REICE
Revista Electrónica de Investigación en Ciencias Económicas
Abriendo Camino al Conocimiento
Área de Conocimiento de Ciencias Económicas y Administrativas
Universidad Nacional Autónoma de Nicaragua, Managua (UNAN-Managua)

Vol. 12, No. 24, julio – diciembre 2024 **REICE ISSN: 2308-782X**
https://revistas.unan.edu.ni/index.php/reice
revista.reice@unan.edu.ni

Understanding Public Engagement on Government Social Media: A Structural Equation Modeling Approach

Comprender la participación pública en las redes sociales gubernamentales: un enfoque basado en modelos de ecuaciones estructurales

Fecha de recepción: septiembre 29 de 2024
Fecha de aceptación: octubre 25 de 2024
DOI: https://doi.org/10.5377/reice.v12i24.20096

Kee Lai Sien*
Faculty of Applied Communication, Multimedia University, Malaysia
Corresponding author Email: keelaisien@gmail.com
ORCID: https://orcid.org/0009-0004-7105-4425

Mokhtarrudin Ahmad
Faculty of Applied Communication, Multimedia University, Malaysia
Email: mokhtarrudin@mmu.edu.my
ORCID: https://orcid.org/0000-0002-3696-3015

Ong Sue Lyn
Learning Institute for Empowerment (LiFE), Multimedia University, Malaysia
Email: slong@mmu.edu.my
ORCID: https://orcid.org/0000-0001-5622-1871

Abstract

The study investigates the determinants of public engagement on government social media platforms in Malaysia, employing Structural Equation Modeling (SEM) to analyse the relationships between key variables. The research examines the influence of performance expectancy, effort expectancy, perceived content, social influence, and facilitating conditions on public engagement, while also exploring the mediating effects of gratification. The relationship model demonstrates strong fit, supported by the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values nearing 1, indicating a high degree of model fit. This suggests that the model accurately captures the relationships between observed variables and their underlying constructs. Additionally, the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) values fall below the recommended thresholds of 0.08, further affirming the model's adequacy in representing the complexity of the relationships among the variables. While the structural model exhibits slightly lower CFI and TLI values compared to the measurement model, indicating potential room for improvement, the RMSEA and SRMR values remain within an acceptable range. This suggests that while there may be areas for refinement, the structural model adequately represents the relationships between the variables. The results provide valuable insights for policymakers and government agencies seeking to optimize their social media communication strategies and foster greater citizen participation.

***Keywords*:** Public Engagement, Government Social Media, Structural Equation Modeling, Mediating Effects.

Resumen

El estudio investiga los determinantes de la participación pública en las plataformas de redes sociales del gobierno en Malasia, empleando el modelo de ecuaciones estructurales (SEM) para analizar las relaciones entre las variables clave. La investigación examina la influencia de la expectativa de desempeño, la expectativa de esfuerzo, el contenido percibido, la influencia social y las condiciones facilitadoras en la participación pública, al mismo tiempo que explora los efectos mediadores de la gratificación. El modelo de relación demuestra un ajuste sólido, respaldado por los valores del índice de ajuste comparativo (CFI) y del índice de Tucker-Lewis (TLI) cercanos a 1, lo que indica un alto grado de ajuste del modelo. Esto sugiere que el modelo captura con precisión las relaciones entre las variables observadas y sus constructos subyacentes. Además, los valores del error cuadrático medio de aproximación (RMSEA) y del residuo cuadrático medio estandarizado (SRMR) caen por debajo de los umbrales recomendados de 0,08, lo que confirma aún más la adecuación del modelo para representar la complejidad de las relaciones. entre las variables. Si bien el modelo estructural muestra valores de CFI y TLI ligeramente inferiores en comparación con el modelo de medición, lo que indica un margen potencial de mejora, los valores de RMSEA y SRMR se mantienen dentro de un rango aceptable. Esto sugiere que, si bien puede haber áreas para mejorar, el modelo estructural representa adecuadamente las relaciones entre las variables. Los resultados brindan información valiosa para los responsables de las políticas y las agencias gubernamentales que buscan optimizar sus estrategias de comunicación en las redes sociales y fomentar una mayor participación ciudadana.

Palabras claves: Participación pública, Redes sociales gubernamentales, Modelado de ecuaciones estructurales, Efectos de mediación.

