**JURTEKSI (Jurnal Teknologi dan Sistem Informasi)** ISSN 2407-1811 (Print)
Vol. XI No 2, Maret 2025, hlm. 381 – 388 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i2.3765
Available online at http://jurnal.stmikroyal.ac.id/index.php/jurteksi

# THE ROLE OF PERCEIVED CONVENIENCE ON WHATSAPP ADOPTION USING UTAUT2 MODEL

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**Abstract:** Advancements in digital technology have significantly transformed communication and learning. Traditional learning methods have limitations in providing a fast and interactive learning environment, necessitating accessible technology that enhances student and teacher engagement while ensuring convenience. WhatsApp has emerged as a widely used solution due to its accessibility, privacy features, and cross-platform compatibility, offering users a sense of convenience. This study examines the role of Perceived Convenience in the acceptance and use of WhatsApp in secondary education in Medan City using the UTAUT2 Model. A survey was conducted with 439 respondents from 8 secondary schools in Medan and analyzed using SEM-PLS with SmartPLS-4. The results indicate that social influence, hedonic motivation, habit, and perceived convenience positively impact the intention to use WhatsApp. Additionally, facilitating conditions, perceived convenience, and intention to use significantly influence actual usage behavior. However, performance expectancy, effort expectancy, and price value do not affect either intention or behavior in using WhatsApp. Moderating variables such as age, gender, and experience partially moderate the relationships between independent factors and WhatsApp usage intention and behavior. This study contributes by incorporating Perceived Convenience into the UTAUT2 Model and affirming its role in educational technology adoption.

**Keywords:** perceived convenience; secondary education; UTAUT2; whatsapp

**Abstrak:** Kemajuan teknologi digital telah membawa perubahan signifikan dalam komunikasi dan pembelajaran. Metode pembelajaran tradisional memiliki keterbatasan dalam menyediakan lingkungan belajar yang cepat dan interaktif, sehingga diperlukan teknologi yang mudah diakses, meningkatkan keterlibatan siswa dan guru, serta nyaman digunakan. WhatsApp menjadi salah satu solusi dan banyak digunakan karena mudah diakses, privasi yang ditawarkan, serta kompatibilitas lintas platform sehingga memberikan kenyamanan yang dapat dirasakan pengguna ketika menggunakannya. Oleh karena itu, Penelitian ini menguji peran Persepsi Kenyamanan terhadap penerimaan dan penggunaan WhatsApp dalam pendidikan menengah di Kota Medan menggunakan Model UTAUT2. Survei dilakukan pada 439 responden dari 8 sekolah menengah di kota Medan, dan dianalisis dengan SEM-PLS menggunakan SmartPLS-4. Hasil penelitian menunjukkan bahwa social influence, hedonic motivation, habit, dan perceived convenience berpengaruh positif signifikan terhadap behavioral intention. Sementara itu, facilitating conditions, perceived convenience, dan behavioral intention berdampak positif pada use behavior. Namun, performance expectancy, effort expectancy, dan price value tidak berpengaruh terhadap niat maupun perilaku penggunaan WhatsApp. Variabel moderasi usia, jenis kelamin, dan pengalaman memoderasi sebagian hubungan antara faktor bebas terhadap niat dan perilaku penggunaan WhatsApp. Penelitian ini berkontribusi dengan menambahkan variabel persepsi kenyamanan (perceived convenience) ke dalam Model UTAUT2 dan menegaskan perannya dalam adopsi teknologi pendidikan.

**Kata kunci:** pendidikan menengah; persepsi kenyamanan; UTAUT2; whatsapp

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## INTRODUCTION

The advancement of digital technology, including computers, smartphones, and the internet, has transformed daily activities, particularly in communication, information exchange, and education [1]. Social media platforms have become integral to modern life, enabling people across generations to share, interact, and stay connected. Additionally, social media serves as a valuable academic tool, enhancing communication, interaction, and collaboration, with WhatsApp being one of the widely used applications [2].

Traditional classroom learning has limitations in effectiveness, evaluation, and student engagement, requiring digital technology to enhance learning efficiency. An ideal technology should boost engagement and be easily accessible anytime, anywhere [3]. WhatsApp serves as a learning communication tool [4], favored for its accessibility, convenience, and privacy features [5]. Supporting multiple communication formats, WhatsApp remains usable across platforms with an internet connection. Convenience, defined as unrestricted access to services [6], is crucial in education, influencing teachers' willingness to adopt technology [7]. Ensuring user convenience fosters a positive attitude and desire to use technology [8]. Moreover, perceived convenience plays a fundamental role in enhancing e-learning adoption by providing flexibility in time, place, and pace of learning. Research has shown that cloud-based learning platforms significantly improve learning outcomes by increasing accessibility, personalization, and engagement [9].

