

## **Exploring the Effectiveness of WhatsApp as a Knowledge Management Tool in Accounting Education**

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### **ABSTRACT**

Emerging technologies in accounting education are crucial for equipping recent graduates and early-career professionals with the skills necessary to achieve organizational success. This study explores the effectiveness of WhatsApp as a knowledge management tool among undergraduate accounting students in Ghana. While studies have examined WhatsApp utilisation in higher education, this study focuses specifically on its application in accounting education. Grounded in Social Constructivism Theory, this study provides insights into students' perceptions, benefits, and challenges of using WhatsApp for learning accounting. Data from semi-structured interviews and focus groups were thematically analyzed using a qualitative approach. The findings revealed that, although WhatsApp facilitates real-time interaction and collaborative learning, the platform faces limitations in supporting the specialized needs of accounting education, including handling intricate financial transactions. Furthermore, the informal nature of WhatsApp limits its utility in explaining complex financial calculations, demanding a structured approach for effective use. The study proposes a framework to address these challenges, offering structured strategies to integrate WhatsApp effectively into accounting education. This framework emphasizes the best practices for knowledge sharing, maximizing the platform's benefits while mitigating its shortcomings. These findings contribute to understanding how WhatsApp can complement accounting education and support the learning needs of students in higher education.

**Keywords:** *Knowledge Management; WhatsApp; Effectiveness; Accounting, Students; Higher Education*

### **INTRODUCTION**

Knowledge management has emerged as a key driver of organizational competitiveness, propelled by the progress in globalization, digital transformation, and the knowledge economy (Wu & Lee, 2017; Yaqub & Alsabban, 2023). The concept of knowledge management (KM) involves a systematic and institutionally specified process aimed at acquiring, organizing, and effectively disseminating students' knowledge within educational settings (Becerra-Fernandez & Sabherwal, 2014). According to Cerchione & Esposito (2017), knowledge management (KM) integrates the interplay of people, technology, and methodologies to systematically create, validate, organize, share, and apply knowledge within an organization or system. This process ensures that knowledge is effectively leveraged to achieve specific goals and enhance decision-making. Knowledge Management Systems (KMS) are often implemented to aid KM initiatives, focusing on enabling knowledge formation, communication, and utilization. According to Dong, Hung & Cheng (2016), a KMS is a platform that simplifies the creation, organizing, sharing, and utilization of knowledge

within an organization. The platform helps students get the right knowledge from the right people at the right time.

Previous studies (Wu & Lee, 2017; Swanson *et al.*, 2020), have demonstrated that an institution can enhance its absorption skills, productivity, performance, and competitive advantages by sharing knowledge effectively. Furthermore, the study of Podrug, Filipović & Kovač (2017) has revealed that knowledge donation, collection, and sharing play a vital role in fostering innovation in an organization. Farooq (2018) defined knowledge sharing as a social interaction between human subjects that involves exchanging knowledge, experience, and skills to facilitate future improvements. Hence, prior studies (such as, Koohang, Paliszkievicz & Goluchowski, 2017; Baima *et al.*, 2022) have advocated for the importance of developing knowledge capabilities (especially digital knowledge management capabilities) that could be considered a crucial factor in improving organizational performance in this age of digitization and knowledge.

According to Hussin *et al.* (2023), knowledge management is critical in the field of accounting education, where students' skills engagement is vital for mastering complex accounting concepts, developing problem-solving skills, and staying current with industry standards. Hence, accounting students require tools that support the assimilation of intricate financial data, the application of technical knowledge, and the preparation for professional accounting exams or practices (Helliard, 2013). In recent years, social media platforms including WhatsApp have emerged as tools that can support accounting knowledge management by facilitating communication and collaboration among students (Mbodila, Marongwe & Kwahene, 2020). WhatsApp, one of the widely used messaging applications, has gained popularity as an informal educational tool that allows students to share resources, discuss coursework, and collaborate on assignments (Madge *et al.*, 2019a; Suárez-Lantarón *et al.*, 2022). According to Leonardi & Treem (2012), the WhatsApp platform primarily serves as a platform for social interactions, collaborative connections, and sharing knowledge. This is due to its ability to encourage interactions and cultivate informal social connections among students, as well as between students and staff, both within and across institutions. Latifah *et al.* (2022) confirmed the significant role of social networks, including WhatsApp, and knowledge sharing in boosting the pace of innovation performance.

Although there has been increased adoption of social network platforms as a tool for knowledge sharing in both academia and industry in recent years, as noted by prior scholars (Al Saifi, Dillon & McQueen, 2016; Latifah *et al.*, 2022; Yaqub & Alsabban, 2023), the effectiveness of WhatsApp platform for knowledge sharing has gained too little attention and needs to be explored further (Alshahrani & Rasmussen Pennington, 2018; Ponera & Ngulube, 2023). In the current educational landscape of developing countries, the advent of WhatsApp has introduced opportunities and challenges, shaping how students manage knowledge (Naghdipour & Manca, 2023). While WhatsApp platform holds the potential to democratize access to information and foster knowledge sharing, the effectiveness of its integration into educational practices remains underexplored within the context of academic learning in developing nations (Ali, Balta & Papadopoulos, 2023). Hence, the effectiveness of WhatsApp for knowledge management in the context of accounting education remains underexplored, particularly in terms of its impact on learning outcomes and the challenges it presents.