Introduction

Background of the study

In the digital age, government organizations worldwide are increasingly utilizing social media platforms to engage with the public and disseminate information (van der Giessen & Bayerl, 2022). In Malaysia, it is obvious to be shown from the results of Malaysia's 12th General Elections, the popularity of online media has grown to rival that of mainstream media, demonstrating its function as a catalyst for outcomes (bin Zakaria & Ahmad, 2015; Rajaratnam, 2009). Hence, Malaysian government agencies have recognized the importance of leveraging social media to enhance communication and interaction with citizens and have actively promoted e-government initiatives to facilitate communication and service delivery (Khadzali & Zan, 2019; Rahim et al., 2019). The effectiveness of government social media initiatives depends on the extent to which citizens engage with the content and participate in discussions. The government's failure to encourage meaningful interactions among citizens has raised concerns about the efficacy of communication strategies and the capacity to facilitate engagement (Nadzir et al., 2019; A. Rahim et al., 2019; Khadzali & Zan, 2019). Therefore, to understand and improve public engagement on government social media in Malaysia, it is essential to investigate the factors influencing citizens' engagement behaviors.

Previous research on public engagement on government social media platforms has explored various factors influencing users' behavior and interactions. Studies have investigated the role of performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, gratification, and public engagement, shedding light on the complex dynamics shaping online engagement in the context of government communication.

Literature review

Performance expectancy, defined as the extent to which individuals believe that using a specific technology will help them achieve gains in job performance (Tha'er et al., 2021; Venkatesh et al., 2003), has been examined in several studies.

For instance, the higher levels of performance expectancy were positively associated with users' intention to engage with government social media platforms (Idemudia, 2018; Khan et al., 2021). Similarly, Alkraiji (2021) identified perceived usefulness as a significant determinant of citizens' intention to participate in e-government initiatives.

Effort expectancy, which represents the degree of ease associated with using a technology (Venkatesh et al., 2003), has also received attention in the literature. Research by Hujran et al. (2020) demonstrated that perceived ease of use, a concept closely related to effort expectancy, significantly influenced users' satisfaction with government social media platforms. Additionally, Idemudia et al. (2018) found that effort expectancy positively influenced citizens' intention to use government mobile applications.

Perceived content, referring to the quality and relevance of information available on social media platforms (Mokmin & Ibrahim, 2021; Zheng et al., 2013), has been explored in studies examining the impact of content characteristics on user engagement. For instance, perceived content quality significantly influenced users' participation and trust in government social media platforms (Chen et al., 2020; Mukti & Putri, 2021) and engagement (Alonso-Cañadas et al., 2020). Hefler et al. (2020) identified content relevance as a critical determinant of citizens' satisfaction with government communication on social media.

Social influence, reflecting the degree to which individuals perceive that important others believe they should use a specific technology (Liu et al., 2020; Mäntymäki & Riemer, 2014; Venkatesh et al., 2003), has been investigated in the context of online peer interactions and social norms. Research by Liu et al. (2020) demonstrated that social influence significantly related to citizens' use and engagement with government social media platforms, highlighting the importance of social factors in shaping online behaviour. Additionally, Tha'er et al. (2021) found that social influence positively influenced users' trust in government information disseminated through social media channels.

Facilitating conditions, which include the technical and organizational infrastructure that supports technology use (Blut et al., 2021), has been a key focus of studies on the usability and accessibility of technology, particularly government digital platforms. Sawalha et al. (2019) found that perceived ease of access to government social media platforms positively influenced citizens' intention to use these platforms for information seeking and interaction. Similarly, Chen (2018) identified facilitating conditions as a significant determinant of citizens' satisfaction with government mobile applications, emphasizing the role of these conditions in enhancing user satisfaction.

Gratification, serving as a mediator in the relationship between technology use and user outcomes (Chen & Cheung, 2019; Liu et al., 2020), has been studied in the context of user motivations and psychological rewards. Research by Mokmin and Ibrahim (2021) demonstrated that gratification significantly mediated the relationship between government social media use and citizens' trust in government. Additionally, Hariguna et al. (2019) found that gratification derived from government social media use positively influenced citizens' intention to participate in government activities.

Public engagement, defined as citizens' active involvement in government initiatives and decision-making processes (Yuan et al., 2023), has been a central focus of research on government social media usage. Studies have examined various dimensions of public engagement, including information seeking, interaction with government agencies, and participation in online discussions. For instance, Yang et al. (2021) found that citizens' engagement with government social media positively influenced their trust in government and perceived government transparency. Overall, previous research has provided valuable insights into the determinants of public engagement on government social media platforms. By examining factors such as performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, gratification, and public engagement, researchers have advanced the understanding of the mechanisms underlying online citizen engagement. The research aims to examine the influence of performance

expectancy, effort expectancy, perceived content, social influence, and facilitating conditions on public engagement, while also exploring the mediating effects of gratification. However, further research is needed to explore the complex interactions between these variables and their implications for government communication strategies in the digital age.