According to research [10], besides influencing user intentions, the convenience felt by users regarding easy access when using technology also has a positive influence on online drug purchasing behavior and encourages users to have online impulsive purchasing behavior [11]. A Study [12] also explained that perceived convenience plays an important role in influencing the user's intention to use parenting applications. Based on several previous studies, it can be stated that the perceived convenience can be one of the predictors in predicting the intention and behavior of using technology.

The UTAUT2 model is used to identify factors influencing users' intention and behavior in adopting new technology due to its enhanced explanatory power [13]. Research by Francis Arthur et al. on tablet-based learning in Ghana found that Social Influence, Hedonic Motivation, Trust, Perceived Learning Opportunities, Effort Expectancy, and Facilitating Conditions significantly affect behavioral intentions [14]. Additionally, research on metaverse adoption among students shows that Social Influence and Habit affect behavioral intention, while Facilitating Conditions and Behavioral Intention influence usage behavior [15].

Based on several studies that have been described previously, it is known that the UTAUT2 model can be used to examine factors that influence the intentions and behavior of technology users in educational learning. In this study, independent variables contained in the UTAUT2 model will be tested on the intention and behavior of using the WhatsApp application as a learning technology among users in secondary education in the city of Medan by adding a new predictor variable, namely perceived convenience which is predicted as an important factor that can influence user intentions and behavior in the context of technology adoption according

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to research support [6], [7], [8], [10], [11] and [12].

This study is particularly significant because perceived convenience has been widely acknowledged as a key determinant of digital learning adoption, yet it has never been examined within the UTAUT2 framework. By incorporating this variable, this research aims to provide a more comprehensive understanding of technology acceptance in education. The object of the study chosen is the WhatsApp application, because based on research [5], WhatsApp meets the criteria for technology that is in accordance with the research [3].

In the context of UTAUT2, the perceived convenience variable can contribute to the increase of behavioral intention in using WhatsApp as a learning medium. The flexibility offered by WhatsApp allows students and educators to stay connected and learn without time and location constraints, thereby enhancing technology adoption in the field of education. Thus, examining perceived convenience within the UTAUT2 framework will not only expand the scope of this model but also provide practical insights for educators and educational technology developers in designing more effective and user-friendly learning systems.

## METHOD

The model that will be used to examine the variables of perceived convenience and factors that influence the acceptance and use of the WhatsApp application is the UTAUT2 model because it has additional factors that can strengthen the explanation of technology acceptance compared to other models.

### Conceptual Model and Research Hypothesis

The researcher conducted a literature study to develop a suitable conceptual model. After reviewing previous studies, UTAUT2 was chosen for its enhanced explanatory factors in technology acceptance. An additional variable, perceived convenience, was included to assess WhatsApp acceptance among secondary education users in Medan City.

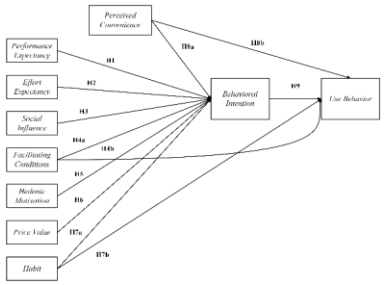


Image 1. Conceptual Model

Based on the conceptual model presented, The following hypotheses were tested: Performance Expectancy has a positive effect on Behavioral Intention (H1), Effort Expectancy has a positive influence on Behavioral Intention (H2), Social Influence has a positive impact on Behavioral Intention (H3), and Facilitating Conditions have a positive effect on Behavioral Intention (H4a) and Use Behavior (H4b). Behavioral Intention is positively influenced by Hedonic Motivation (H5), Price Value (H6), Habit (H7a), and Use Behavior (H7b). Perceived Convenience affects Behavioral Intention (H8a), Use Behavior (H8b), and Behavioral Intention has a positive impact on Use Behavior (H9).