Consequently, this study, grounded on the social constructivism theory explores the effectiveness of WhatsApp platform for knowledge management among undergraduate accounting students in Ghana. While several studies have examined the role of WhatsApp in higher education (Jabbar *et al.*, 2021; Iranmanesh *et al.*, 2022), this study focuses specifically on its use in accounting education. The unique demands of accounting, including the handling of complex financial concepts and professional exam preparation, make this exploration particularly novel. Additionally, this research contributes to the understanding of WhatsApp's educational utility within the Ghanaian higher education context. Using a qualitative research approach, this study provides

insights into how students perceive the use of WhatsApp for accounting educational purposes, the benefits it offers, and the challenges they encounter. Understanding these dynamics is crucial for educators who wish to leverage social media platforms to enhance learning and knowledge sharing in accounting education. The findings offer useful insights to policymakers, educationalists, practitioners, and stakeholders of higher institutions of learning. Along these lines, the following research questions guided the conduct of the study:

RQ1. What are the salient challenges of using WhatsApp for accounting education?

RQ2. How can accounting knowledge be shared using WhatsApp?

RQ3. What is the impact of WhatsApp on the learning outcomes of accounting students?

## LITERATURE REVIEW

### Social Networks for Knowledge Management

Social Network for Knowledge Management is an emerging concept that explores the potential of online social networking platforms to facilitate the creation, sharing, and application of knowledge in higher education institutions (HEIs) (Corcoran & Duane, 2018). According to Manca & Ranieri (2017), social networks have been identified as useful tools in teaching and learning, as well as in the employability and career management of students. The use of these platforms has been seen to enhance the pedagogical process, particularly in developing countries where resources are constrained. The study of Khan *et al.* (2021) indicated that, in the context of higher education, social networking platforms facilitate the sharing of knowledge and information among students and teachers, thereby fostering an environment conducive to collaborative learning. These platforms serve as a medium for students and teachers to share ideas, discuss topics, and work on projects together, thereby enhancing the overall learning experience.

As of February 2024, Ghana boasts approximately 8.8 million social media users, a number projected to rise in the coming years. The leading social media platforms in Ghana, according to Statista (2024), include WhatsApp, Facebook, Instagram, Snapchat, and Twitter. At the close of 2023, 91.8% of the people connected to the internet in Ghana used WhatsApp, making it the most popular platform (Statista, 2024). The platform's popularity is attributed to its ease of use and widespread adoption across various age groups. Facebook followed closely, with approximately 77.4% of internet users using the platform. Furthermore, Instagram accounted for nearly 37.4% of total internet usage in Ghana. Other platforms, including TikTok and Telegram, also had significant user bases, with 64.9% and 43.5% of internet users, respectively. According to Alhabash & Ma (2017), social networking platforms are primarily used to keep in touch with friends and family, fill spare time, or make new connections. These platforms not only facilitate communication but also play a significant role in shaping cultural trends, disseminating information, and fostering online communities in Ghana. As mobile usage continues to rise, social media platforms are likely to evolve further, impacting how Ghanaians connect and engage with each other in the digital space.

Several studies (Sobaih *et al.*, 2016; Boruzie *et al.*, 2024) have highlighted the potential benefits of social network platforms in developing countries, emphasizing their role in democratizing access to information. Ravi, Ismail & Kumar (2021) found that students in low-resource settings utilize various platforms, including Facebook and WhatsApp, to collaboratively engage with learning materials, bridging gaps in traditional access to educational resources. This collaborative approach, rooted in social constructivist principles, has been observed to enhance knowledge creation and sharing among students in the context of limited physical infrastructure (Tan *et al.*, 2021). According to a study by Cepeda-Carrion *et al.* (2023), the integration of social network platforms in developing countries can be a catalyst for positive change, offering new avenues for collaborative learning and knowledge sharing. Qazi, Raza & Khan (2020) also found that students in Pakistan, for instance,

demonstrated enhanced knowledge acquisition through online collaborative spaces, breaking traditional barriers to information access.

However, Gladkova, Ragnedda & Vartanova (2022) highlighted that challenges and disparities persist because the digital space, often prominent in developing nations, raises concerns about equitable access to social network platforms and the resulting impact on knowledge management. Research by Laeeq Khan *et al.* (2020), also confirmed the disparity in digital literacy levels among students in developing countries, suggesting that while some leverage social network platforms for collaborative learning, others face barriers due to limited digital skills. Additionally, the literature highlights the potential of social network platforms to address resource constraints in developing nations. For instance, (Boateng, 2023) emphasized the role of social network platforms, including WhatsApp and Facebook, in providing students in Ghana with cost-effective ways to access educational resources and engage in collaborative knowledge-building activities. Furthermore, issues of privacy, data security, and the possible reinforcement of existing educational inequalities are topics that require careful examination within the specific context of developing countries (Adekola *et al.*, 2023). Research by Patel *et al.* (2022) stressed the need for targeted interventions to close these gaps and enhance the impact of social network platforms on knowledge management in India.

Furthermore, the cultural dimensions of knowledge management through social network platforms are vital considerations. According to Hayden (2017), culturally grounded learning practices may intersect with or challenge the affordances of these platforms. A study by Hunter (2005) outlined the role of indigenous knowledge systems in shaping how students in developing countries engage with social network platforms for knowledge management, emphasizing the need for culturally responsive approaches in educational technology design. Cultural nuances, language diversity, and varying pedagogical practices present additional layers of intricacy. Therefore, gaining deeper insights into these factors is crucial for tailoring social networking platforms to the specific needs of students in developing countries. Hence, the need for more contextually grounded research to inform the effective integration of social network platforms into educational practices is required to realize the benefits of technology-driven knowledge management in diverse and resource-constrained settings.