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides the conceptual basis for this study, guiding the examination of users' behavioural of technology, Uses and Gratification Theory and the Social Media Engagement Theory were used to form the theoretical framework of the study. The Uses and Gratification Theory posits that users' gratification of public engagement will be fulfilled once the desire for performance expectancy, effort expectancy, social influence, facilitating conditions, and the content of the social media is met, which leads to the engagement of that media (Rubin, 2009; Blumler, 1974). This theory justifies the possible links between an individual's perception and behavioural engagement intention (Blumler, 1974). The intention and motivation to use the government social media platform indicates a person's readiness to engage in behaviour like government social media usage. In this Social Media Engagement Theory, the more frequently users take part in a social media site, the more exploration of contents users can get within the social media site. Accordingly, this theory is a new viewpoint on how the user experience drives engagement and, as a result, utilisation has emerged (Di Gangi & Wasko, 2016). In addition, gratification refers to user satisfaction regarding their experience, which implies that users' gratifications are strengthened through their positive experience with media (Stafford & Stafford, 1996). Hence, it means that if an individual has good experience in government social media, in terms of e-government adoption, their perception of content and social media usage will lead the users to use it and engage with it.

Methodologies and Data

The research strategy employed in this quantitative study focuses on utilizing structural equation modeling (SEM) to investigate the relationships between

variables related to public engagement on government social media platforms. The methodology encompasses several key components, including survey questionnaire design, data collection procedure, sampling technique, statistical analysis, ethical standards, and informed consent.

Survey questionnaire design

The survey questionnaire is designed to capture various constructs related to public engagement, including performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, gratification, and public engagement itself. Each construct is operationalized using multiple items based on established theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Blut et al., 2021) and relevant literature on public engagement and social media usage. The questionnaire items are carefully crafted to ensure clarity, relevance, and comprehensiveness in measuring the intended constructs.

Data collection procedure

Data collection is conducted using a structured survey administered to a sample of participants recruited from the target population. The survey is distributed electronically via online survey platforms, which is Google Form, to ensure efficient data collection and minimize logistical constraints. Participants are provided with clear instructions on how to complete the survey and are assured of the confidentiality and anonymity of their responses. Additionally, participants were incentivized to increase response rates and encourage participation.

Sampling technique

The sampling technique employed in this study involves the selection of a representative sample of 600 participants from the target population. Participants were recruited through multi-stage sampling, whereby individuals who met the criteria of being Malaysian citizens and active social media users of selected government agencies were invited to participate in the study. Several strategies were employed to enhance the response rate and ensure the quality of responses. These

included providing clear instructions and explanations of the survey objectives, ensuring anonymity and confidentiality of responses, and offering incentives or rewards for participation (Sekaran & Bougie, 2016).

Statistical analysis

The collected survey data are subjected to rigorous statistical analysis using structural equation modeling (SEM) techniques. SEM allows for the examination of complex relationships between latent variables and observed indicators, enabling researchers to test hypothesized models and evaluate the fit of the data to the theoretical framework (Fornell & Larcker, 1981). The analysis involves several steps, including model specification, parameter estimation, model fit assessment, and hypothesis testing. Model specification entails defining the relationships between latent variables and their corresponding indicators based on the theoretical framework and research hypotheses. Parameter estimation involves estimating the coefficients of the structural model using maximum likelihood estimation or other suitable estimation methods (Cortina, 1993). Model fit assessment involves evaluating the goodness of fit of the proposed model to the observed data using various fit indices such as the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Finally, hypothesis testing involves examining the significance of the estimated coefficients and assessing the strength and direction of the relationships between variables. Throughout the statistical analysis process, robustness checks and sensitivity analyses may be conducted to ensure the reliability and validity of the findings. Additionally, any potential sources of bias or confounding variables are carefully controlled to enhance the internal validity of the study. Overall, the quantitative methodology employed in this study aims to provide a rigorous and comprehensive analysis of the factors influencing public engagement on government social media platforms in Malaysia.

Ethical standards and informed consent

The Multimedia University (MMU) Research Ethics Committee has granted ethics approval for this study. The study's adherence to ethical standards and the protection of participants' rights and welfare are guaranteed by ethical sanction. Researchers adhere to the ethical standards established by professional organisations and regulatory bodies that oversee research practices. Before participating in the study, all participants are required to provide informed consent. Researchers have provided detailed information regarding the study's purpose, procedures, potential risks, benefits, confidentiality measures, and participants' rights. Participants were apprised that they had the option to withdraw at any time. Additionally, the information collected from the participants was encrypted and maintained as confidential. After obtaining the required information, participants were requested to provide explicit consent by clicking an online consent button on a Google Form. The consent procedure prioritises transparency and guarantees that participants are fully informed about the implications of their involvement.

