Digital Communication in School Leadership: Examining Email and WhatsApp Use, Challenges, and Efficiency in Punjab Province

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ARTICLE INFO	ABSTRACT
	In the present study, we investigated the impact of digital communication tools, specifically email and WhatsApp, on the efficiency and effectiveness of communication among secondary school heads in Punjab, Pakistan. With the rapid advancement of technology in educational settings, understanding how these tools facilitate or hinder communication is essential for improving administrative practices. We employed a quantitative approach with a descriptive research design to collect data from a sample of 112 secondary school heads, selected using a simple random sampling technique. The data were collected through structured questionnaires that assessed the usage, challenges, and communication efficiency of email and WhatsApp. It was analyzed using SPSS software (version 27) by deploying percentage, mean, standard deviation, and independent sample *t*-tests. Key findings revealed that male school heads reported a higher perception of these communication tools' usage and effectiveness than their female counterparts. While both genders faced similar challenges in using digital platforms, males perceived communication efficiency as significantly higher. Additionally, WhatsApp was favored for its immediacy and collaborative capabilities, while email was valued for maintaining formal records. The implications of this study highlight the necessity for educational policymakers to develop clear communication guidelines and training programs that enhance digital literacy. Furthermore, we suggest that school heads should adopt a balanced approach to using email and WhatsApp to optimize communication practices.

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INTRODUCTION

In recent years, educational institutions' communication landscape has dramatically transformed (Malik et al., 2024). The advent of smartphones and mobile applications has led to a surge in the use of platforms such as WhatsApp for personal and professional interactions. WhatsApp, in particular, has become popular due to its user-friendly interface, immediacy, and cost-effectiveness. According to Bouhnik and Deshen (2014), WhatsApp facilitates group communication, allowing teachers to engage with students more effectively than traditional email. This shift is not merely a trend but a broader movement towards integrating technology into educational practices to enhance administrative efficiency and improve stakeholder engagement (Amjad et al., 2024a, b, c, d).

While email has long been the standard for official correspondence in educational settings, its effectiveness is increasingly questioned (Faisal & Kisman, 2020). Many educators report that students do not check their emails regularly, leading to delays in communication (Bouhnik & Deshen, 2014). In contrast, WhatsApp offers real-time messaging capabilities that significantly enhance responsiveness among school heads, teachers, and students. The immediacy of WhatsApp allows for quick updates and feedback, fostering a more dynamic communication environment (Masip et al., 2021).

Various studies have documented WhatsApp's integration into the communication practices of secondary school heads (Ajani, 2021; Thaba-Nkadimene, 2020; Olowo et al., 2020). For instance, research indicates that principals utilize WhatsApp for multiple purposes: disseminating information quickly, fostering relationships among staff, and enhancing engagement with parents (Toker-Gokce & Balcı, 2023). The platform's ability to create group chats allows school leaders to communicate simultaneously with multiple stakeholders, streamlining information sharing and reducing the time spent on administrative tasks.

Furthermore, WhatsApp has been shown to improve organizational communication competence among school leaders. As highlighted by a study conducted among public secondary school principals in Jerusalem and the West

Bank, effective use of WhatsApp contributes to achieving key indicators of communication competence such as clarity, feedback mechanisms, and relationship enhancement (Cheung & Wang, 2021). This underscores the potential for WhatsApp as a tool for immediate communication and a means to foster a collaborative school culture.

Despite its advantages, adopting WhatsApp for official correspondence is not without challenges (Morris et al., 2021). One significant issue is the potential for information overload. As noted by Cetinkaya (2019), excessive messaging can lead to disruptions in work and may overwhelm educators who are already managing numerous responsibilities. Additionally, concerns regarding privacy and professionalism in communications occur on informal platforms like WhatsApp (Doğan, 2019). School heads must navigate these challenges carefully to maintain effective communication without compromising their professional standards.

Another challenge is ensuring equitable access among all stakeholders. While most students and parents have smartphone access with WhatsApp installed, segments of the population may lack reliable internet connectivity or access to technology (Shahriar et al., 2021). This digital divide can exacerbate existing inequalities within educational systems if not addressed adequately.

