



WhatsApp Use and Interpersonal Communication among Postgraduate University Students in Lahore, Pakistan: A Technology Acceptance Model Perspective

Zaheer Hussain¹
Azhar Munir Bhatti²

ABSTRACT

The increasing integration of mobile instant messaging applications into higher education has transformed the way university students communicate, collaborate, and engage in academic activities. Among these applications, WhatsApp has emerged as one of the most widely used platforms for academic interaction due to its accessibility, ease of use, and interactive features. Despite its widespread adoption, previous studies have reported contradictory findings regarding its influence on students' interpersonal communication. Therefore, this study examined the relationship between WhatsApp use and interpersonal communication among postgraduate students enrolled in four universities in Lahore, Pakistan. Guided by the Technology Acceptance Model (TAM), the study investigated two key dimensions of WhatsApp adoption: perceived usefulness and perceived ease of use. A quantitative survey research design was employed, and data were collected through a structured questionnaire from 159 MPhil and PhD students studying at the University of Lahore, the University of Education, the University of Management and Technology, and Riphah International University Lahore Campus. The questionnaire demonstrated satisfactory internal consistency, with Cronbach's alpha values of 0.806 and 0.912 for the two constructs. The collected data were analysed using correlation analysis in SPSS (Version 25). The findings revealed a strong positive relationship between the perceived usefulness and convenience of WhatsApp for academic communication and students' interpersonal communication ($r = .746, p < .001$). The results indicate that WhatsApp facilitates academic discussions, resource sharing, peer collaboration, and continuous interaction between students and teachers, thereby supporting effective interpersonal communication in higher education. The study contributes to the growing literature on educational technology by providing empirical evidence on the educational value of WhatsApp in postgraduate learning environments. The findings also offer practical implications for university administrators and educators seeking to integrate mobile communication technologies into teaching and learning practices.

Key Words: WhatsApp, Interpersonal Communication, Technology Acceptance Model, Higher Education, Mobile Learning, Social Networking Services

¹ National University of Modern Languages, Lahore Campus

² Higher Education Department, Punjab, Pakistan





1. INTRODUCTION

Digital technologies have fundamentally transformed communication practices across educational institutions worldwide (Galvis & Carvajal, 2022). The rapid expansion of internet connectivity, smartphones, and mobile applications has shifted communication from conventional face-to-face interaction to technology-mediated communication. Among these technologies, social networking services (SNS) and instant messaging applications have become integral components of students' academic and social lives (Alamer, Al Khateeb, & Jenö, 2023). University students increasingly rely on these digital platforms to communicate with classmates, instructors, and academic communities, making mobile communication an indispensable element of higher education.

Among the various instant messaging applications available today, WhatsApp has emerged as one of the most widely adopted communication platforms because of its accessibility, affordability, and user-friendly interface. The application enables users to exchange text messages, voice notes, images, documents, videos, and real-time calls, thereby supporting both social interaction and academic collaboration. In higher education, WhatsApp is frequently used for class announcements, collaborative learning, peer discussions, assignment sharing, and teacher–student communication. These features have expanded its role beyond social networking and positioned it as an important educational communication tool.

The increasing dependence on digital communication has generated considerable scholarly interest regarding its influence on interpersonal communication. Interpersonal communication refers to the exchange of information, ideas, emotions, and experiences between two or more individuals through verbal and non-verbal interactions (Alamer, & Al Khateeb, 2023). Effective interpersonal communication is essential for academic success because it facilitates collaborative learning, strengthens peer relationships, enhances teacher–student interaction, and contributes to students' social and emotional development. However, scholars remain divided regarding the effects of social networking applications on interpersonal communication.