### **Effectiveness of WhatsApp in Accounting Education**

The rise of mobile technology has significantly transformed the educational landscape, particularly in West Africa, where access to traditional classroom resources is limited. According to Tetteh *et al.* (2023), WhatsApp, a popular messaging platform, has emerged as an effective tool for enhancing accounting education, especially during and after the COVID-19 pandemic. Higher education institutions worldwide adopted digital tools, including WhatsApp, to facilitate learning and communication during this period (Ali *et al.*, 2020). WhatsApp became a crucial part of knowledge management by creating learning communities, allowing students and educators to share notes, assignments, and resources in real-time. Research shows that WhatsApp improves communication and increases students' engagement with accounting materials, particularly in remote areas where internet access is unreliable, and other platforms may not be feasible (Adebayo *et al.*, 2021).

In addition, WhatsApp supports group discussions, a vital feature for collaborative learning in accounting. For instance, through group chats, students can engage in complex discussions, seek clarification, and share their understanding of accounting principles. This informal learning approach often leads to a deeper grasp of accounting concepts as students explain ideas to their peers. According to La Hanisi *et al.* (2018), WhatsApp fosters the growth of learning communities, enabling students to collaborate on assignments and engage in real-time communication through voice and video calls. These interactions provide timely feedback from instructors, which is crucial in accounting that requires accuracy and timeliness.

Furthermore, WhatsApp's accessibility and versatility make it a valuable resource-sharing platform, particularly for students in regions with limited connectivity (Umoh, 2024). It enables easy sharing of study materials, educational links, and multimedia content. The platform's voice and video call features are also highly useful for virtual meetings and discussions, further enhancing collaboration in remote learning environments. As educational institutions continue to embrace online and remote learning, WhatsApp remains an essential tool for maintaining student-teacher communication and facilitating knowledge exchange (Abubakar *et al.*, 2019; Chaka, Nkhobo & Lephalala, 2021). Motaung & Dube (2020) highlighted that WhatsApp's availability across multiple devices and its low bandwidth requirements make it an ideal solution for fostering real-time interaction and collaboration in West African education.

### **Challenges in Using WhatsApp for Accounting Education**

Using WhatsApp for accounting education presents several challenges, particularly in maintaining academic rigour and managing distractions. Unlike general subjects, accounting requires the use of detailed numerical data, financial statements, and complex concepts that may be difficult to explain effectively through WhatsApp's text-based communication. Research shows that while WhatsApp is widely adopted as a learning tool, its functionality is limited when dealing with intricate calculations, leading to frustration among students (Martinez-Comeche & Ruthven, 2021). The platform's informal communication style also makes it challenging for students to engage deeply with accounting material, as they often lack access to interactive tools, including spreadsheets or accounting software, necessary for a comprehensive understanding (Boadu, Donnelly & Sharp, 2020).

Again, WhatsApp, as a social messaging platform, is not designed as a formal learning management system, making it difficult for learners to organize and categorize content effectively (Chugh & Ruhi, 2018). This can lead to a disorganized flow of information, where critical study materials and important discussions may be lost in the constant stream of messages. Hence, there is a need for structured guidance from educators to ensure that students stay on track with their learning objectives. Additionally, the informal nature of WhatsApp communication may distract students from focusing on key accounting concepts (Kusi-Mensah *et al.*, 2019) and reduce the accounting profession's focus, which may potentially undermine the seriousness of educational interactions.

Another significant challenge is managing the potential distractions and off-topic discussions that can arise in WhatsApp groups. While WhatsApp fosters real-time collaboration, it can also lead to excessive messaging, which may overwhelm students and divert attention from the main academic objectives (Aharony & Gazit, 2020). These issues highlight the need for structured guidelines and proper moderation when using WhatsApp in educational settings to ensure that the focus remains on learning while minimizing the risks associated with informal, unregulated communication. Despite these challenges, when WhatsApp is used effectively, it can be a valuable tool for knowledge management in accounting education. Hence, this study seeks to build on these existing studies by focusing specifically on the experiences of accounting students to provide insights into how WhatsApp can be optimized for knowledge management in accounting education.

### **THEORETICAL FRAMEWORK**

In integrating information technologies in education, several theories have evolved to appreciate the intricate dynamics and impact on learning and teaching. These theories, including the Technology Acceptance Model (TAM) (Dumpit & Fernandez, 2017), Social Constructivism, Diffusion of Innovation Theory (Acharya, 2025), Activity Theory (Lee *et al.*, 2024), Social Cognitive Theory (SCT) (Al-Dokhny *et al.*, 2021), and Self-Determination Theory (SDT) (Akbari & Simons,

2018), among others, offer valuable insights into the diverse interactions within the current educational social network settings. Thus, this study is grounded on the theoretical lens of social constructivism, which posits that knowledge is constructed through social interactions and shared experiences (Hinshaw, Burden & Shriner, 2012). This theory by Vygotsky (1969) is a learning theory of knowledge where learners' development is socially situated, and knowledge is constructed through peer interaction. The theory emphasizes that learning is a process of constructing knowledge through interaction, communication, and shared experiences (Schreiber & Valle, 2013). In the context of WhatsApp as a knowledge management tool for accounting students, this theory supports the idea that knowledge is co-constructed through communication and shared experiences.