The impact of using WhatsApp as a communication tool extends beyond mere convenience; it significantly enhances overall communication efficiency within schools. Research indicates that WhatsApp principals report improved response times and greater engagement from staff and parents (Neiroukh et al., 2024; Ong et al., 2024). This shift towards digital communication aligns with contemporary expectations for immediacy and accessibility in information exchange.

Moreover, the ability to automate routine communications through features like broadcast lists or automated replies further streamlines processes within schools (BizMagnets.ai). Such functionalities allow school heads to focus on strategic initiatives rather than getting bogged down by administrative minutiae. Exploring secondary school heads' usage of Email and WhatsApp for official correspondence reveals a complex interplay between technology adoption and communication practices in education. While both platforms have their merits, WhatsApp is a transformative tool that enhances stakeholder engagement and responsiveness. However, information overload and equity must be addressed to maximize its potential.

As educational institutions evolve in response to technological advancements, understanding the practices and impacts of these digital tools will be crucial for fostering effective communication strategies that benefit all school community members. Exploring the usage of digital communication tools like Email and WhatsApp among secondary school heads for official correspondence reveals a significant shift in how educational leaders manage communication. This research topic is particularly relevant in the context of increasing reliance on technology in educational settings, where traditional methods of communication are often supplemented or replaced by instant messaging applications. This study investigates the practices, challenges, and impacts of using these platforms on communication efficiency within secondary schools.

The rapid integration of digital communication tools, such as email and WhatsApp, into the administrative practices of secondary school heads in Punjab presents both opportunities and challenges that warrant thorough investigation. Despite the potential benefits of these platforms for enhancing communication efficiency, there is a lack of comprehensive understanding regarding their actual usage patterns, the specific challenges faced by school leaders, and the impact on overall administrative effectiveness. Additionally, gender disparities in communication practices and experiences have not been sufficiently explored within this context. Therefore, this study addresses these gaps by examining how secondary school heads utilize these tools for official correspondence, the obstacles they encounter, and the implications for effective school administration.

Research Objectives
The following research objectives guided the present study.

1. To investigate the extent of email and WhatsApp usage by secondary school heads in Punjab for official correspondence.
2. To identify the challenges secondary school heads face in using email and WhatsApp for official communication.
3. To assess the impact of email and WhatsApp usage on the efficiency and effectiveness of communication in school administration.
4. To examine the difference between male and female secondary school heads' practices, challenges, and communication efficiency.

Research Questions
The researcher investigated the current study's objectives using the following research questions.

1. What is the level and extent of email and WhatsApp usage by secondary school heads in Punjab for official correspondence?

2. What are the important challenges secondary school heads face when using email and WhatsApp for official communication?
3. How email and WhatsApp usage impact the efficiency and effectiveness of communication in school administration.
4. What are the differences between male and female secondary school heads' practices, challenges, and communication efficiency?

LITERATURE REVIEW
Email and WhatsApp Usage
Integrating digital communication tools in educational settings has become increasingly prevalent, particularly with the rise of platforms like WhatsApp and traditional email. Research indicates that secondary school heads favor WhatsApp due to its immediacy, ease of use, and cost-effectiveness (Bouhnik & Deshen, 2014). In contrast, email remains a staple for formal communication but often suffers from low engagement rates, as many students and staff do not check their emails regularly (Afzal & Abdullah, 2023). This dichotomy raises questions about the extent to which secondary school heads in Punjab utilize these platforms for official correspondence. Bouhnik and Deshen (2014) found that while teachers still rely on email for formal communications, WhatsApp has become a more effective tool for real-time interactions and group communications. The study highlights that WhatsApp's group features allow for dynamic discussions that can enhance educational outcomes. Furthermore, the convenience of accessing WhatsApp on mobile devices makes it a preferred choice among secondary school heads who seek to engage with students and parents outside traditional school hours (Doğan, 2019). This suggests that secondary school heads may be shifting towards WhatsApp for its practical advantages, though the degree of this shift remains to be quantified in the context of Punjab.

