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CLICK, SHARE, RECOMMEND: EXPLORING USER BEHAVIOUR IN MOBILE APP USAGE

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***Abstract**: In order to understand the use of mobile apps, this research examines potential differences in users' attitudes towards mobile app features, privacy policies and recommendations related to mobile apps. More specifically, it looks at the impact that mobile application features have on users' willingness to share personal data and on the propensity to recommend the mobile application. The study was performed between May and September 2023 and aimed at 230 participants with mobile app usage in the last 6 months. The data was obtained using a Google form that was shared on social media platforms. Factor analysis and analysis of variance were performed to achieve the research objectives. Results from the study reveal that there are significant differences between the factors usefulness and reliability, and users' attitudes towards using mobile apps. However, no significant differences were identified for the simplicity factor. The analysis of variance further indicates that there are significant differences between the extracted factors and users' attitudes towards mobile app privacy. Similarly, the results show significant differences between the extracted factors and users' attitudes towards mobile app recommendations.*

***Keywords**: mobile apps, mobile apps usage, mobile apps features, privacy, user behaviour*

***JEL Classification**: M31*

INTRODUCTION

The ever-growing number of mobile applications has significantly changed the way people use and interact with digital platforms, particularly in the areas of communication, commerce and entertainment. Mobile applications or mobile apps are a marketing tool and a common advertising tactic that offer great potential for customer engagement due to their unique features (Stocchi, L., Pourazad, N. & Michaelidou, N., 2020). In addition, they improve customer engagement by leveraging features such as novelty and interactivity that transform communication efforts into value-generating

experiences such as purchases and information access (Natarajan, T., Balasubramanian, S.A. & Kasilingam, D.L., 2017).

However, the widespread use of mobile applications has also brought new challenges in terms of user trust, privacy and behavioural intentions. With the increasing popularity of apps, academic research on this topic has also increased. Research has shown that trust-building mechanisms, such as transparent data practices and secure payment options, play an important role in promoting user trust (Gefen, D., Karahanna, E. & Straub, D. W., 2003). In addition, privacy concerns and security risks significantly influence users' willingness to adopt and use mobile applications (Binns, R., Veale, M., Van Kleek, M. & Shadbolt, N., 2018) (de Reuver, M., Sørensen, C., & Basole, R. C., 2018). As a result, understanding the factors that influence users' attitudes towards mobile app adoption, privacy and recommendations remains an important research focus.

However, there are still gaps in understanding the combined influence of app features on user behaviour, particularly in relation to users' willingness to disclose private information and the likelihood that they will recommend mobile apps to others. In that context, this paper fills this research gap by examining how mobile app features shape users' perceptions of privacy and influence their recommendation behaviour. By examining users' attitudes toward privacy and app recommendations, this study aims to provide insights for app developers, marketers, and policy makers seeking to improve user satisfaction and data security. The next sections deal with an overview of the relevant literature, a detailed explanation of the research methodology, the research results and discussion. Finally, limitations, future research directions and practical implications are outlined.

LITERATURE OVERVIEW

Previous research on mobile apps has distinguished three stages, i.e. the pre-adoption stage, adoption and the post-adoption stage (Stocchi, L., Pourazad, N., Michaelidou, N., Tanusondjaja, A. & Harrigan, P., 2022), where users in each stage may have different attitudes, characteristics, experiences and intentions. In this context, previous studies addressed a wide range of individual user characteristics such as hedonic characteristics (Alalwan, 2020), consumer innovativeness (Koenig-Lewis, N., Marquet, M., Palmer, A., & Zhao, A. L., 2015), customer's interest in the app (Taylor, G. D. & Levin, M., 2014) and personality (Fang, 2019).

As regards the perceived ease of use, it plays a critical role in fostering personal connections between consumers and the apps they use. These connections, in turn, influence not only their preference for purchasing through mobile apps compared to physical stores but also their overall purchasing behaviour and future intentions to continue using and recommending the apps (Newman, C. L., Wachter, K. & White, A., 2018). Additionally, the findings indicate that privacy concerns significantly shape users' attitudes and behaviours toward mobile apps (Axcell, S. & Ellis, D. , 2023). Consumers who perceive branded apps as customizable, privacy-friendly, and compatible with their needs tend to perceive the apps' usefulness and ease of use more strongly, which reinforces their intention to use the app (Stocchi, L., Michaelidou, N. & Micevski, M. , 2019). As a result, they are willing to recommend the app and pay for further access to its functions.