In 1978, Vygotsky modified this theory by introducing the Zone of Proximal Development (ZPD), which aims to address the gap between what a learner can do independently and what they can achieve with guidance. WhatsApp's group chat features, media sharing, and instant messaging enable collaborative learning, where students can engage in peer-to-peer discussions, clarify concepts, and share resources (Al-Qaysi, Mohamad-Nordin & Al-Emran, 2021). Hence, WhatsApp groups can serve as platforms for peers or instructors to provide scaffolding, assisting learners in bridging this gap. According to Nkambule & Ngubane (2024), through discussions and exchange of ideas among peers, students enhance their understanding of accounting concepts, share resources, and provide mutual support, which fosters a deeper engagement with the subject matter. The immediacy and informal nature of the WhatsApp platform align with social constructivist principles, fostering an environment where learners collectively build their understanding through dialogue and social interaction (Rambe, Chipunza & Ng'ambi, 2020).

However, applying social constructivism through WhatsApp also presents challenges. For instance, the lack of structured moderation can lead to off-topic discussions, and unequal participation may occur if some students dominate conversations while others remain passive (Malhotra et al, 2024). Additionally, distractions inherent in social media platforms can hinder focused academic engagement. Despite these challenges, this theory highlights the importance of active participation and collaboration in enhancing knowledge management. WhatsApp's ability to support continuous feedback and social engagement, while aligning with constructivist approaches, makes it a potentially effective tool for managing knowledge among accounting students, though its success relies heavily on how it is used within the academic setting (Oluseyi-Sowunmi & Samuel, 2024).

## **METHODOLOGY**

### **Research Design**

A qualitative research design was employed to explore the effectiveness of WhatsApp for knowledge management in accounting education. The qualitative approach is suited to this study as it allows for an in-depth exploration of participants' experiences, perceptions, and challenges associated with the use of WhatsApp in accounting educational settings (Bjørner & Schrøder, 2019). This approach allowed for a nuanced understanding from diverse perspectives and contextual insights into how the WhatsApp platform impacts knowledge sharing on academic outcomes (Madge *et al.*, 2019). The study was conducted with 20 undergraduate accounting students who were given pseudonyms from P1 to P20 from two public universities in Ghana.

### **Sampling and Data Collection**

This study focused on accounting students from two public universities in Ghana. The choice of the two public universities in Ghana was guided by their distinct characteristics. Sunyani Technical University (STU) was selected because it was one of the technical universities known for its emphasis on practical accounting education, while the University of Energy and Natural Resources

(UENR) is a traditional university with a broader curriculum. These institutions were selected to provide a diverse representation of accounting students. This approach aligns with recommendations in qualitative research for selecting sites that reflect varied experiences and contexts (Obilor *et al.*, 2023). Specifically, purposive sampling was used to ensure that participants had relevant experience with WhatsApp as a knowledge management tool (Obilor *et al.*, 2023). Additionally, convenience sampling was employed to identify students who were readily available and willing to participate, considering the practical constraints of conducting research in a resource-limited context (Obilor *et al.*, 2023). These techniques ensured a mix of participants with varied levels of engagement in WhatsApp learning groups, providing rich insights into its effectiveness (Kalu, 2019).

Data was collected through semi-structured interviews and focus group discussions. A total of 20 undergraduate accounting students, 12 males (P1, P3, P4, P6, P8, P9, P11, P12, P13, P14, P18, P20) and 8 females (P2, P5, P7, P10, P15, P16, P17, P19), participated in the study. These students were selected based on their activity levels in existing WhatsApp learning groups, with pseudonyms assigned to maintain confidentiality. Interviews explored participants' experiences with using WhatsApp for sharing complex financial documents, preparing for exams, and addressing accounting challenges. The languages of the interviews used were English and Akan as the dominant spoken languages in Ghana. Focus group discussions were used to complement these interviews, fostering in-depth dialogue on collaborative learning dynamics and challenges. Each interview lasted approximately 30 minutes, while focus group sessions were one hour long.

### **Data Analysis Method**

Thematic analysis was employed to identify patterns and themes related to WhatsApp in accounting education. It was selected because it effectively captures shared experiences and challenges among participants, along with their unique perspectives. The process adhered to Braun & Clarke (2014) framework, which involves familiarizing with the data, generating initial codes, developing themes, reviewing, defining, and documenting the findings. Major themes uncovered included the impact of WhatsApp on learning outcomes, specific challenges faced in accounting education, and approaches to enhance the platform's effectiveness.

An interview protocol with pre-determined questions enhanced reliability, ensuring consistency across data collection methods. Focus group discussions and WhatsApp content analysis complemented the interviews, providing a triangulated view of the data. For example, multimedia resources shared on WhatsApp were categorized and analyzed to understand their role in explaining accounting concepts.

### **Ethical Considerations**

The researchers ensured that participants participated in the study voluntarily, without feeling compelled or fearing negative consequences for opting out. Participants were informed of their right to withdraw from the study at any time without needing to explain, with any collected data still being usable. Clear and understandable information about the research, including objectives, risks, and benefits, was provided in a language they understood. Informed consent was obtained, orally and electronically, with participants given ample time to consider their decision. Participants' identities were anonymized and kept confidential throughout the study. Only aggregate findings were reported to ensure anonymity and protection of participants' privacy.

## RESULTS

### Demographic Information

Table 1 presents the demographic details of the participants selected for the study. Among the 20 participants, the majority were male (55%). Most students (65%) specialized in Computerized Accounting and were enrolled in both BTech and HND programs. Additionally, majority of the students (55%) were in their second year of study, with the highest proportion (55%) falling within the 26 to 30 age range.