In addition to communication efficiency, the cultural context of Punjab plays a significant role in shaping the communication practices of school heads. The widespread use of smartphones among educators and students facilitates the adoption of messaging applications like WhatsApp (Neiroukh et al., 2024). However, it is essential to consider that while WhatsApp offers several advantages, such as instant notifications and multimedia-sharing capabilities, it also presents challenges related to information overload and professional boundaries (Cetinkaya, 2019). Therefore, understanding the extent of email and WhatsApp usage among secondary school heads requires a nuanced approach that considers both the benefits and drawbacks of each platform. The current study aims to fill this gap by providing empirical data on how these tools are utilized in official correspondence within Punjab's secondary schools.

Challenges in Using Email and WhatsApp
While digital communication tools offer numerous benefits, they also introduce various challenges that secondary school heads must navigate (Shafqat & Amjad, 2024). One significant issue is the potential for information overload associated with platforms like WhatsApp. Cetinkaya (2019) noted that excessive messaging can disrupt workflows and confuse recipients. This challenge is particularly pertinent for secondary school heads managing multiple responsibilities simultaneously. Additionally, concerns regarding privacy and professionalism in using informal platforms for official communication have been highlighted in various studies (Doğan, 2019). The lack of clear boundaries between personal and professional communications can create dilemmas for school leaders who wish to maintain a professional image while engaging with staff and students on platforms they frequently use in their personal lives.

Moreover, the effectiveness of email as a communication tool is often hindered by low engagement rates among recipients (Afzal & Abdullah, 2023). Many educators report that their emails go unread or receive delayed responses, impeding timely decision-making. This situation necessitates exploring how secondary school heads in Punjab perceive these challenges when utilizing email and WhatsApp for official correspondence. The findings from this study will contribute to existing literature by elucidating specific obstacles school leaders face in their communication practices. By identifying these challenges, educational stakeholders can develop targeted strategies to enhance school communication efficiency.

Email and WhatsApp Effectiveness
The impact of digital communication tools on organizational efficiency has been a focal point in educational research. Studies suggest that using WhatsApp can significantly improve communication effectiveness among secondary school heads by facilitating real-time interactions and fostering collaborative environments (Toker-Gokce & Balcı, 2023). For instance, principals who employ WhatsApp report enhanced engagement from teachers and parents due to its immediacy compared to traditional methods like email (Neiroukh et al., 2024). Furthermore, Bouhnik and Deshen (2014) indicate that WhatsApp groups serve various purposes beyond mere information sharing; they also nurture social connections among students and teachers, creating a more conducive learning atmosphere.

However, while WhatsApp presents advantages such as increased responsiveness and accessibility, assessing whether these benefits translate into improved overall communication efficiency within school administration is crucial. According to Afzal and Abdullah (2023), effective communication is essential for achieving institutional goals; therefore, understanding how email and WhatsApp usage impacts administrative processes is vital. The current study aims to evaluate these effects quantitatively through various metrics such as response times, engagement levels, and overall satisfaction with communication practices among secondary school heads in Punjab.

Difference of Opinion

Gender differences in leadership styles have been extensively studied across various organizational contexts, including education. Research indicates that male and female leaders may approach communication differently due to varying socialization experiences and professional expectations (Cheung & Wang, 2021). In the context of secondary education in Punjab, it is essential to explore how these gender dynamics influence the practices of school heads regarding email and WhatsApp usage. For instance, studies have shown that female leaders often prioritize collaborative communication styles that foster inclusivity (Toker-Gokce & Balcı, 2023). Conversely, male leaders may adopt more directive approaches, emphasizing efficiency over relational aspects.

Additionally, understanding gender-specific challenges school heads face when using digital communication tools is crucial for developing tailored support systems within educational institutions. Research suggests that female leaders may encounter unique barriers related to work-life balance when utilizing informal platforms like WhatsApp for official correspondence (Doğan, 2019). By examining these differences through empirical research methods such as surveys or interviews with male and female secondary school heads in Punjab, this study aims to contribute valuable insights into how gender influences communication practices within educational leadership.