Ease of use is repeatedly emphasised as a key factor influencing users' intention to continue using mobile applications (Kang, 2014). However, with the increasing number of mobile apps available, the challenge of efficiently recommending relevant apps to users has become increasingly complex. Current recommendation approaches for mobile apps that use user attributes and behavioural patterns have proven to be effective, but often overlook the interdependencies and distribution patterns of topic-specific apps across different user groups (Chen, J., Cao, B., Peng, Z., Xie, Z., Liu, S. & Peng, Q., 2024). Recent studies also highlight the significant role of user engagement in shaping mobile app adoption and usage behaviours. Consumer interest in a retail app is positively related to the intention to engage in activities related to shopping and information-sharing (Taylor, G. D. & Levin, M. , 2014). This suggests that consumer engagement goes beyond transactional behaviour, extending to the active dissemination of information.

Brand trust also plays a major role in buying decisions. In this context, consumers who have a strong trust in brands are more willing to buy new and regular products (Sung, 2020). In addition, user trust mitigates privacy concerns and can be used to overcome privacy-related barriers to app adoption (Aydin, 2023). Behavioural factors, such as hedonic motivation and habitual use have also been recognised as strong predictors of mobile shopping app usage (Tak, P. & Panwar, S. , 2017). Offers and promotions increase user engagement, while facilitating conditions, such as technical support and ease of use, contribute to the sustained adoption of shopping apps.

User behaviour within app ecosystems tends to evolve over time. In the early stages, users typically download similar apps, reflecting a preference for familiar content. Over time, however, their preferences diversify based on their level of emotional attachment and the intensity of their need to share information (Son, 2017). Users willing to share information are more inclined to download communication and information-sharing apps rather than information-seeking apps, indicating a shift from passive to active digital engagement. Perceived app security plays a crucial role in building user trust, which, in turn, positively influences user involvement, commitment, and their willingness to provide feedback on app recommendations (Ravichandran, S., Osakwe, C. N., Elgammal, I. M. Y., Abbasi, G. A. & Cheah, J.-H. , 2024). Moreover, users' intentions to disclose personal information are shaped by both privacy concerns and privacy fatigue (Tang, J., Akram, U. & Shi, W. , 2021).

Privacy in the context of applications is considered a critical factor for acceptance and use, which primarily depends on consumer trust (Morosan, C. & DeFranco, A. , 2015) (Morosan, C. & DeFranco, A. , 2016). The security of mobile apps is another critical factor influencing in-app purchasing behavior (Liu, Y. (D)., Chung, H. F. L., Zhang, Z. (J). & Wu, M. , 2023). Mobile app features, such as perceived ubiquity, informativeness, and personalization, are positively associated with perceived usefulness, resulting in increased app retention and positive word-of-mouth (Kim, S., Baek, T. H., Kim, Y.-K. & Yoo, K. , 2016a). Among these characteristics, personalization is the strongest predictor of an app's usefulness and user engagement. Privacy concerns, on the other hand, have a negative impact on users' willingness to reveal personal information. However, privacy protection measures and perceived personalization contribute to consumer empowerment and promote a sense of control over data-sharing decisions (Luo, D., Ni, X., Aw, E. C.-X. & Tan, G. W.-H. , 2024). Malgieri, G. &

Custers, B., 2018 argued that empowering users to take control of their data increases trust and compliance.

Finally, user satisfaction also plays an important role in the decision to disclose personal information. Mobile app users are often faced with the decision to grant access to personal data to use certain functions. Research suggests that the perceived benefits of an app have a greater impact on satisfaction than the perceived risks. These benefits, in turn, indirectly influence users' willingness to disclose personal data by increasing their overall satisfaction with the app experience (Najjar, M. S., Dahabiyeh, L. & Algharabat, R. S., 2021).

METHODOLOGY

The study investigates the influence of mobile app features on user behaviour, particularly regarding the sharing of private information and the recommendation of mobile apps to others. Primary data were collected through a purposive sampling method from respondents aged 18 to 48, during the period from May to September 2023. The sample consisted of 230 respondents who actively use mobile apps. The target population comprised users who had made online purchases via mobile apps within the last six months. Respondents who had not engaged in mobile purchases during this period were excluded from the survey.

The items of the questionnaire were derived from the existing literature and adapted for the purposes of this study. The instrument consisted of two sections. The first section captured demographic characteristics, including gender, age, education level, income level and daily time spent on mobile apps. The second section focused on mobile app features, covering aspects such as perceived ease of use, service quality, perceived usefulness and perceived informativeness. The constructs related to perceived ease of use, service quality, perceived informativeness, and attitudes toward mobile app privacy and recommendations were adopted from (Hanjaya, S. M., Kenny, S. K. & Gunawan, S. F. 2019). Items measuring perceived usefulness and attitudes towards mobile app usage were modified from the study by (Moon, E. & Domina, T. , 2015).