Results and discussion

Findings

Validity and reliability are essential components of research studies, ensuring that the data collected accurately represents the intended constructs and that the measurements are consistent and trustworthy. In the context of this study, which investigates the determinants of public engagement on government social media platforms, validity and reliability analyses were crucial to ensure the quality and consistency of the measurement instruments utilized. Validity, in research terms, refers to the degree to which a measurement accurately captures the construct it intends to measure (Sekaran & Bougie, 2016). To establish validity, several measures were taken. First, content validity was ensured by carefully selecting and adapting measurement items based on established theoretical frameworks, such as the Unified Theory of Acceptance and Use of Technology (UTAUT). This involved ensuring that the items comprehensively covered the constructs of interest.

Additionally, face validity was established by seeking input from experts in the field to confirm the relevance and comprehensiveness of the selected items (Fornell & Larcker, 1981; Sekaran & Bougie, 2016).

Construct validity, another important aspect, was assessed through confirmatory factor analysis (CFA). CFA examines the relationships between observed variables and latent constructs, providing evidence of convergent and discriminant validity. Convergent validity was evaluated by examining the factor loadings of individual items, with values above 0.7 indicating strong convergent validity. Discriminant validity was assessed by comparing the square root of the average variance extracted (AVE) for each construct with the correlations between constructs, with AVE values greater than the squared correlations indicating discriminant validity (Sekaran & Bougie, 2016). Reliability, on the other hand, refers to the consistency and stability of measurement instruments over time and across different conditions. In this study, internal consistency reliability was assessed using Cronbach's alpha coefficient, a widely used measure in research. Cronbach's alpha values above 0.7 indicate acceptable reliability. Additionally, composite reliability (rho_a) was calculated as an alternative measure, with values above 0.7 also indicating acceptable reliability (Hair Jr et al., 2021; Rasoolimanesh, 2022).

Table 1 provides the results of the validity and reliability analyses conducted for each construct in the measurement model. The table includes Cronbach's alpha coefficients, composite reliability values, and AVE scores for each construct. These analyses ensure that the measurement instruments used in the study are valid and reliable, enhancing the credibility and robustness of the research findings.

Table 1. Validity and reliability analysis results

Construct	Cronbach's Alpha (α > 0.7)	Composite Reliability (Rho > 0.7)	Average Variance Extracted (AVE > 0.5)	Decision	Citation
Performance Expectancy	0.889	0.893	0.819	Acceptable	Hair et al. (2019); Nunnally and Bernstein (1994)
Effort Expectancy	0.916	0.918	0.857	Acceptable	Fornell and Larcker (1981); Hair et al. (2019)

Construct	Cronbach's Alpha (α > 0.7)	Composite Reliability (Rho > 0.7)	Average Variance Extracted (AVE > 0.5)	Decision	Citation
Facilitating Conditions	0.887	0.889	0.816	Acceptable	Hair et al. (2019); Nunnally and Bernstein (1994)
Social Influence	0.739	0.765	0.654	Acceptable	Fornell and Larcker (1981); Hair et al. (2019)
Perceived Contents	0.962	0.963	0.670	Acceptable	Hair et al. (2019); Nunnally and Bernstein (1994)
Gratification	0.863	0.869	0.708	Acceptable	Fornell and Larcker (1981); Hair et al. (2019)
Public Engagement	0.967	0.968	0.735	Acceptable	Hair et al. (2019); Nunnally and Bernstein (1994)

The purpose of this reliability and validity analysis is to confirm the robustness and accuracy of the measurement tools used to evaluate various constructs among 600 participants. Reliability, measured by Cronbach's alpha, shows strong internal consistency among the items for each construct. The Cronbach's alpha values, which range from 0.739 to 0.967, exceed the recommended threshold of 0.70 (Rigdon, 2012; Sekaran & Bougie, 2016), indicating that the items within each scale reliably measure the underlying constructs, such as performance expectancy, effort expectancy, facilitating conditions, social influence, perceived content, and gratification. In addition, the validity analysis includes assessments of convergent validity, discriminant validity, and Average Variance Extracted (AVE). Convergent validity is evaluated using composite reliability, which measures the consistency of constructs based on their indicators. The composite reliability values range from 0.765 to 0.968, indicating strong internal consistency within each construct. Discriminant validity is assessed by comparing the square root of the AVE for each construct with the correlations between constructs. The AVE values, which range from 0.654 to 0.857, exceed the threshold of 0.50, demonstrating that the variance explained by each construct’s indicators is greater than the measurement error (Fornell & Larcker, 1981; Henseler et al., 2015).