**Table 1:** Demographic variables of participants

Category	Variable	Frequency (N=20)	Percentage (%)
Gender	Male	11	55
	Female	9	45
Qualification	HND	6	30
	BTECH	7	35
	BSC	7	40
Age Range	20-25	9	45
	26-30	11	55
Specialization	Computerized Accounting	13	65
	Accounting	7	35
Year	1	0	0
	2	11	55
	3	9	45
	4	0	0

*HND>Higher National Diploma; BTECH>Bachelor of Technology; BSC>Bachelor of Science*

### Thematic Content Analysis of WhatsApp: Focused Group Discussions

Two groups were formed, consisting of 8 participants and 12 participants, respectively. At least one researcher was assigned to each group to monitor and observe the participants' chat activities. The groups were created purposely for this study; hence, administrators were requested to control the chat to only accounting learning and related. Participants were assured that their names or any information that may reveal their identity would not be publicly known, and therefore, participants were given pseudonyms from P1 to P20. The groups were actively engaged for one month; however, with the assurance of confidentiality and anonymity, the chat history for their regular accounting WhatsApp learning platforms was taken in addition to the analysis.

The analysis of the chat history reveals the importance and intensity of WhatsApp group learning platforms. The groups were not only actively engaged by students' participation, but they were also essential in providing formal and informal information in a fast and convenient manner. The thematic analysis of the chat history in these groups shows that their conversations or interactions can be classified into six major themes, namely, general academic chat, exams and assignments chat, wishes and greetings chat, extra-curricular chat, entertainment chat, and other chats. The details of these themes are shown in Table 2 below.

WhatsApp groups play a pivotal role in fostering communication and collaboration among students, encompassing a wide range of themes that cater to both academic and non-academic purposes. These themes include general academic chat, exams and assignments, wishes and greetings, extracurricular activities, entertainment, and other informational chats.

**Table 2:** Major issues posted on the WhatsApp group learning platforms

Themes	Purpose	Examples
General Academic Chat	Sharing and seeking general academic information	Lecture notes and materials, lecture timing, accounting resources (books, articles, links, etc.), discussions of complex accounting problems after lectures, syllabus, sources of reading materials, etc.
Exams and Assignments Chat	Seeking and sharing information relating to quizzes, assignments, projects, and end-of-semester exams	Discussion of group work, Discussion of areas for exams, posting and discussing past questions, term paper, dates, and times for submitting assignments, projects, presentations, classifications of complex accounting concepts and principles, etc.
Entertainment Chat	Sharing and liking funny photos and videos just for fun	Jokes, sharing of funny photos, videos, etc.
Wishes and Greetings Chat	Celebrating individual achievements, wishes (e.g. birthdays, etc.), and group-related wishes (holidays, festival days, etc.)	Holidays, birthdays, congratulatory posts, checking up on members in the form of greetings, etc.
Extra-curricular Chat	Sharing information relating to participation in various extra-curricular activities at the University	Students Representative Council (SRC) week celebration, SRC election, Association of Technical University Accounting Students (ATUAS) week celebration and election, ATUAS educational tour, cultural week celebration, Health Walk, etc.
Other Chats	Sharing of other academic or non-academic information outside of the University	Seminar, professional accounting course discussion, sharing scholarship posts, announcements, etc.

General academic discussions were the most prominent and recurring theme in the WhatsApp group discussions. These conversations primarily relate to the day-to-day class activities and include sharing class-related information, notes, and learning materials; discussions on admission, school fees, and registration; and answering general questions raised by group members. Additionally, these chats were focused on clarifying complex accounting problems after lectures. Regular conversations about these topics demonstrated the essential role of WhatsApp in facilitating general academic activities and maintaining engagement among students.

Chats related to exams and assignments form a crucial part of academic discussions. These interactions included conversations about exam timetables, term papers, submission deadlines for assignments, sessional topics considered challenging, and group work. WhatsApp groups were especially valuable for students who missed classes, as these discussions served as their primary source of exam-related information. This reliance underscores the importance of these groups in providing academic support and fostering collaborative learning (Sugianto *et al.*, 2021).

Non-academic interactions, including wishes and greetings, contributed to building group cohesiveness and a sense of belonging. Participants shared birthday wishes, holiday greetings, and congratulations for their achievements. While these messages were not directly related to academics, they played a significant role in fostering positive relationships within the group.

Messages celebrating festivals, including interreligious or intercultural events, highlight the inclusive nature of these groups, even when some members may feel obligated to participate due to social conventions. An added benefit of group-based greetings is the time saved by not sending individual messages (Shahid, 2018).

Although educational institutions primarily focused on academics, co-curricular and extracurricular activities were equally important for students' holistic development. Chats in this category often revolve around events such as educational tours, SRC (Student Representative Council) week celebrations, student floats, and elections. While these messages were not directly academic, they generated high levels of enthusiasm and excitement among students, making them some of the most engaging topics within group chats.

Another recurring theme involved messages meant purely for entertainment. These include sharing jokes, memes, photos, videos, and other humorous content. Such interactions add a lighthearted dimension to the group and help students unwind, promoting a balanced group dynamic. Apart from academic, extracurricular, and entertainment-related messages, some discussions focus on professional and personal development. These chats provided information on scholarships, professional accounting courses (e.g., ICAG, ACCA, CIMA), seminars, and social issues. However, such messages may not resonate with all group members and often go unnoticed or unacknowledged.