Each item of the questionnaire was rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The statistical analysis methods used included descriptive statistical analysis, factor analysis, and analysis of variance. Descriptive statistical analysis was used to sum up the basic characteristics of the data to provide an overview of the most important sample attributes (Table 1). Methodology must be described clearly and precisely; the methodological contribution of authors (if available) must be established and it must all be done in a fashion that it allows for its testing by other authors.

Table 1. Sample characteristics

Sample characteristics	N	Percent (%)
AGE:		
18-26	141	61.3
27-37	33	14.3
38-48	56	24.4

GENDER:		
Male	75	32.6
Gender	155	67.4
Education level:		
Elementary school	3	1.3
High school	109	47.4
College	19	8.3
Graduate	78	33.9
Master and PhD	21	9.1
Monthly income (EUR):		
597-729,99	26	11.3
730-862,99	15	6.5
863-995,99	22	9.6
996 and more	73	31.7
I prefer not to provide an answer	22	9.6
I do not have any income	72	31.3

Source: Research findings (N=230)

The statistical analysis was performed using the Statistical Package for the Social Science (SPSS), version 29.

EMPIRICAL EVIDENCE

Confirmatory factor analysis was conducted to assess the convergent validity of the measurement scale. The Cronbach's alpha coefficient represents the weighted mean of the standard change resulting from the proportion of the total variance of the k statements in the scale to the total variance (Bryman, A. & Cramer, D. , 2011). The Cronbach's alpha coefficient was used to assess the reliability of the measurement scale (Table 2).

Table 2: Reliability of the measurement scale related to mobile app features

Number of variables	Cronbach's Alpha
19	.881

Source: Research findings (N=230)

The Cronbach's alpha value was 0.881, with each variable exhibiting an alpha value greater than 0.7, indicating high internal consistency and satisfactory reliability of the measurement scale. To further validate the research measurement scale, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) test were performed. The results of these statistical tests are presented in Table 3.

Table 3: KMO test and Bartlett's test of sphericity for the measurement scale of mobile app features

KMO test		.878
Bartlett's test of sphericity x^2	Hi-square	1356.827
Degree of freedom (df)		78
Significance		.000

Source: Research findings (N=230)

The suitability of the data set for the factor analysis was checked using the KMO test and Bartlett's test of sphericity before the exploratory factor analysis was carried out. The p-value for the Bartlett's test was significant at the 0.001 level ($\alpha \leq 0.05$), indicating that the variables were sufficiently correlated to justify factor analysis. The KMO value is 0.878, indicating a high level of common variance among the variables. These results confirm that the sample is suitable for further factor analysis.

The validity of the measurement scale was tested using principal component analysis (PCA) with varimax rotation. PCA was considered more suitable in this context as it aimed to empirically reveal an existing structure rather than evaluate the suitability of statements for a particular construct (Tabachnick, B. G. & Fidell, L. S. , 2019). To further ensure the construct validity of the measurement scale, an exploratory factor analysis was performed. Table 4 shows the number of factors extracted from the measurement scale.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.657	43.512	43.512	3.111	23.929	23.929
2	1.487	11.441	54.953	2.899	22.298	46.227
3	1.223	9.408	64.362	2.358	18.135	64.362

Extraction Method: Principal Component Analysis

Source: Research findings (N=230)

Once the suitability of the data set for the factor analysis has been confirmed, an exploratory factor analysis was carried out using PCA with Varimax rotation. When determining the number of factors in the scale, factors with eigenvalues greater than 1 were taken into account. An internal consistency test was also performed to evaluate the reliability of the scale.

The exploratory factor analysis identified three factors within the scale, which comprises 13 statements. As shown in Table 3, three factors with eigenvalues above 1 were extracted. The analysis revealed that factor 1 explained 43.51% of the total variance, factor 2 explained 11.44% and factor 3 explained 9.40%. Together, the three factors explained 64.36% of the total variance using the varimax rotation method. The factor loadings for all items were above 0.50, which indicate a high convergent and discriminant validity. It can be concluded that factor 1 refers to the customized features of mobile app usage and is referred to as the usefulness factor. Factor 2 refers to the

reliable use of mobile apps and is referred to as the reliability factor, while factor 3 corresponds to the ease of use of mobile apps and is referred to as the simplicity factor.