Several studies have reported positive educational outcomes associated with WhatsApp and other social networking platforms. Researchers have found that instant messaging applications facilitate collaborative learning, improve academic engagement, strengthen peer relationships, and provide opportunities for continuous communication beyond classroom boundaries (Habes et al., 2022). Through instant communication, students can easily seek clarification, exchange learning materials, discuss assignments, and receive immediate feedback from classmates and instructors. Such interactions contribute to the development of academic communities and strengthen interpersonal relationships within educational settings.

Conversely, other researchers have argued that excessive dependence on digital communication may reduce face-to-face interaction, weaken communication competence, increase social isolation, and negatively affect interpersonal relationships. Critics suggest that excessive engagement with smartphones and social networking platforms may replace meaningful physical interaction and reduce opportunities to develop essential interpersonal communication skills. Consequently, existing literature presents inconsistent evidence regarding whether WhatsApp enhances or diminishes interpersonal communication among university students.





These contrasting findings reveal an important research gap, particularly within the context of Pakistani higher education. Although WhatsApp has become an indispensable communication platform in universities across Pakistan, empirical evidence regarding its educational and interpersonal implications remains relatively limited, especially among postgraduate students. Furthermore, the rapid expansion of digital learning environments following the widespread adoption of online and blended learning has significantly increased students' reliance on mobile communication technologies for academic purposes. Understanding how students perceive and utilize WhatsApp has therefore become increasingly important for educators, university administrators, and policymakers seeking to promote effective digital learning environments.

The present study addresses this gap by examining the relationship between WhatsApp use and interpersonal communication among postgraduate students enrolled in four universities in Lahore, Pakistan. Unlike many previous studies that focused primarily on social interaction, the current research specifically investigates WhatsApp as an academic communication platform that supports discussion, collaboration, resource sharing, and interaction between students and teachers.

The study is theoretically grounded in the Technology Acceptance Model (TAM), originally proposed by Davis (1989). TAM explains users' acceptance of technology through two fundamental constructs: **Perceived Usefulness (PU)**, which refers to the degree to which users believe that a technology enhances their performance, and **Perceived Ease of Use (PEOU)**, which refers to the extent to which users perceive the technology as effortless to use. Within educational contexts, these constructs provide an appropriate framework for understanding students' adoption of WhatsApp as a communication and learning tool. It is expected that when students perceive WhatsApp as useful and easy to use, they are more likely to employ it for academic collaboration and interpersonal communication.

This study contributes to the existing literature in several ways. First, it extends the application of the Technology Acceptance Model to interpersonal communication within postgraduate education. Second, it provides empirical evidence from Pakistan, where limited research has investigated the educational implications of WhatsApp among postgraduate students. Third, the findings offer practical insights for higher education institutions seeking to integrate mobile communication technologies into teaching and learning while promoting meaningful academic interaction.

Research Objectives

The study was guided by the following objectives:

1. To examine the relationship between WhatsApp use and interpersonal communication among postgraduate university students.
2. To investigate students' perceptions regarding the usefulness and ease of using WhatsApp for academic discussion, collaboration, and sharing of learning materials.

Research Questions

The following research questions guided the study:

1. What is the relationship between WhatsApp use and interpersonal communication among postgraduate university students?
2. How do postgraduate students perceive the usefulness and ease of using WhatsApp for academic communication, discussion, and sharing of educational resources?

2. LITERATURE REVIEW





2.1 Interpersonal Communication in Higher Education

Interpersonal communication is a dynamic process through which individuals exchange ideas, emotions, information, and experiences using verbal and non-verbal channels. According to DeVito (2018), effective interpersonal communication extends beyond the transmission of information; it involves mutual understanding, active listening, feedback, empathy, and relationship building. Within higher education, interpersonal communication plays a crucial role in promoting collaborative learning, developing critical thinking, enhancing classroom participation, and strengthening relationships among students and instructors.

The rapid evolution of digital technologies has transformed interpersonal communication from predominantly face-to-face interactions to technology-mediated communication. Contemporary university students frequently communicate through smartphones, instant messaging applications, learning management systems (LMS), and social networking platforms. These technologies have created opportunities for continuous interaction beyond the physical classroom while simultaneously raising concerns regarding their influence on communication quality, social relationships, and academic engagement.

