi Selatan	0.91
	Sulawesi Tengah	3.64
	Sulawesi Tenggara	1.82
	Sumatera Selatan	0.45
	Sumatera Utara	0.45

3.2 Reliability Analysis and Descriptive Statistics

Cronbach's alpha assesses the subscale reliability; values ranging from 0.7 to 0.9 are considered optimal [30]. Table 3 displays Cronbach's alpha reliability testing findings, each sub-scales mean, and standard deviation. Cronbach alpha values for AE, PUs, EN, FA, NO, and FI ranged from "very excellent" to "very good," and no items were deleted from this subscale. The means were computed by summing the scores of each participant for each subscale's items, and the sum was divided by the number of items in that subscale. Each subscale's mean and standard deviation were computed using these individual scores. The means results for PU, FA, and NO are suitable for a 4-point Likert scale, but the average AE, EN, and FI ratings are relatively high.

Table 3. Reliability Analysis and Descriptive Statistics

Scale	No Items	Cronbach's alpha	Mean	Standard Deviation
Focused Attention (FA)	7	0.86	2.47	0.83
Perceived Usability (PU)	8	0.78	1.98	0.71
Aesthetic Appeal (AE)	5	0.80	3.21	0.65
Endurability (EN)	5	0.76	3.05	0.68
Novelty (NO)	2	0.80	2.89	0.70
Felt Involvement (FI)	3	0.89	3.11	0.67

3.3 Validity Analysis

Data validity is measured using convergent validity. If the outer loading item is more than 0.6, it indicates more joint variance than the error variance (Hair et al., 2009). Table 4 shows the outer loading on all valid scales except for the 5 question items (EN, FA4, FA5, PU7, and PU8) on the endurability, Focused Attention, and perceived usability scales where the values are less than 0.6.

Table 4. Outer Loading

	Aesthetics	Endurability	Focus Attention	Felt Involvement	Novelty	Perceived Usability
AE1	0.73					
AE2	0.87					
AE3	0.90					
AE4	0.81					
AE5	0.85					
EN1		0.84				
EN2		0.72				
EN3		-0.12				
EN4		0.83				
EN5		0.71				
FA2			64			
FA4			52			
FA5			57			
FA6			76			

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	Aesthetics	Endurability	Focus Attention	Felt Involvement	Novelty	Perceived Usability
FA7			77			
FI1				89		
FI2				81		
FI3				82		
NO1					88	
NO2					92	
PU1						79
PU2						78
PU3						86
PU4						85
PU5						72
PU6						828
PU7						.071
PU8						.586

Average variance Extracted (AVE) is also used to measure convergent validity. If all variables have a value of more than 0.5, then the variable is valid. For example, Table 5 shows that all scales are valid with a value of more than 0.5, except for the Focus attention scale, which has an AVE value of 0.44.

Table 5. Average Variance Extracted (AVE)

Scale	No Items	Average Variance Extracted (AVE)
Focus attention	7	0.44
Perceived Usability(PU)	8	0.65
Aestetic Appeal (AE)	5	0.71
Endurability (EN)	2	0.81
Felt Involvement (FI)	3	0.71

3.4 Path Analysis

According to Path Analysis, the connections between Aesthetic Appeal, Focused Attention, and Felt Involvement were mediated by Perceived Usability. In other words, Perceived Usability had a significant role in predicting SME customers' perceptions of the social media experience. Moreover, Aesthetic Appeal and Novelty were predictors in the model, suggesting that users would opt to spend their attention and engage in social media SMEs, is shown in Figure 2.