Based on the result of the factor analysis, ANOVA was conducted to examine the differences between the identified factors and users' attitudes towards mobile app usage, their intention to use mobile apps, and their attitudes towards mobile app privacy. The results of the ANOVA between the factors and attitudes towards the mobile app usage are presented in Table 5.

Table 5: Analysis of variance between the factors and attitudes towards the mobile app usage

	Sum of squares	df	Mean square	F	Sig.
Usefulness factor	65.428	34	1.924	2.294	.000
Reliability factor	91.176	34	2.682	3.794	.000
Simplicity factor	39.949	34	1.175	1.212	.210

Source: Research findings (N=230)

Table 5 indicates a significant difference between the usefulness and reliability factors and users' attitudes towards using the mobile app. The results of the usefulness factor in relation to attitudes towards mobile app usage show statistically significant differences ($p<0.000$, $F=2.294$). Users who engage with mobile apps due to their useful content or information are more likely to have a positive attitude towards the use of mobile apps. Therefore, individuals who perceive mobile apps as valuable and suitable tools for daily activities are more inclined to develop a favourable attitude towards the mobile app usage.

The analysis shows a significant relationship between the reliability factor and users' attitudes towards the mobile app usage ($p<0.000$, $F=3.794$). This indicates that users who perceive mobile apps as reliable or dependable tools are more inclined to use them. Reliability appears to be a feature that can enhance positive attitudes towards the use of mobile apps. For these users, trustworthiness may serve a key motivator in adopting mobile apps as tools that meet their needs. In contrast, the results of the ANOVA to examine differences between the simplicity factor and attitudes towards the mobile app usage ($p<0.210$, $F=1.212$) indicate no significant differences. This suggests that simplicity does not significantly influence users' attitudes towards the mobile app usage. The results examining the relationship between the factors and attitudes towards mobile app privacy are shown in Table 6.

Table 6: Analysis of variance between factors and attitudes toward mobile app privacy

	Sum of squares	df	Mean square	F	Sig.
Usefulness factor	30.735	12	2.561	2.803	.001
Reliability factor	52.848	12	4.404	5.425	.000
Simplicity factor	21.483	12	1.790	1.872	.039

Source: Research findings (N=230)

The results revealed significant differences between the usefulness factor and attitudes towards mobile apps privacy ($p<0.001$, $F=2.803$). The findings indicate that users who engage with mobile apps for personalised and useful content are more willing to disclose private information. Mobile apps that cater to users' needs by offering valuable and exclusive information can foster a greater sense of privacy security. For these users, mobile apps that facilitate access to customised information and enable secure information transfer and transactions are perceived more positively, making users more comfortable sharing private data.

Further analysis was conducted to investigate the relationship between the second extracted factor, reliability, and attitudes towards privacy in mobile apps. The analysis showed significant differences between the reliability factor and mobile app privacy attitudes ($p<0.000$, $F=5.425$), as shown in Table 5. The results suggest that mobile apps providing credible and trustworthy information are perceived as safe platforms for sharing private or payment-related information. Reliability can be regarded as a key feature that enhances users' confidence in the mobile app usage, providing that the data they share remain secure and uncompromised.

The results for the simplicity factor in relation to attitudes towards mobile app privacy revealed significant differences ($p < 0.039$, $F=1.872$). The findings suggest that simplicity, or user-friendliness, may be an important factor influencing the willingness to share private information. Users who perceive mobile apps as simple and easy to navigate tend to have greater confidence in the app's reliability, particularly when providing sensitive information, such as credit card details. Table 7 shows the results of the ANOVA between the identified factors and users' attitudes towards recommending the use of mobile apps.

Table 7: Analysis of variance between the identified factors and users' attitudes toward recommending the use of mobile apps

	Sum of squares	df	Mean square	F	Sig.
Usefulness factor	27.089	4	6.772	7.547	.000
Reliability factor	54.676	4	13.669	17.642	.000
Simplicity factor	16.530	4	4.132	4.376	.002

Source: Research findings (N=230)