### **Thematic Analysis of Interviewed Respondents**

#### ***Challenges in Using WhatsApp for Accounting Education***

Participants highlighted several challenges in using WhatsApp for accounting education. One recurring issue was the platform's limitations in handling complex calculations and financial statements. As P2 stated:

*"It's hard to explain detailed calculations over a chat. I find it confusing sometimes, especially with complex accounting problems."*

This aligns with Twumasi Ankrah *et al.* (2023) findings that the lack of specialized tools creates frustration for students working with technical content. Another significant challenge was the distracting nature of WhatsApp, as non-academic discussions often overshadowed learning-focused interactions. P7 commented:

*"WhatsApp is distracting when everyone sends jokes or irrelevant messages during study time. It's difficult to stay focused on accounting."*

These distractions can dilute the platform's potential as an educational tool. Moreover, students expressed frustration with WhatsApp's lack of organizational features. P10 noted:

*"The platform is not structured like other e-learning tools. Important discussions get lost easily among other messages."*

#### ***Collaborative Learning and Knowledge Sharing via WhatsApp***

Students actively used WhatsApp for collaborative learning. Three major themes emerged: Participants, including P8, emphasized the benefit of real-time communication and instant feedback from peers, particularly when preparing for exams or assignments. The immediacy of WhatsApp allows for quick problem-solving. P8 remarked:

*“When we have problems with assignments, we just ask the group, and usually, someone helps right away. It’s a quick way to solve problems.”*

Another major theme that emerged was the sharing of multimedia learning resources using the WhatsApp platform. Many participants, including P13 and P20, indicated they frequently shared videos, images, and documents, such as PDFs, to explain accounting concepts for better understanding. This aligns with prior research by Nur Rahmadi (2021) on the usefulness of multimedia in WhatsApp educational groups. Respondent P13 stated that:

*“We share notes, videos, and sometimes images of our calculations, which helps explain things better than just text.”*

Collaborative discussions and peer support emerged as the third theme. WhatsApp was largely used for group study and discussions. Participants appreciated the collaborative environment, where more knowledgeable peers could explain difficult topics, reflecting Vygotsky’s (1978) theory of scaffolding in social learning. P5 stated:

*“When someone explains something, I don’t understand, it helps a lot. Sometimes we take turns explaining different parts of accounting topics.”*

### **Effectiveness of WhatsApp in Supporting Learning**

Three key themes emerged regarding WhatsApp's effectiveness as a learning tool: Respondents highlighted WhatsApp's accessibility, especially for students in remote areas with limited internet access. According to Konyana & Modise (2024), WhatsApp's wide availability and ease of use made it a convenient tool for communication. Respondent P12 stated that:

*“WhatsApp is cheap and easy to use anywhere, which makes it good for us who don’t have access to advanced platforms.”*

While WhatsApp was considered effective for quick exchanges, participants expressed concerns about its adequacy for mastering complex accounting concepts. For instance, P15 stated that:

*“WhatsApp is great for quick communication, but not for deep learning. For things like financial reports, you need more advanced tools.”*

These observations align with prior research Adebayo *et al.* (2021), which suggests that WhatsApp is better suited for surface-level communication than in-depth learning activities.

### **Impact of WhatsApp on Learning Outcomes**

Respondents shared mixed perspectives on the platform's impact on learning outcomes. Several participants noted that WhatsApp facilitated better collaboration for group assignments and projects, helping them manage workloads more effectively. The views of some respondents include:

*“It’s easier to coordinate group projects using WhatsApp. Everyone can contribute, and it keeps us organized.” (P11)*

*“Using WhatsApp makes me feel connected and supported, always knowing I have a network of peers to turn to.” (P1)*

Additionally, the immediate feedback and interaction available on WhatsApp fostered greater engagement: According to Respondent P1,

*“The immediate feedback and interaction make me feel more engaged with my studies.”*

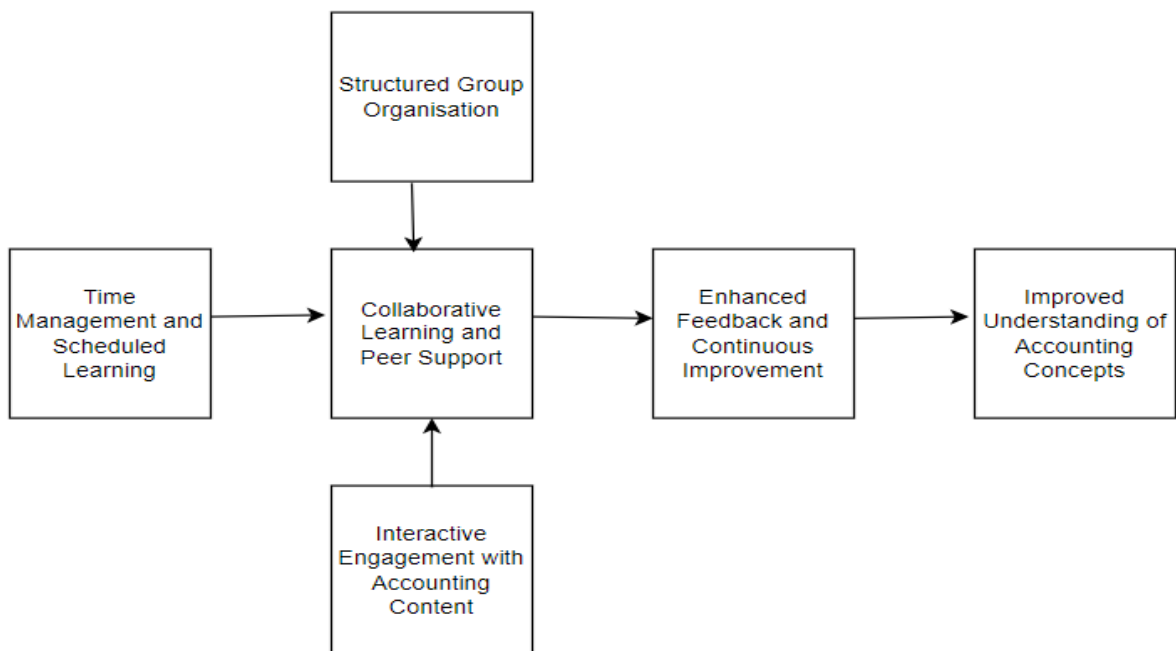
Despite the platform's collaborative benefits, participants agreed that WhatsApp lacked the functionality to support complex tasks, such as working with spreadsheets or accounting software. Respondent P19 stated that:

*“I don't think WhatsApp helps me understand the more complicated parts of accounting.”*

These findings resonate with earlier studies such as Kusi-Mensah *et al.* (2019), which suggested that WhatsApp's limitations hinder its effectiveness in supporting the mastery of technical concepts.