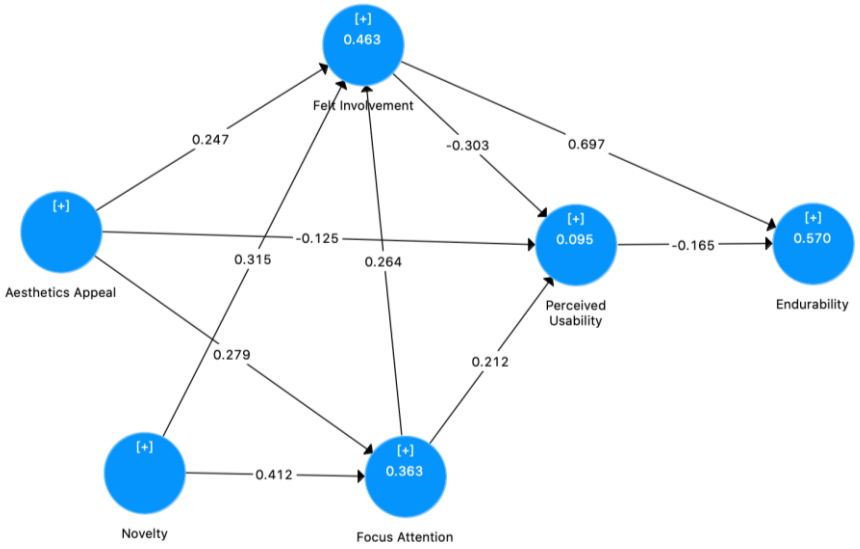

Figure 2. Path Model of UES in SME Social-Media

In addition, the user's evaluation of the visual appearance of SME social media and their emotions of attraction, interest, and enjoyment during social media engagement are adversely connected with their emotional and cognitive reactions to social media. Finally, the association between users' emotive and cognitive reactions to social media has a negative correlation with users' overall perception of the experience of using SME social media.

3.5 Factor Analysis

This research seeks to comprehend the notion of user engagement and evaluate the use of UES on SME social media; where the Principal Component Analysis (PCA) employs varimax rotation, it is recommended that a factor analysis be performed when using UES. The primary reason for using PCA is that UES was originally designed in English, and there is no Indonesian version.

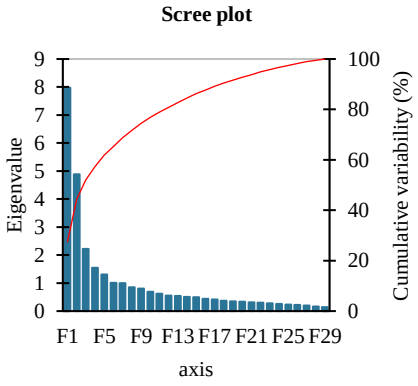

Figure 3. Scree Plot and Eigenvalue

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The scree plot and eigenvalues showed a three-factor approach (see Figure 3). Principal axis factor analysis (PAF) with Promax rotation was conducted first. In the initial six-factor solution, all loaded item is only on the three rotated factors. The three-factor model (Table 6) accounted for 51.99% of the total variance. The items AE, EN, NO, and FI comprise Factor 1, accounting for 27.47% of the variance. The remaining PU items are loaded together at Factor 2, contributing 16.85% to the total variance. Finally, FA items (Factor 3) contributed 7.67% of the variance.

Table 6. Variance

	F1	F2	F3
FA1	0.193	0.465	0.567
FA2	0.339	0.506	0.538
FA3	0.142	0.439	0.625
FA4	0.163	0.677	0.368
FA5	0.247	0.572	0.451
FA6	0.689	0.060	-0.083
FA7	0.418	0.347	0.06
PU1	-0.302	0.680	-0.273
PU2	-0.354	0.554	-0.437
PU3	-0.354	0.706	-0.333
PU4	-0.372	0.667	-0.356
PU5	-0.358	0.572	-0.2
PU6	-0.388	0.681	-0.254
PU7	0.227	0.320	-0.048
PU8	0.676	0.008	-0.132
AE1	0.593	0.272	-0.003
AE2	0.678	0.132	-0.015
AE3	0.688	0.082	0.045
AE5	0.689	0.089	-0.007
EN1	0.663	-0.112	-0.244
EN2	0.594	-0.041	-0.254
EN3	-0.113	0.394	-0.261
EN4	0.646	-0.179	-0.198
EN5	0.667	0.008	-0.118
NO1	0.508	0.344	-0.059
NO2	0.707	0.173	-0.096
FI1	0.730	0.054	-0.28
FI2	0.657	0.186	-0.314
FI3	0.753	-0.129	-0.093

3.6 Discussion

We conducted a study using UES in the SME social media domain to test its usefulness as a measure of SME social media use. Regarding reliability, the research demonstrated the internal consistency of the six pre-PCA subscales, the original UES subscale (AE, FA, FI, PUs, and NO). A three-factor solution emerges during PCA. This research presents a three-factor model instead of the six-factor model presented by O'Brien and Toms [23].