### Population and Sample

The study population includes educators and secondary-level students using WhatsApp in Medan City. Using purposive sampling, the criteria require

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respondents to be WhatsApp users in Medan, part of secondary education students or educators. Since the exact population size is unknown, the minimum sample size was calculated using the Lemeshow formula (1) [16]. The result of the calculation of the minimum number of samples was 384.16 which was rounded up to 385 respondents which is shown in calculation (2).

$$n = \frac{Z^2 \, P \, (1 - P)}{d^2} \quad (1)$$

Information :
n = sample size
Z = 1.96 confidence level (95%)
P = expected proportion of 0.5
d = alpha (0.05) sampling error (5%)

So :

$$n = \frac{(1{,}96)^2 \, x \, 0{,}5(1-0{,}5)}{(0{,}05)^2} = 384.16 \quad (2)$$

**Questionnaire Preparation and Distribution**

The questionnaire was designed based on previous research and used a 5-point Likert scale. A preliminary trial was conducted by distributing it online to at least 30 participants, following Nurisa et al.'s recommendation [17]. A total of 99 respondents participated to assess validity and reliability. Convergent validity was evaluated using the loading factor (>0.7) and AVE (>0.5), while discriminant validity was checked through cross-loadings. Reliability was measured using composite reliability (>0.7). After testing, the final questionnaire was created in Google Forms and distributed via WhatsApp to eligible respondents.

**Data Analysis**

Data analysis was conducted by providing an overview of the important characteristics of the research sample and utilizing the SEM-PLS method, which consists of two main components: the measurement model (outer model) and the structural model (inner model). The measurement model explains the relationship between latent variables and their indicators, which is assessed through validity and reliability tests. Validity testing includes convergent validity, discriminant validity, and factor loadings, while reliability testing is evaluated using composite reliability. The structural model describes the relationship between latent variables and is analyzed through the determination coefficient (R-Square) test and hypothesis testing. This method is highly useful for examining the relationships between constructs that cannot be measured directly, ensuring a comprehensive evaluation of the research model.

## RESULT AND DISCUSSION

This section will present a discussion related to the results of the instrument validity and reliability tests, the results of the measurement and structural model evaluations, and the results of hypothesis testing. The SEM-PLS technique is used to test this research model. While the evaluation process of the outer and inner models is tested using SmartPLS-4 software.

**Validity and Reliability Test**

The results indicate that all indicators meet the requirements for convergent validity, with loading factor values greater than 0.7 and AVE values exceeding 0.5. The reliability test results show that the composite reliability of each variable is above 0.7, confirming adequate reliability. Additionally, the cross-

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loading values demonstrate that the correlation between indicators is higher within their respective variables compared to other variables, fulfilling the criteria for discriminant validity. Therefore, all indicators are considered valid and reliable.

**Coefficient of Determination (R-Square)**

R-Square is a key measure in evaluating the PLS-SEM structural model, indicating its predictive ability. It represents the proportion of variance in the dependent variable explained by independent variables [18]. In this study, the $R^2$ value for Behavioral Intention is 0.516 (51.6%), with the remaining 48.4% influenced by other factors. Similarly, the $R^2$ value for Use Behavior is 0.458 (45.8%), with 54.2% explained by variables outside this model.

**Hypothesis Testing**

Hypothesis testing was conducted using the bootstrapping method, generating original sample values, T-Statistics, and P-Values to determine the influence of independent variables on dependent variables, as shown in Table 1. Age moderation was tested by dividing respondents into a young group (≤ 20 years, 386 respondents) and an older group (> 20 years, 53 respondents) using multigroup analysis. Gender moderation was analyzed by splitting respondents into male (219 respondents) and female (220 respondents) groups. Experience moderation was tested by categorizing respondents into experienced users (> 2 years, 386 respondents) and inexperienced users (≤ 2 years, 53 respondents), also using multigroup analysis.

Table 1. Results of Latent Variable Hypothesis Testing

| Correlation | Original sample | Sample mean | Standard deviation | T-Statistics | P-value | Information |
|---|---|---|---|---|---|---|
| PE -> BI | 0.078 | 0.078 | 0.043 | 1,835 | 0.067 | Rejected |
| EE -> BI | 0.054 | 0.052 | 0.045 | 1.190 | 0.234 | Rejected |
| SI -> BI | 0.115 | 0.117 | 0.054 | 2.125 | 0.034 | Accepted |
| FC -> BI | 0.015 | 0.017 | 0.049 | 0.311 | 0.756 | Rejected |
| FC -> UB | 0.202 | 0.202 | 0.059 | 3.439 | 0.001 | Accepted |
| HM->BI | 0.138 | 0.140 | 0.057 | 2.418 | 0.016 | Accepted |
| PV -> BI | 0.049 | 0.049 | 0.046 | 1,054 | 0.292 | Rejected |
| H -> BI | 0.263 | 0.261 | 0.052 | 5,050 | 0.000 | Accepted |
| H -> UB | 0.020 | 0.023 | 0.050 | 0.398 | 0.690 | Rejected |
| PC -> BI | 0.259 | 0.258 | 0.068 | 3,790 | 0.000 | Accepted |
| PC -> UB | 0.260 | 0.262 | 0.064 | 4.038 | 0.000 | Accepted |
| BI -> UB | 0.338 | 0.335 | 0.070 | 4,861 | 0.000 | Accepted |