Researchers argue that effective interpersonal communication remains an essential graduate attribute because employers increasingly expect graduates to demonstrate teamwork, collaboration, leadership, problem-solving, and communication skills alongside disciplinary knowledge. Consequently, understanding how digital communication technologies influence interpersonal communication has become an important area of educational research.

2.2 WhatsApp as a Digital Communication and Learning Platform

WhatsApp has become one of the most widely adopted mobile instant messaging applications globally. Initially developed as a social communication tool, it has evolved into a versatile platform supporting academic collaboration, information sharing, and virtual learning communities. The application's popularity is largely attributed to its free messaging service, multimedia sharing capabilities, group communication features, voice and video calls, and cross-platform accessibility.

In higher education, WhatsApp enables students to communicate synchronously and asynchronously regardless of geographical boundaries. Students use WhatsApp groups to discuss assignments, share lecture notes, exchange learning resources, clarify academic concepts, coordinate group projects, and receive announcements from instructors. These features promote collaborative learning and facilitate continuous communication outside formal classroom settings.

Unlike traditional email communication, WhatsApp offers immediate interaction, rapid feedback, and greater social presence. The platform allows students to develop learning communities where academic discussions continue beyond scheduled class hours. Such communication encourages peer support, knowledge sharing, and cooperative learning, all of which contribute to enhanced learning experiences.

Several scholars have recognised WhatsApp as an effective mobile learning (m-learning) tool because it supports learner-centred education, active participation, and flexible communication. Its ease of accessibility has made it particularly valuable in contexts where sophisticated learning management systems may be less accessible or where students rely primarily on smartphones for internet access.





2.3 Social Networking Services and Interpersonal Communication

The educational implications of social networking services (SNS) remain an area of considerable scholarly debate. Existing literature presents two contrasting perspectives regarding the influence of social networking platforms on interpersonal communication.

The first perspective argues that social networking applications strengthen interpersonal relationships by facilitating frequent interaction, collaborative learning, and social connectedness (Lee et al., 2023). Studies have shown that digital communication enables students to maintain relationships with peers, instructors, and family members regardless of physical distance (Yeboah & Nyagorme, 2022). Frequent online interaction promotes emotional support, cooperative problem-solving, and information sharing, thereby strengthening social relationships. Research has demonstrated that WhatsApp groups encourage students to participate more actively in academic discussions, particularly those who may be reluctant to speak during traditional classroom sessions (Suárez-Lantarón et al., 2022). Online communication also reduces communication barriers by allowing students sufficient time to formulate responses and participate more confidently in discussions (Habes et al., 2022). Consequently, digital communication can promote inclusion and increase participation among diverse student populations.

Conversely, a second body of literature highlights the potential negative consequences of excessive social networking. Researchers argue that overdependence on digital communication may reduce face-to-face interaction, weaken verbal communication skills, increase social isolation, and contribute to superficial relationships. Excessive smartphone use may also distract students from meaningful interpersonal engagement and reduce opportunities for developing non-verbal communication competencies such as eye contact, facial expressions, and body language. Some studies further suggest that prolonged engagement with social networking applications may contribute to reduced academic concentration, technology dependency, and communication anxiety during direct interpersonal interactions. These findings indicate that while digital communication provides numerous educational benefits, its effectiveness largely depends upon how students utilise these technologies.

The contradictory findings reported across previous studies suggest that the relationship between WhatsApp use and interpersonal communication is context-dependent rather than universally positive or negative. Cultural factors, educational environments, technological infrastructure, and patterns of technology use may all influence students' experiences (Bhatti & Bashir, 2025). Therefore, further empirical investigation within specific educational contexts remains necessary.