This subscale has shown excellent internal consistency before factor analysis. First, the AE, NO, FI, and EN subscales item focuses on the user's experience evaluation. The Novelty subscale contains items related to curiosity about social media application content and interest in assignments. The Felt Involvement subscale addresses involvement. Users feel engaged in their tasks and rate their overall experience as enjoyable. One version is visually pleasing, whereas the other is not due to differences in the aesthetic aspects (colors, typefaces, and advertisements). The aesthetic appeal subscale successfully distinguishes variations between these two interfaces. The Endurability item invites users to examine the result of their app experience, i.e., whether the app was successful and helpful and if they would recommend it to relatives and friends. It is probable that this evaluation, which varies from their perception of the application's usability (PU) or capacity to produce a state of flow (FA), correlates with the interaction's perceived worth and its level of success.

3.6.1 Theoretical Implications

This research contributes to the existing research domain, particularly regarding the user engagement scale in social media SMEs. We evaluate the user engagement scale in the small to medium-enterprise social media area using three distinct measures. First, Path analysis and confirmatory factor analysis examine the function of Perceived Usability as a mediator between Aesthetic Appeal, Focused Attention, and Felt Involvement. Our findings indicate that Perceived Usability is an essential component and that the affective and cognitive aspects of using social media in SMEs influence users' propensity to repeat this experience in the future. Moreover, according to O'Brien and Toms [23], positive user reactions to the Usability and utility of a computer-based system for a given job are essential for user engagement.

The second theoretical implication is from our diverse findings on the three-factor solution on the user engagement scale of social media SMEs. The first factor comprises four subscales: aesthetic appeal, novelty, felt involvement, and endurance. The visual look of social media is strongly connected to user engagement and interest in SME products on SMEs. Social media also makes users promote social media to others to observe the SME's products. The second factor is perceived Usability, which includes user affective engagement and the degree of control and effort exerted in response to social media usage. Usability measurements among social media users include ease of use, effort, and preference. The third factor is focused attention. Focused attention is a flow theory characteristic defined by temporal separation and total immersion in an activity [19]. Focused attention is crucial to the entire experience; for example, a social media user may concentrate on an SME product.

3.6.2 Practical Implications

The latest UES was driven by the conclusion that engagement is a multidimensional concept and that it is necessary to reexamine its potential attributes and their interrelationships [23], [26]. Therefore, this study utilized the User Engagement Scale to quantify user engagement in the social media SME area. This study confirms the multidimensionality and internal

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consistency of User Engagement's subscales. This research also provides evidence for the concurrent validity and reliability of the UES. The user Engagement Scale may be used to quantify user engagement in social media for small and medium-sized businesses. It may be immediately applied so that the business owner can determine whether social media can increase revenue and provide value to the business and the level of user engagement with social media.

3.6.3 Limitations and Future Research

This study is limited because the collected data was from a survey of SME Customers who had purchased or utilized SME services. This shows that the engagement is restricted to SME customers. Nevertheless, a product owner also uses social media. Therefore, our findings are inapplicable to people who have never purchased in social media SME. This constraint compels us to do further research in the future to determine if product owners or other customers who have never purchased or utilized SME services are engaged with social media.

4. Conclusion

In conclusion, we discovered evidence supporting the dependability and validity of the UES concept applied to SME social media. Based on the result, all of the scale shown reliable. Meanwhile, the validity describes that majority scales are valid except focused attention. The 5 question items on the endurability, Focused Attention, and perceived usability scales are not valid. Nonetheless, the arrangement of items for the endurability, focused attention, and perceived usability subscales must be more complete and clearer. If the UES is a three-factor instrument, assessing the items comprising these subscales is necessary to verify that they accurately reflect the constructs they measure. The following stage is crucial because it will establish how researchers will utilize the UES and how to compute the subscale. The evolving three-factor model from this research prompted us to examine scale modification at each item, size, and level of the overall scale. The process of scale assessment is parallel. This research can only refine the UES's features and produce a reliable, valid instrument for assessing user experiences with social media by testing it in SME contexts.

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