The results examining the differences within the factors in attitudes towards recommending the use of mobile apps ($p<0.000$, $F=7.547$) show significant differences for the usefulness factor. Mobile apps that provide information tailored to users' search and usage histories are more likely to be positively received, leading users to recommend these apps to others. Users are particularly inclined to recommend mobile apps that offer personalized or exclusive services and provide high-quality customer support. For the reliability factor, the analysis also revealed significant differences ($p<0.000$, $F=17.642$). The findings show that users who trust mobile apps are more willing to share private information. These users place a higher level of trust in mobile apps that provide credible and relevant information, particularly when it concerns the sharing of important personal data. Additionally, the analysis indicated statistically sig-

nificant differences for the simplicity factor in terms of attitudes towards recommending mobile apps ($p<0.002$, $F=4.376$). This suggests that users who find mobile apps simple and intuitive, requiring minimal effort to use, are more likely to recommend them to others. Mobile apps that streamline user interactions and enhance usability contribute to greater user satisfaction, thereby increasing the likelihood of recommendations. In summary, users who value personalised and reliable information tend to have a positive attitude towards the mobile app usage. Moreover, users who view mobile apps as efficient tools that provide necessary information with minimal effort are more willing to share private information and promote these apps through positive word-of-mouth recommendations.

RESULTS AND DISCUSSION

The findings indicate significant differences between the factor's usefulness and simplicity and users' attitudes towards using mobile apps. Users who engage with mobile apps because of personalised content or information tend to have a positive attitude towards using mobile apps. These users perceive mobile apps as valuable tools in their daily lives and have a positive attitude towards their use. This is in line with previous research that emphasises that usefulness and ease of use promote positive consumer attitudes towards mobile applications (Kim, S. C., Yoon, D. & Han, E. K., 2016b) (Stocchi, L., Pourazad, N. & Michaelidou, N., 2020). The analysis also reveals a significant relationship between the reliability factor and attitudes towards the use of mobile applications. Users who perceive mobile apps as reliable and dependable tools are more inclined not only to use them, but also to recommend them to others.

In addition, the analysis shows significant differences between the three factors and attitudes towards data protection in mobile apps. Users who access mobile apps to receive personalised and exclusive content are more willing to reveal private information via mobile apps. Additionally, mobile apps that provide high-quality and credible information are perceived as safer platforms for sharing sensitive data as they promote user trust. When mobile apps are perceived as user-friendly, users are more confident that these apps will protect their private data.

The results examining differences between the factors and users' attitudes towards recommending mobile apps show significant differences. Mobile apps that provide credible and relevant information enhance users' trust, increasing their willingness to share important personal information. When users find mobile apps simple and easy to navigate, they report greater satisfaction, which in turn makes them more likely to recommend the app to others. This is consistent with the findings of Xu et al. (2015), who confirmed that user satisfaction, intention to continue using the app and the hedonic benefit of app usage are direct predictors of the intention to recommend the app.

CONCLUSION

There are several limitations that should be mentioned. In terms of sample composition, the study primarily included users between the ages of 18 and 48, which may not represent the broader population of mobile app users, particularly older or younger demographics who may exhibit different behavioural patterns. Another limitation relates to the method of data collection. Data were gathered through online surveys distributed via social media platforms, which may lead to self-selection bias, as re-

spondents who are more active online may differ in their behaviour from less active users. Additionally, the research design does not consider changes in user behaviour or preferences over time, especially as users become more familiar with mobile apps. Finally, the study did not consider the scope of mobile app categories (e.g. social media, e-commerce, games), which may influence users' attitudes towards privacy, usage and recommendations differently.

Future studies could adopt a longitudinal approach to examine how users' attitudes and behaviours evolve over time, particularly in response to privacy breaches or the introduction of new mobile app features. Additionally, future research could consider a more diverse sample by expanding the demographic characteristics to include a wider range of age groups, geographic locations and cultural backgrounds to improve the generalizability of the results. Further research could also distinguish between various types of mobile apps (e.g. entertainment, health, etc.) to determine whether certain features influence user behaviour differently depending on the app category. In addition, future studies could investigate the privacy settings and design elements that promote user trust and increase their willingness to share personal data.

The results of this study could be interesting for app developers, marketers and policy makers. Mobile app developers should prioritize transparency and security features that increase user trust, such as clear privacy policies, opt-in options for data sharing and visible security certifications. In addition, personalised content and recommendations can increase user engagement, provided these features are balanced with user privacy. Simplifying app interfaces can also enhance user satisfaction, which, as the findings suggest, can increase the likelihood of app recommendations. Clear communication about privacy settings and data usage policies can improve user attitudes towards privacy. In this context, marketers can highlight privacy-friendly features as part of their value proposition to appeal to privacy-conscious users. Finally, policymakers can use these insights to refine regulations to promote ethical data collection and encourage developers to adopt privacy principles to foster an ecosystem that prioritizes user trust.

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