2.4 Empirical Evidence on WhatsApp in Higher Education

Over the past decade, WhatsApp has received increasing scholarly attention as an educational communication platform. Previous empirical studies have examined its influence on student engagement, collaborative learning, academic achievement, communication skills, and interpersonal relationships.

Several investigations have reported positive educational outcomes associated with WhatsApp use. Shahkat Ali and Kootbodien (2017) found that WhatsApp served as an effective interpersonal communication medium among university students by facilitating interaction beyond campus boundaries. Similarly, studies conducted in Malaysia demonstrated positive relationships between mobile instant messaging and interpersonal communication among university students. These findings suggest that WhatsApp promotes collaboration and strengthens peer relationships through continuous communication.





Other researchers have emphasised WhatsApp's contribution to academic collaboration. Students frequently use the platform to exchange learning materials, coordinate group assignments, seek clarification regarding course content, and communicate with instructors. The availability of instant feedback encourages collaborative problem-solving and promotes active participation in learning activities.

Furthermore, online communication provides opportunities for students who experience anxiety during face-to-face communication. Instant messaging allows these individuals to express opinions more confidently while reducing communication apprehension. Such flexibility may enhance students' willingness to participate in academic discussions and strengthen interpersonal relationships (Abbas et al., 2021).

However, not all empirical evidence supports these positive conclusions. Several studies have reported that excessive social networking may reduce direct interpersonal interaction and weaken communication quality. Some researchers found that students spending excessive time on social media experienced deteriorating relationships with family members, peers, and teachers. Others argued that digital communication cannot fully replace the richness of face-to-face interaction because important non-verbal cues remain absent.

These divergent findings indicate that WhatsApp should neither be viewed as inherently beneficial nor inherently harmful. Instead, its educational value depends upon students' patterns of use, educational objectives, institutional support, and communication practices.

2.5 Technology Acceptance Model (TAM)

The present study is grounded in the Technology Acceptance Model (TAM), one of the most influential theoretical frameworks for explaining technology adoption and user behaviour. Developed by Davis (1989) as an extension of the Theory of Reasoned Action (TRA), TAM proposes that users' acceptance of technology is primarily determined by two cognitive beliefs: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**.

Perceived usefulness refers to the degree to which individuals believe that using a particular technology enhances their performance or productivity (Guo et al., 2022). Within educational settings, students are more likely to adopt digital communication platforms when they perceive them as facilitating learning, improving communication, and increasing academic efficiency.

Perceived ease of use refers to the extent to which users believe that a technology requires minimal effort to learn and operate. Technologies that are intuitive, accessible, and user-friendly generally experience higher acceptance among users because they reduce cognitive burden and encourage sustained engagement.

Numerous studies have validated TAM across diverse educational technologies, including learning management systems, e-learning platforms, social networking services, mobile learning applications, and instant messaging tools. Research consistently demonstrates that perceived usefulness and perceived ease of use significantly influence students' willingness to adopt educational technologies and integrate them into their learning activities.

In the context of the present study, WhatsApp represents a mobile communication technology whose acceptance among postgraduate students may influence interpersonal communication. Students who perceive WhatsApp as useful for academic collaboration and easy to use are expected to communicate more frequently with peers and instructors, thereby strengthening interpersonal relationships within higher education environments.





2.6 Conceptual Framework

The conceptual framework for this study is derived from the Technology Acceptance Model. The framework proposes that two independent constructs—**Perceived Usefulness** and **Perceived Ease of Use**—shape students' acceptance of WhatsApp as an academic communication platform. These perceptions influence how students utilise WhatsApp for academic discussions, sharing educational resources, seeking guidance, and collaborating with peers.

Consequently, greater acceptance of WhatsApp is expected to be associated with stronger interpersonal communication among postgraduate students. The study therefore examines the relationship between these TAM constructs and students' perceptions of interpersonal communication within university learning environments.