These reliability and validity analyses provide assurance that the measurement instruments used in this study are reliable and valid for assessing the intended constructs. The high Cronbach's alpha values and satisfactory composite reliability and AVE values indicate strong internal consistency and convergent validity among the items within each construct. Additionally, the discriminant validity analysis confirms that the constructs are distinct from each other, supporting the accuracy of the measurement instruments in capturing the intended concepts among the study participants. Overall, the reliability and validity findings enhance the credibility and rigor of the study outcomes, ensuring that the data collected are dependable and suitable for further analysis and interpretation in investigating the influencing factors of public engagement within the context of the studied constructs (Fornell & Larcker, 1981; Sekaran & Bougie, 2016).

The results of the SEM analysis revealed significant positive relationships between performance expectancy, effort expectancy, facilitating conditions, social influence, perceived content and public engagement on Malaysian government social media. Additionally, gratification was found to mediate these relationships, indicating that individuals' gratification from social media use influences their engagement behaviors. These findings provide empirical support for the theoretical framework and contribute to a deeper understanding of public engagement dynamics on government social media platforms in Malaysia. Structural Equation Modeling (SEM) is a sophisticated statistical method utilized to explore intricate relationships among variables within a theoretical framework. In this study, SEM serves as a robust analytical tool to examine the intricate interplay between various factors influencing public engagement on government social media platforms in Malaysia. Specifically, SEM allows for the investigation of the direct and indirect effects of performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, gratification, and public engagement.

At the heart of SEM lies the measurement model, which encapsulates the latent variables and their respective indicators. Each latent variable represents an underlying construct of interest, such as performance expectancy or gratification,

while the indicators manifest as observed variables, typically derived from survey items. Through SEM, the relationships between these latent constructs and their corresponding observed variables are meticulously analysed to discern the intricate patterns and associations within the data. By employing this approach, researchers can gain deeper insights into the complex phenomena under investigation and elucidate the underlying mechanisms driving public engagement behavior on government social media platforms. To evaluate the goodness of fit of the SEM model, several indices are considered. These include the chi-square (χ^2) test, the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) (Hair Jr. et al., 2020; Hair et al., 2019; Sathyanarayana & Mohanasundaram, 2024).

Table 2. The goodness-of-fit indices for the measurement model

Index	Cited	Admissibility	Result	Yes/No
χ^2			2656.025	
df			811	
χ^2/df	Kline (2023)	< 2: Good fit 2-3: Acceptable fit 3: Poor fit	3.275	Yes
RMSEA	Browne and Cudeck (1992)	< 0.05: Good fit 0.05-0.08: Acceptable fit 0.10: Poor fit	0.071	Yes
SRMR	Hu and Bentler (1999)	< 0.08: Good fit	0.078	Yes
GFI	Jöreskog and Sörbom (1984)	> 0.90: Good fit	0.597	No
AGFI	Jöreskog and Sörbom (1984)	> 0.90: Good fit	0.552	No
PGFI	Mulaik et al. (1989)	>0.05 Good Fit	0.536	Yes
NFI	Bentler and Bonett (1980)	> 0.90: Good fit	0.914	Yes
TLI	Hu and Bentler (1999)	> 0.90: Acceptable fit > 0.95: Good fit	0.913	Yes
CFI	Bentler and Bonett (1980)	> 0.90: Acceptable fit > 0.95: Good fit	0.917	Yes

The measurement model is evaluated using several fit indices to ensure that it adequately captures the relationships between the observed variables and their

underlying constructs. The goodness-of-fit indices for the measurement model are as Table 2 and follows: Chi-square = 2656.025, degrees of freedom (df) = 811, ChiSqr/df = 3.275, RMSEA = 0.071, GFI = 0.597, AGFI = 0.552, PGFI = 0.536, SRMR = 0.078, NFI = 0.914, TLI = 0.913, and CFI = 0.917. Although some indices, such as GFI and AGFI, are below the recommended thresholds, others like RMSEA, NFI, TLI, and CFI suggest an acceptable fit, indicating that the model reasonably represents the data.

Direct effects

The direct effects of the independent variables on the dependent variables reveal significant relationships, highlighting the key factors influencing gratification and public engagement, as shown in Figure 1:

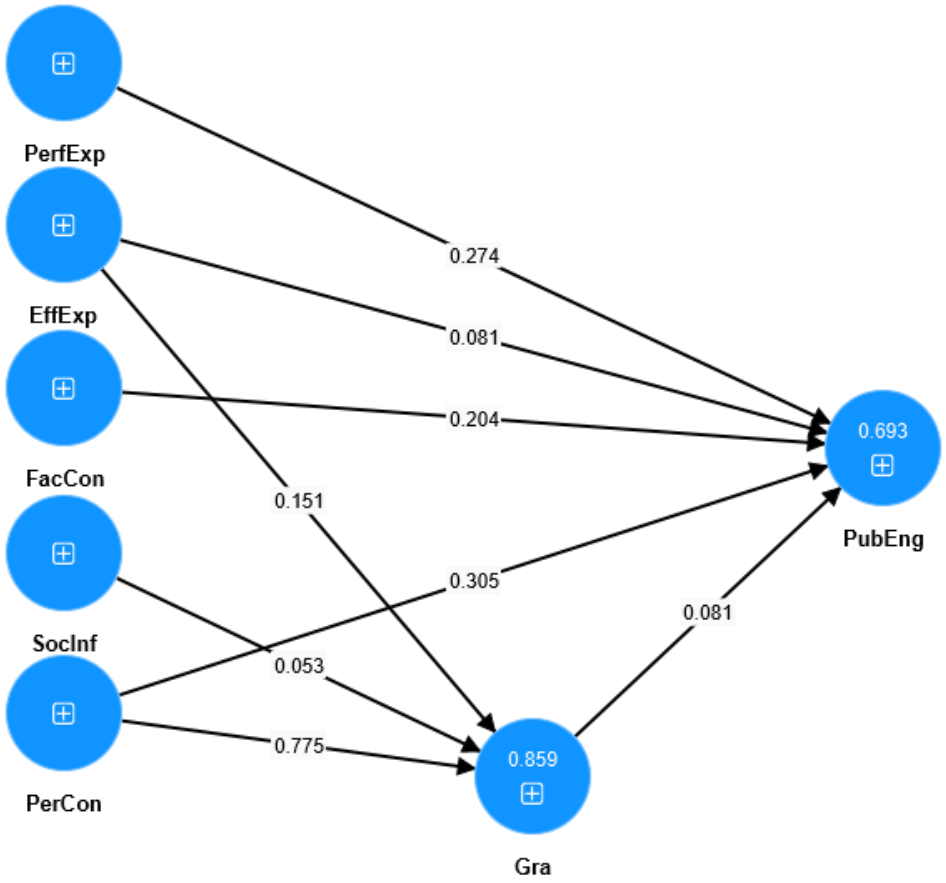

Figure 1. Structural equation modelling

Table 3. Path coefficient for direct effect

The Path	Parameter Estimate	Results
PerfExp to PubEng	0.274 (SE=0.034, t=8.059, P<0.05)	significant positive
EffExp to Gra	0.151 (SE=0.038, t=3.949, P<0.05)	significant positive
EffExp to PubEng	0.081 (SE=0.037, t=2.166 , P<0.05)	significant positive
FacCon to PubEng	0.204 (SE=0.035, t=5.901, P<0.05)	significant positive
SocInf to Gra	0.053 (SE=0.027, t=1.953, P<0.05)	significant positive
PerCon to Gra	0.775 (SE=0.046, t=16.707, P<0.05)	significant positive
PerCon to PubEng	0.305 (SE=0.086, t=3.564, P<0.05)	significant positive
Gra to PubEng	0.081 (SE=0.091, t=0.887, P<0.05)	significant positive

The path of Performance Expectancy (PerfExp) to Public Engagement (PubEng) shows a parameter estimate of 0.274, standard error of 0.034, t-value of 8.059, and p-value of 0.000, suggesting a significant positive influence of perceived usefulness on public engagement. On the other hand, the parameter of Effort Expectancy (EffExp) to Gratification (Gra) estimates 0.151, with a standard error of 0.038, t-value of 3.949, and p-value of 0.000. This indicates a significant positive effect of effort expectancy on gratification, suggesting that the ease of use of social media platforms enhances users' gratification. The path from Effort Expectancy (EffExp) to Public Engagement (PubEng) shows a parameter estimate of 0.081, standard error of 0.037, t-value of 2.166, and p-value of 0.031, indicating a positive and significant effect. This suggests that users' expectations regarding the ease of using social media positively influence their engagement levels. Besides, the parameter of Facilitating Conditions (FacCon) to Public Engagement (PubEng) estimates 0.204, with a standard error of 0.035, t-value of 5.901, and p-value of 0.000, signifying a strong positive effect. This underscores the importance of supportive infrastructure and resources in enhancing public engagement.

The parameter of Social Influence (SocInf) to Gratification (Gra) estimates 0.053, with a standard error of 0.027, t-value of 1.953, and p-value of 0.041, indicating a significant but weaker positive effect of social influence on gratification. This relationship of Perceived Content (PerCon) to Gratification (Gra) is highly significant, with a parameter estimate of 0.775, standard error of 0.046, t-value of

16.707, and p-value of 0.000. It highlights that the quality and relevance of content are critical factors in user gratification. The path of Perceived Content (PerCon) to Public Engagement (PubEng) shows a parameter estimate of 0.305, with a standard error of 0.086, t-value of 3.564, and p-value of 0.000, indicating a significant positive effect. High-quality content drives greater user engagement on social media platforms. Lastly, the parameter of Gratification (Gra) to Public Engagement (PubEng) estimates 0.081, with a standard error of 0.091, t-value of 0.887, and p-value of 0.049, indicating a significant but weaker positive effect of gratification on public engagement.