**Analysis of Latent Variable Hypothesis Testing Results**

The hypothesis testing results reveal that Performance Expectancy (H1), Effort Expectancy (H2), Facilitating Conditions on Behavioral Intention (H4a), Price Value (H6), and Habit on Use Behavior (H7b) were rejected, indicating no significant influence on Behavioral Intention (BI) or Use Behav-

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ior (UB). These findings suggest that respondents find WhatsApp useful but recognize the need for improvements, consider it easy to use without effort being a key factor, and do not view price as a barrier. Additionally, Habit did not influence Use Behavior due to external factors like school regulations.

Conversely, Social Influence (H3), Facilitating Conditions on Use Behavior (H4b), Hedonic Motivation (H5), Habit on Behavioral Intention (H7a), Perceived Convenience on both Behavioral Intention (H8a) and Use Behavior (H8b), and Behavioral Intention on Use Behavior (H9) were accepted, showing significant positive relationships. Social influence encourages adoption, hedonic motivation enhances engagement, and perceived convenience ensures accessibility, flexibility and secure usage. Facilitating conditions support continued use, and habit strengthens intention. Ultimately, a strong Behavioral Intention leads to increased Use Behavior for learning communication. The hypothesis testing results of the latent variables diagram in this study are presented in Image 2.

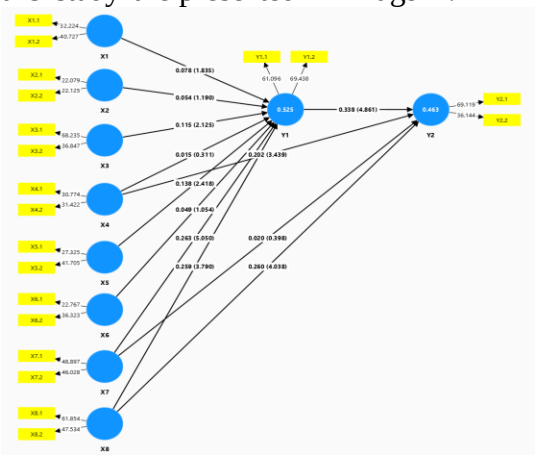


Image 2. Inner Model Diagram

**Analysis of Moderation Variable Test Results**

The moderation test results show that age, gender, and experience influence the relationships between independent and dependent variables. The effect of Social Influence (SI) on Behavioral Intention (BI) is stronger among younger respondents (≤ 20 years), while Hedonic Motivation (HM) and Habit (H) enhance Behavioral Intention (BI) across all age groups. Facilitating Conditions (FC) and Habit (H) strengthen Use Behavior (UB) in both age groups. Gender moderates SI's impact on BI, being stronger among males, while HM and H influence BI across both genders. Habit also strengthens UB regardless of gender. Experience moderates Effort Expectancy (EE) on BI, being stronger among those with ≤ 2 years of experience, while SI, H, and FC have a stronger impact on BI and UB among respondents with more than 2 years of experience. HM's effect on BI and BI's influence on UB are reinforced across all experience levels. The study involved 386 younger and 53 older respondents, 219 males and 220 females, and 390 experienced and 49 less-experienced respondents.

## CONCLUSION

This study revealed that perceived convenience has a significant influence on the intention and behavior of using WhatsApp in secondary education in Medan City. Convenience in terms of accessibility and flexibility of time and place, cross-device access, and ease of secure communication encourage users to continue using this application in learning. In addition, social influence and hedonic motivation factors are proven to influence the intention and behavior of using WhatsApp, while habit only influences behavioral intention and facilitating conditions only influence

usage behavior. Support from the surrounding environment, aspects of pleasure in using the application, and habits formed from previous experiences strengthen the adoption of WhatsApp as a learning communication tool. In contrast, performance expectancy, effort expectancy, and price value do not affect the intention and behavior of use, while facilitating conditions do not affect behavioral intention, and habit does not affect usage behavior. In terms of demographics, age, gender, and experience moderate some of the relationships between UTAUT2 variables and intention and behavior of use. This study provides insights for application developers and educational units in increasing the effectiveness of using WhatsApp as a learning communication tool.

Recommendations for further research include expanding the scope of the area covered, increasing the number of respondents, balancing the moderating variable data and exploring new factors in various contexts other than secondary education.

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