2.7 Research Gap

Although previous studies have extensively examined social networking applications, several gaps remain evident in the literature. First, existing research reports inconsistent findings regarding the influence of WhatsApp on interpersonal communication, with some studies identifying positive educational outcomes while others emphasise adverse social consequences. Second, comparatively limited empirical evidence is available from Pakistani higher education institutions, particularly regarding postgraduate students whose academic communication needs differ from those of undergraduate learners. Third, relatively few studies have examined interpersonal communication through the theoretical lens of the Technology Acceptance Model by simultaneously considering perceived usefulness and perceived ease of use.

The present study addresses these gaps by investigating the relationship between WhatsApp use and interpersonal communication among postgraduate students enrolled in four universities in Lahore, Pakistan. By employing the Technology Acceptance Model as its theoretical framework, the study contributes to a deeper understanding of students' acceptance of mobile communication technologies within higher education and their implications for academic interaction and collaborative learning.

3. METHODOLOGY

3.1 Research Design

This study employed a **quantitative cross-sectional survey design** to investigate the relationship between WhatsApp use and interpersonal communication among postgraduate university students. A quantitative approach was considered appropriate because it enables researchers to collect standardized data from a relatively large number of participants and examine relationships among variables using statistical techniques (Creswell & Creswell, 2018). Survey research is particularly suitable for investigating participants' perceptions, attitudes, behaviours, and technology acceptance in educational settings.

The study was guided by the **Technology Acceptance Model (TAM)**, which proposes that users' acceptance of technology is primarily influenced by two constructs: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)** (Davis, 1989). These constructs formed the conceptual basis for investigating students' perceptions regarding WhatsApp as an academic communication platform.

3.2 Population of the Study

The target population comprised postgraduate students enrolled in **MPhil and PhD programmes** at four universities in Lahore, Pakistan:

- University of Lahore
- University of Education





- University of Management and Technology (UMT)
- Riphah International University, Lahore Campus

These universities were selected because they actively integrate digital communication technologies into postgraduate teaching and learning, making them suitable settings for investigating WhatsApp-mediated academic communication.

3.3 Sampling Technique and Sample Size

Participants were selected using a **non-probability convenience sampling technique**. Students who were enrolled in postgraduate programmes and actively used WhatsApp for academic communication were invited to participate in the survey through programme coordinators and class representatives.

A total of **159 valid responses** were received and included in the final analysis. According to Sekaran and Bougie (2016), sample sizes ranging from 30 to 500 are generally adequate for survey-based social science research. Although convenience sampling limits the generalisability of the findings, it remains an appropriate and widely accepted approach for exploratory educational research where access to the complete sampling frame is limited.

3.4 Research Instrument

Data were collected using a **structured self-administered questionnaire** developed in accordance with the constructs of the Technology Acceptance Model.

The questionnaire consisted of two sections.

The **first section** measured students' perceptions regarding the **perceived usefulness of WhatsApp**, particularly its contribution to interpersonal communication. The items examined whether WhatsApp strengthened communication, improved mutual understanding, enhanced collaboration, promoted respectful interaction, and facilitated communication among peers.

The **second section** measured the **perceived ease of use** of WhatsApp for academic purposes. The items focused on students' perceptions regarding the convenience of using WhatsApp to discuss academic issues, share learning materials, exchange ideas, seek guidance from teachers, and collaborate with classmates.

Responses were measured using a **five-point Likert scale**, ranging from:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

The Likert scale enabled respondents to express varying degrees of agreement regarding each statement while facilitating quantitative statistical analysis.

3.5 Validity and Reliability of the Instrument

The questionnaire was developed after an extensive review of the literature on interpersonal communication, educational technology, social networking services, and the Technology Acceptance Model. The instrument was designed to ensure that each questionnaire item corresponded directly to the constructs investigated in the study.