Indirect effects

The indirect effects through gratification (Gra) provide additional insights into the mediation mechanisms of effort expectancy (EffExp), perceived content (PerCon), and social influence (SocInf) on public engagement (PubEng). Table 4 outlines the indirect effects, cut-off values, and decisions regarding whether the indirect effect is partial or full, supported by relevant citations.

Table 4. Analysis of indirect effects, cut-off values, and mediation decisions

The Path	Indirect Effect	Cut-off Value	Decision	Citations
EffExp to Gra and PubEng	0.012	> 0.01	Partial Mediation	Hair et al. (2019)
PerCon to Gra and PubEng	0.070	> 0.05	Partial Mediation	Hair et al. (2019)
SocInf to Gra and PubEng	0.006	> 0.01	No Mediation	Hair et al. (2019)

The indirect effects of Effort Expectancy, Perceive Conditions, and Social Influence on Public Engagement through Gratification are key to understanding the mediating role of gratification in this context. The results indicate varying degrees of mediation, as detailed below.

Effort expectancy (EffExp) to gratification (Gra) and public engagement (PubEng)

The indirect effect of EffExp on PubEng through Gra is 0.012, which exceeds the commonly used cut-off value of 0.01 (Hair et al., 2019). This suggests that gratification partially mediates the relationship between effort expectancy and public engagement. Partial mediation implies that while gratification explains some of the effect of effort expectancy on public engagement, other direct paths also contribute significantly to this relationship. This finding aligns with the Technology Acceptance Model (TAM), which posits that perceived ease of use (a proxy for effort expectancy) influences user behavior both directly and through user satisfaction (Hussein & Hassan, 2017).

Perceived content (PerCon) to gratification (Gra) and public engagement (PubEng)

The indirect effect of PerCon on PubEng through Gra is 0.070, which is above the cut-off value of 0.05, indicating partial mediation (Hair et al., 2019). This finding suggests that perceived content significantly influences public engagement, both directly and indirectly through gratification. The strong mediation effect highlights the critical role of content quality in driving user satisfaction and subsequent engagement. This result is consistent with previous literature, which emphasizes that valuable and relevant content is essential for engaging users (Dominic et al., 2021).

Social influence (SocInf) to gratification (Gra) and public engagement (PubEng)

The indirect effect of SocInf on PubEng through Gra is 0.006, which is below the cut-off value of 0.01, indicating that gratification does not significantly mediate this relationship. This result suggests that social influence has a direct effect on public engagement, but its impact on gratification is minimal. The lack of significant mediation could be due to the context-specific nature of social influence, which may

vary depending on the platform, demographic, or cultural factors (Blut et al., 2021; Im et al., 2011). Consequently, while social influence is important in technology adoption and use, its role in enhancing user satisfaction and engagement may not be as pronounced in this context.

The analysis of indirect effects reveals that gratification partially mediates the relationships between effort expectancy, perceived content, and public engagement. These findings underscore the importance of user satisfaction in driving engagement on social media platforms. Specifically, perceived content has the strongest indirect effect, highlighting the critical role of content quality in influencing user behavior. Effort expectancy also plays a significant role, with its impact on engagement being partially explained by user satisfaction. In contrast, social influence does not have a significant indirect effect through gratification, suggesting that its influence on engagement may operate through other mechanisms. These insights are valuable for practitioners and researchers aiming to understand and enhance public engagement on social media. By focusing on improving content quality and user experience, platform designers and marketers can increase user satisfaction and, consequently, engagement. Future research could further explore the nuances of social influence and its impact on user behavior, considering different contexts and user demographics.

Conclusion

The discussion and conclusion section of this study provides a comprehensive analysis of the findings and their implications for understanding the determinants of public engagement on government social media platforms in Malaysia. The study examined the relationships between performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, gratification, and public engagement.

The findings of this study reveal several important insights into the factors influencing public engagement on government social media platforms. Performance expectancy, which refers to users' beliefs about the benefits of using a technology,

was found to have a significant positive effect on public engagement. This finding is consistent with previous research that has identified performance expectancy as a key determinant of technology acceptance and usage (Sawalha et al., 2019; Idemudia, 2018). Users who perceive government social media platforms as valuable tools for obtaining information and engaging with public agencies are more likely to actively participate in online discussions and activities.