### PROPOSED FRAMEWORK FOR EFFECTIVE USE OF WHATSAPP IN ACCOUNTING EDUCATION

Based on the findings of this study, the study proposed a framework for the effective use of WhatsApp in accounting education. The proposed framework integrates the principles of Social Constructivism (Amineh & Asl, 2015), emphasizing structured group organization, collaborative learning, time management, interactive engagement, and enhanced feedback. These constructs are interconnected to address the limitations and leverage the strengths of WhatsApp as a learning tool, providing a cohesive structure for fostering a collaborative and productive learning environment. The framework aligns with the themes and challenges identified in the study, including communication, collaboration, resource management, and structured learning strategies to enhance WhatsApp platform's effectiveness in supporting accounting education. These strategies are designed to mitigate WhatsApp's limitations while maximizing its strengths in fostering collaborative learning environments. Figure 1 illustrates the proposed framework.



**Figure 1:** Proposed Framework for Effective Use of WhatsApp in Accounting Education

Structured group organization significantly improves the effectiveness of WhatsApp for collaborative learning and peer support by encouraging clear communication, goal alignment, and fair participation. Research indicates that the unstructured nature of WhatsApp groups often causes distractions and the loss of important information. Tackling this issue involves forming purpose-driven study groups with well-defined objectives tailored to specific courses, such as financial or managerial accounting. It is important to emphasize that well-organized groups, guided by norms and rules, boost engagement and meaningful discussions by reducing distractions. Assigning specific roles like group administrators, content moderators, and discussion facilitators ensures goal-focused interactions and helps prevent issues like free-riding or dominance. Furthermore, highlight the benefits of structured settings in allowing students to share resources, clarify concepts, and work together to solve problems, creating a supportive learning environment. Strategies like using hashtags or labels (e.g., "#ConsolidatedAccounts") to categorize discussions by topic can help make information easier to find and keep discussions focused. These practices align with Vygotsky's sociocultural theory, which stresses the importance of structured social interactions to deepen learning through collaborative engagement within the "zone of proximal development".

Time management and structured learning are critical in enhancing WhatsApp's effectiveness as a collaborative tool in education, particularly for complex subjects like accounting. According to Lai & Hwang (2023), effective time management ensures that students allocate specific periods for learning, fostering regular and meaningful interactions within WhatsApp groups. Scheduled participation promotes consistency in discussions, resource sharing, and problem-solving, which are essential for peer support in demanding academic environments. Similarly, (Alrasheedi & Capretz, 2013) found that structured schedules within digital platforms help balance academic responsibilities with other commitments, enabling students to contribute more effectively. For instance, scheduling specific group discussions, such as "Midterm Review on Friday at 5 PM," ensures accountability and consistent engagement. Additionally, setting deadlines for tasks, coupled with reminders from group administrators, minimizes delays and fosters timely responses (Sari & Putri, 2019).

Interactive engagement with accounting content significantly enhances the effectiveness of WhatsApp as a collaborative learning tool by fostering active participation, deeper understanding, and peer support among students. According to (Garrison & Cleveland-Innes, 2005), interactive engagement in online learning environments encourages cognitive presence, where students construct and confirm meaning through sustained dialogue. WhatsApp's real-time communication features enable students to discuss complex accounting concepts, share resources, clarify doubts, and collaboratively solve problems, aligning with social constructivist principles that emphasize the role of interaction in learning (Vygotsky, 1978). This dynamic cultivates a strong sense of community and accountability, enabling students to draw on peer support for both guidance and motivation (Bouhnik & Deshen, 2014). Leveraging features such as quizzes, multimedia sharing, and audio explanations enhances student engagement and simplifies complex topics. Additionally, external resources like online calculators and accounting apps offer practical insights into technical concepts, bridging theory and application (Wilson, 2014; Nsor-Ambala, 2022). Together, these elements illustrate how WhatsApp's interactive capabilities strengthen learning outcomes and address the challenges of mastering accounting's technical and analytical demands.

WhatsApp collaborative learning and peer support foster enhanced feedback and continuous improvement by enabling real-time communication, resource sharing, and ongoing dialogue among students. According to Bouhnik & Deshen (2014), WhatsApp accessibility and ease of use encourage active participation, immediate feedback, and peer interaction, which are essential for deepening understanding of course materials. Through group discussions, students collaboratively solve problems, clarify doubts, and exchange ideas, creating a dynamic learning environment that supports the co-construction of knowledge. This iterative process enhances individual performance

and cultivates continuous improvement, making WhatsApp a valuable tool for collaborative and reflective learning.