The internal consistency of the questionnaire was assessed using **Cronbach's Alpha**. The reliability coefficients were:





Construct	Number of Items	Cronbach's Alpha
Perceived Usefulness (Impact on Interpersonal Communication)	10	.806
Perceived Ease of Use (Convenience of WhatsApp)	9	.912

According to Hair et al. (2019), Cronbach's Alpha values above .70 indicate acceptable internal consistency, while values exceeding .80 demonstrate good reliability. Therefore, both constructs exhibited satisfactory reliability and were considered appropriate for subsequent statistical analysis.

3.6 Data Collection Procedure

The questionnaire was created using **Google Forms** to facilitate efficient online data collection.

The survey link was distributed electronically through programme coordinators and class representatives of the participating universities. Students voluntarily completed the questionnaire using their smartphones or computers.

The online mode of data collection was particularly suitable because the study investigated the use of WhatsApp and other digital communication practices among postgraduate students. Furthermore, online distribution enabled the researchers to reach respondents from multiple universities simultaneously while reducing administrative costs and improving response efficiency.

Only completed questionnaires were included in the final analysis.

3.7 Ethical Considerations

The study adhered to generally accepted ethical principles governing educational research. Participation in the survey was entirely voluntary. Before completing the questionnaire, respondents were informed about the purpose of the study and assured that their participation was anonymous and confidential. No personally identifiable information was collected, and respondents retained the right to withdraw from the survey at any stage before submission.

The collected data were used exclusively for academic research purposes.

3.8 Data Analysis

The collected data were analysed using **IBM Statistical Package for the Social Sciences (SPSS) Version 25**.

Initially, reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the questionnaire.

Subsequently, **Pearson's Product-Moment Correlation** was employed to examine the relationship between students' perceptions regarding the usefulness and convenience of WhatsApp in relation to interpersonal communication.

The correlation coefficient (r) was interpreted using conventional guidelines, where values approaching +1 indicate a strong positive relationship between variables. Statistical significance was evaluated at the **0.05 level**, with stronger evidence reported at the **0.01 significance level**.

3.9 Conceptual Framework

The study was guided by the Technology Acceptance Model (TAM), which proposes that users' acceptance of technology depends primarily on two cognitive beliefs:

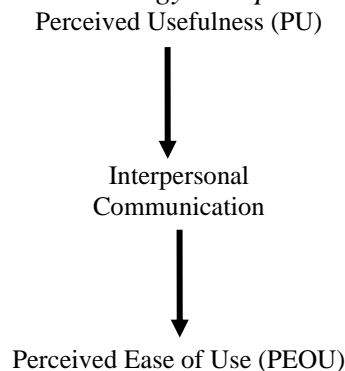
- **Perceived Usefulness (PU):** the extent to which students believe that WhatsApp enhances their academic communication and interpersonal interaction.



- **Perceived Ease of Use (PEOU):** the extent to which students perceive WhatsApp as simple, convenient, and effortless for academic communication.

These two constructs were examined in relation to students' perceptions of interpersonal communication in postgraduate education. The conceptual framework assumes that higher levels of perceived usefulness and perceived ease of use are associated with more positive interpersonal communication among university students.

Conceptual Framework based on the Technology Acceptance Model (TAM)



(Figure 1)

Improvements Over the Original Methodology

This revised methodology addresses the reviewer's concerns by:

- Correcting the sampling description (replacing the contradictory "non-probability random sampling" with **convenience sampling**).
- Providing a clearer justification for the quantitative survey design.
- Improving the description of the research instrument and its alignment with TAM.
- Presenting reliability results in a professional format and citing accepted thresholds.
- Adding a dedicated **Ethical Considerations** section.
- Resolving the inconsistency between Spearman's and Pearson's correlation.
- Explaining the conceptual framework rather than merely displaying it.

4. Results and Discussion

4.1 Reliability Analysis

Before examining the relationship between the study variables, the internal consistency of the research instrument was assessed using Cronbach's Alpha. Reliability analysis is essential for determining whether the questionnaire items consistently measure the intended constructs.