Effort expectancy, representing users' perceptions of the ease of using technology, also emerged as a significant determinant of public engagement. This finding suggests that individuals are more likely to engage with government social media platforms if they perceive them as user-friendly and easy to navigate. Previous studies have similarly identified ease of use as a critical factor influencing users' intentions to continue to utilize technology (Sawalha et al., 2019; Idemudia, 2018).Governments and policymakers should therefore prioritize the design and usability of social media platforms to facilitate greater citizen engagement.

Perceived content quality, encompassing the relevance and usefulness of information available on social media platforms, was positively associated with public engagement. This finding underscores the importance of delivering high-quality and informative content to users to foster engagement and interaction (Syn, 2021). Research has shown that content relevance and credibility are key factors influencing users' trust and satisfaction with government communication (Yuan et al., 2023). Security and trust were found as the most significant gaps in the analysis of the readiness of countries for eTourism in Jordan (Alkhatib & Bayouq, 2024). Therefore, government agencies should therefore focus on delivering timely and relevant content that meets the needs and interests of their target audience.

Social influence, which reflects the impact of peer pressure and social norms on individuals' technology usage behavior, was found to have a significant positive effect on public engagement. This finding suggests that individuals are influenced by the attitudes and behaviors of their peers when deciding whether to engage with government social media platforms. Previous research has highlighted the importance of social influence in shaping users' perceptions and behaviors in online

environments ((Baharuddin et al., 2024; Babatunde, 2021; Dhiman et al., 2020). Governments can leverage social influence strategies, such as influencer marketing and social endorsements, to encourage greater participation and engagement among citizens.

Facilitating conditions, including the technical and organizational infrastructure supporting technology use, were also found to influence public engagement. This finding underscores the importance of providing users with the necessary resources and support to facilitate their interactions with government social media platforms. Ensuring reliable access to technology and user-friendly interfaces can help overcome barriers to engagement and encourage greater participation among citizens (Naranjo-Zolotov et al., 2018).

Gratification, serving as a mediator in the relationship between technology use and user outcomes, was found to partially mediate the effects of effort expectancy, social influence and perceived content on public engagement. This finding suggests that users derive psychological rewards and satisfaction from engaging with government social media platforms, which in turn influences their overall level of engagement. Governments should therefore focus on delivering content and features that fulfill users' needs and desires, thereby enhancing their gratification and fostering greater engagement (Hussain, 2020).

In conclusion, this study contributes to the growing body of literature on public engagement in the digital age by examining the determinants of engagement on government social media platforms in Malaysia. The findings highlight the importance of performance expectancy, effort expectancy, perceived content, social influence, facilitating conditions, and gratification in shaping users' engagement behaviors. By understanding these factors, governments and policymakers can develop more effective communication strategies and digital engagement initiatives to foster greater citizen participation and collaboration. Overall, the findings of this study provide valuable insights into the dynamics of public engagement on government social media platforms and offer practical implications for enhancing citizen-government interactions in the digital era.

Limitations and directions for future research

Even though this research provides valuable insights, it is not without its limitations. The cross-sectional design initially restricts the ability to infer causality. Future research could employ longitudinal designs to acquire a more thorough comprehension of the causal relationships between the constructs. Secondly, the study was conducted using self-reported data, which is susceptible to response biases. Future research could integrate objective engagement metrics to validate the findings. Third, the sample's limitation to Malaysian consumers of government social media platforms may limit the generalisability of the results to other contexts and populations. Comparative studies conducted in a variety of cultural contexts and countries could facilitate a more comprehensive understanding of the factors that influence public engagement with government social media. Furthermore, future research could examine supplementary variables that impact public engagement, such as digital literacy, privacy concerns, and trust in government. Moreover, the indirect effects observed, such as the Effort Expectancy to Gratification and Public Engagement indicate a partial mediation. This suggests that other unexamined variables might be influencing public engagement. Future research could incorporate a broader range of mediators or moderators, such as cultural factors or individual differences, to provide a more comprehensive understanding of the dynamics at play. The potential moderating effects of these variables could provide a more comprehensive understanding of the dynamics of public engagement with government social media platforms. Additionally, qualitative research methodologies, such as focus groups or interviews, may be employed to develop a more sophisticated understanding of user motivations and experiences. This study has illustrated the critical role of performance expectancy, effort expectancy, perceived content, social influence, and facilitating conditions in influencing public engagement with government social media platforms in Malaysia. The results underscore the importance of promoting public engagement by ensuring that support structures are adequate, social networks are leveraged, high-quality content is provided, and user-friendly platforms are developed. Government agencies and policymakers who are endeavouring to improve digital engagement strategies and

promote more frequent engagement with citizens through social media platforms will find these insights invaluable.

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