The effectiveness of peer interactions on WhatsApp aligns with Vygotsky's Zone of Proximal Development theory, where learners advance with support from more knowledgeable peers (Chaiklin, 2003). Students with a stronger understanding of specific concepts, such as accounting errors or cash flow statements, can mentor others, simplify complex topics and foster a supportive environment where academic challenges are openly discussed (Nguyen, Tomy & Pardede, 2024). Regular question and answer (Q&A) sessions facilitated via WhatsApp enable students to collaboratively tackle challenging accounting topics, provide timely feedback, and prepare for exams. Group administrators can enhance these interactions by encouraging the sharing of multimedia resources, such as videos, infographics, and annotated documents, to simplify complex accounting concepts (Sugianto *et al.*, 2021). These strategies create an engaging and supportive learning atmosphere where students actively contribute to and benefit from collaborative knowledge-building.

Enhanced feedback and continuous improvement are critical for fostering a deeper understanding of complex accounting concepts and for improving learning outcomes in collaborative environments like WhatsApp groups. Feedback, as (Sadler, 1989) argued, bridges the gap between current performance and desired outcomes by providing actionable insights that promote reflection, self-assessment, and skill refinement. This aligns with (Kolb, Boyatzis & Mainemelis, 2014) experiential learning theory, which emphasized a cyclical process of learning through experience, reflection, and application. In accounting education, such iterative processes allow students to apply theoretical knowledge to practical scenarios, receive constructive feedback, and refine their approaches.

In the context of WhatsApp groups, the absence of structured feedback and assessment emerges as a limitation. Constructive, real-time feedback from peers and instructors ensures the accuracy and relevance of shared materials, while personalized feedback fosters a supportive and interactive environment. Periodic evaluations of group effectiveness, guided by member feedback, allow for continuous improvement and alignment with educational goals (Shahid, 2018). Involving instructors or teaching assistants occasionally to provide expert guidance further enriches discussions and enhances the overall learning experience (Sugianto *et al.*, 2021). Integrating these principles will enable educators to guide students to navigate the intricate technicalities of accounting, ultimately leading to better comprehension and application of complex financial principles. Through constructive feedback, students are empowered to take ownership of their learning, enabling them to navigate complex accounting concepts with improved comprehension and practical application (Lee *et al.*, 2024).

In conclusion, when these strategies are well executed, students can leverage WhatsApp to enhance collaborative learning, overcome barriers to understanding technical concepts, and improve overall academic performance in accounting education.

## **CONCLUSION AND IMPLICATIONS OF THE STUDY**

The findings of this study highlight the strengths and limitations of using WhatsApp for knowledge management in accounting education. While WhatsApp facilitates real-time communication, collaboration, and resource-sharing, it does not provide the depth of support necessary for handling complex accounting topics. This aligns with previous studies such as Boadu, Donnelly & Sharp (2020) that emphasized the limitations of WhatsApp in supporting specialized academic fields requiring advanced tools.

Furthermore, the findings show that WhatsApp enhances accessibility and immediate support for accounting students, particularly in group assignments and collaborative learning. However, the platform's informal nature limits its utility in explaining complex financial calculations, demanding a structured approach for effective use. The proposed framework of this study hence offers practical strategies for integrating WhatsApp effectively into accounting education. Hence, WhatsApp was seen as a promising, albeit complementary, tool for learning in resource-constrained educational environments, particularly for subjects requiring collaborative learning.

This study reinforces previous research on social media's role in collaborative learning (Tetteh et al., 2023) by showing that WhatsApp can facilitate real-time interaction and community-building among students, aligning with findings by Adebayo *et al.*, (2021) on its value in accounting education. However, it expands on current literature by focusing on the platform's role in managing specialized knowledge in accounting, where prior studies (such as, Al-Htaybat et al., 2018) indicated limitations in non-specialized platforms for complex learning. This study's proposed framework adds a new dimension to the literature, suggesting that specific guidelines and structural organization within WhatsApp groups can make informal platforms more suitable for professional and technical education.

The findings further validate the need for a structured approach to optimize WhatsApp's use in accounting education. For instance, scheduled Q&A sessions align with the ZPD, providing a scaffolded learning environment. Moderation and content organization address the challenges of distractions and information overload. However, the study recommends that educators should introduce structured moderation in WhatsApp groups to limit distractions and maintain focus on academic content. This could involve appointing group moderators and setting specific times for discussions, as recommended by Kusi-Mensah *et al.*, (2019). Universities should develop guidelines to help students maximize WhatsApp's potential while minimizing its downsides, including managing distractions and organizing content. WhatsApp should be used alongside more robust educational tools like Learning Management Systems (LMS) that support complex accounting tasks.

## LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

WhatsApp's limitations in handling complex numerical data and technical financial documents restrict its effectiveness for subjects like accounting, which rely on sophisticated software for in-depth learning. Future research can focus on integrating WhatsApp with specialized accounting software to provide an enhanced, tailored learning experience. Due to its informal nature, WhatsApp often lacks structure, resulting in challenges in organizing educational content and managing off-topic discussions. This limits its capacity to maintain academic rigour. Future studies could explore how adding a moderation or structured content management tool, such as hashtags or sub-groups by topic as indicated in the proposed framework of this study, might help manage the flow of academic discussions more effectively. This study focused exclusively on undergraduate accounting students in Ghana, limiting the generalizability of findings. Future research can examine diverse academic settings and disciplines to evaluate WhatsApp's effectiveness in knowledge management for various specialized subjects, and ideally across different cultural and resource contexts. Expanding the study to include a quantitative approach could also enrich the findings by providing measurable data on learning outcomes. Future research may also explore moderating variables, including gender, age, and technology proficiency, and/or mediating variables (e.g., engagement and communication quality) to examine their influence on the relationship between using WhatsApp platforms and knowledge management outcomes. This would enhance the understanding of the boundary conditions and underlying mechanisms of this relationship.

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