Table 1 presents the reliability statistics for the two constructs investigated in the study.

Table 1

Reliability Statistics

Construct	Number of Items	Cronbach's Alpha
Perceived Usefulness (Impact on Interpersonal Communication)	10	.806
Perceived Ease of Use (Convenience of WhatsApp)	9	.912

The Cronbach's Alpha coefficients indicate satisfactory internal consistency for both constructs. The value of **0.806** for Perceived Usefulness suggests good reliability, while the coefficient of **0.912** for Perceived Ease of Use demonstrates excellent reliability. These values

WhatsApp Use and Interpersonal Communication among Postgraduate University Students in Lahore, Pakistan: A Technology Acceptance Model Perspective.



exceed the recommended threshold of 0.70 (Hair et al., 2019), indicating that the questionnaire was sufficiently reliable for further statistical analysis.

4.2 Relationship between WhatsApp Use and Interpersonal Communication

The principal objective of this study was to examine the relationship between postgraduate students' perceptions of WhatsApp and their interpersonal communication. Pearson's Product-Moment Correlation was employed to determine the degree of association between the two constructs.

Table 2

Pearson Correlation between Perceived Usefulness and Perceived Ease of Use

Variables	1	2
1. Perceived Usefulness	1	.746**
2. Perceived Ease of Use	.746**	1

Note. p < .01 (two-tailed)

The analysis revealed a **strong positive correlation** between perceived usefulness and perceived ease of use ($r = .746, p < .001$). This finding indicates that postgraduate students who perceived WhatsApp as useful for academic communication also regarded it as easy and convenient to use.

The strength of the relationship suggests that students' acceptance of WhatsApp is closely associated with its contribution to academic interaction and communication. The statistically significant positive correlation supports the proposition that when students perceive WhatsApp as an effective educational tool, they are more likely to utilise it for collaborative learning, information sharing, and interpersonal communication.

It is important to note that the reported correlation demonstrates a **strong association rather than a causal relationship**. Therefore, the findings indicate that perceptions of usefulness and convenience are positively related to interpersonal communication; however, they do not establish that WhatsApp directly causes improvements in interpersonal communication.

4.3 Discussion

The findings of this study indicate that postgraduate students perceive WhatsApp as an effective platform for academic communication and interpersonal interaction. The significant positive relationship between perceived usefulness and perceived ease of use suggests that students' acceptance of WhatsApp contributes to more frequent academic communication and collaborative learning.

These findings are consistent with the Technology Acceptance Model (Davis, 1989), which proposes that individuals are more likely to adopt and continue using a technology when they perceive it as useful and easy to use. In the present study, WhatsApp appears to satisfy both conditions. Students considered the application beneficial for communicating with peers and instructors while also appreciating its user-friendly interface and accessibility. Consequently, WhatsApp has become an integral component of their academic communication practices.

The findings also support previous research demonstrating the educational potential of instant messaging applications. Earlier studies reported that WhatsApp facilitates collaborative learning by enabling students to exchange lecture notes, discuss assignments, share multimedia resources, and seek clarification from peers and teachers beyond scheduled classroom hours. Such continuous interaction strengthens academic relationships and promotes a supportive learning environment.





Another important finding concerns the role of WhatsApp in maintaining communication regardless of geographical or temporal constraints. Participants perceived the application as enabling immediate communication and rapid exchange of information. This flexibility is particularly valuable for postgraduate students, whose academic activities frequently involve independent research, collaborative projects, and consultations with supervisors. The ability to communicate asynchronously as well as synchronously allows students to maintain regular academic interaction despite differing schedules.

The findings further indicate that WhatsApp contributes to collaborative learning by encouraging mutual assistance among students. Participants reported that they used the platform to exchange academic resources, solve learning problems, discuss coursework, and provide guidance to one another. Such collaborative practices are consistent with social constructivist perspectives on learning, which emphasize that knowledge is developed through interaction and shared experiences.

The results also demonstrate that WhatsApp facilitates teacher–student communication. Participants perceived the application as an accessible medium for seeking academic guidance and receiving timely responses from instructors. This finding has important implications for higher education because increased accessibility may strengthen mentoring relationships and improve students' academic engagement.

While the findings generally support the educational value of WhatsApp, they should be interpreted cautiously. Previous research has produced mixed evidence regarding the influence of social networking applications on interpersonal communication. Some scholars have argued that excessive dependence on digital communication may reduce face-to-face interaction and weaken traditional communication skills. These concerns remain valid because the present study examined students' perceptions rather than objectively measuring changes in interpersonal communication competence.

Nevertheless, the findings suggest that WhatsApp should not be viewed solely as a social networking application. Rather, within postgraduate education it functions as an educational communication platform that facilitates collaboration, information sharing, and academic interaction. When used purposefully for educational activities, WhatsApp appears capable of supporting rather than replacing meaningful interpersonal communication.

The present findings therefore contribute to the growing body of research suggesting that the educational value of social networking technologies depends less upon the technology itself and more upon the manner in which it is integrated into teaching and learning. Appropriate educational use of WhatsApp may strengthen communication among students and instructors while enhancing collaborative learning experiences.

4.4 Practical Implications

The findings have several practical implications for higher education institutions.

First, universities may consider integrating WhatsApp into course communication strategies to facilitate timely dissemination of announcements, learning materials, and academic support. The platform's accessibility enables students to remain connected with instructors and classmates beyond formal classroom sessions.

Second, instructors can utilise WhatsApp groups to encourage collaborative learning through peer discussion, problem-solving activities, and resource sharing. Such practices may promote active learning and strengthen students' engagement with course content.





Third, university administrators should develop institutional guidelines regarding the educational use of instant messaging applications. Clear communication protocols can maximise educational benefits while minimising potential distractions associated with non-academic use. Finally, teacher training programmes should include guidance on the effective pedagogical integration of mobile communication technologies. Developing digital communication competencies among educators will enable them to utilise WhatsApp and similar platforms more effectively to support student learning and interaction.

5. Conclusion

This study examined the relationship between WhatsApp use and interpersonal communication among postgraduate students enrolled at four universities in Lahore, Pakistan. Guided by the Technology Acceptance Model, the research investigated students' perceptions regarding the usefulness and ease of using WhatsApp for academic communication.

The findings revealed a statistically significant positive relationship between perceived usefulness and perceived ease of use, suggesting that postgraduate students regard WhatsApp as an effective communication platform for academic collaboration. Participants perceived the application as facilitating communication with peers and instructors, promoting collaborative learning, supporting the exchange of academic resources, and strengthening interpersonal interaction within higher education settings.

The study contributes to the literature by extending the application of the Technology Acceptance Model to mobile communication in postgraduate education within the Pakistani context. The findings demonstrate that mobile instant messaging applications can play an important role in supporting collaborative learning and academic communication when used appropriately. However, the results should be interpreted within the limitations of the study. The use of a convenience sample drawn from four universities limits the generalisability of the findings. In addition, the study relied on self-reported perceptions rather than objective measures of communication behaviour. The cross-sectional design also precludes conclusions regarding causality.

Future research should include larger and more diverse samples representing public and private universities across different regions of Pakistan. Researchers may also employ longitudinal or mixed-methods designs to investigate how WhatsApp influences interpersonal communication over time. Further studies could compare WhatsApp with other digital communication platforms, examine discipline-specific differences, and explore the relationship between technology use, academic achievement, and communication competence.

Overall, the findings suggest that WhatsApp has considerable potential as an educational communication tool that supports interaction, collaboration, and academic engagement among postgraduate students. Universities and educators should therefore consider integrating mobile communication technologies into pedagogical practice while encouraging balanced and purposeful use that complements rather than replaces face-to-face communication.

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