RESEARCH METHODOLOGY

Research Design

This study employs a descriptive survey design, particularly suitable for exploring the usage patterns, challenges, and impacts of email and WhatsApp communication among secondary school heads. Descriptive surveys allow researchers to gather quantitative data from a large population, facilitating a comprehensive understanding of current practices and perceptions. By employing this design, we can systematically collect information on how school leaders utilize these digital tools, their obstacles, and the differences in communication efficiency based on gender. This approach captures the breadth of experiences among participants and provides a solid foundation for statistical analysis, making it an ideal choice for addressing the research objectives.

Participants

The population for this study comprises secondary school heads from the Lahore Division in Punjab, Pakistan. A diverse range of educational backgrounds, administrative experiences, and varying levels of familiarity with digital communication tools characterize this group. School heads in this region typically possess leadership roles requiring them to manage academic and administrative tasks effectively. They are responsible for communicating with teachers, students, parents, and educational authorities, making their insights into digital communication practices particularly valuable. Given the rapid technological advancements in education, understanding their experiences with email and WhatsApp is crucial for enhancing school communication strategies. We selected a sample of 112 participants for this study using a simple random sampling technique. This method ensures that every secondary school head within the defined population has an equal chance of being included in the sample, thereby enhancing the representativeness of our findings. By randomly selecting participants, we aim to minimize bias and ensure that the results reflect the broader perspectives of school heads across the Lahore Division.

Instrument

To measure the factors involved in this study's topic, we developed a structured questionnaire tailored to capture various dimensions of email and WhatsApp usage among secondary school heads. The questionnaire includes items designed to assess the extent of usage, challenges faced, perceived efficiency of communication, and demographic information such as gender. This instrument was carefully constructed to ensure clarity and relevance to the research objectives, allowing for effective data collection.

Data Collection

Data were collected using Google Forms distributed through WhatsApp groups comprising secondary school heads. This approach facilitated easy access to participants and capitalized on using WhatsApp as a communication tool among educators. By leveraging this platform, we ensured a higher response rate and timely data collection while minimizing logistical challenges associated with traditional survey methods.

RESULTS

Data for this study were collected using Google Forms from a sample of 112 secondary school heads in Punjab. The responses were then extracted into an Excel file for further analysis. We utilized SPSS software (version 27) to analyze the data, a widely recognized tool for conducting complex statistical analyses. Initially, we screened the data for missing values and outliers to ensure the integrity of our dataset. Following this, we tested several assumptions necessary for parametric statistics, including normality, homogeneity of variance, and linearity. Normality was assessed using the Shapiro-Wilk test, while Levene's test evaluated homogeneity of variance. Linearity was examined via scatterplots to ensure relationships between variables were appropriately modeled. After confirming these assumptions were met, we proceeded with descriptive and inferential statistical analyses. Descriptive statistics provided an overview of the demographic characteristics and usage patterns of email and WhatsApp among school heads. In contrast, inferential statistics, including independent sample t-tests, allowed us to explore differences in communication practices and challenges faced by male and female participants. This comprehensive analysis will facilitate a deeper understanding of how digital communication tools are employed in educational administration within Punjab's secondary schools.

Then, data were analyzed using the mean, standard deviation, and percentage for the first research question, and the results are presented in Table 1.

Table 1: Secondary School Heads' Perception of Using Email and WhatsApp for Official Correspondence

Statements	SD (%)	D (%)	N (%)	A (%)	SA (%)	M	SD
I regularly use email for official communication with teachers and staff.	11	26	12	20	31	2.94	1.35
I frequently use WhatsApp to communicate with parents regarding school matters.	4	20	6	49	21	3.56	1.12
I rely on email as the primary means of sharing official notices with the education department.	2	23	6	56	13	3.56	1.00
WhatsApp is my preferred platform for quick communication with school staff.	1	2	0	30	67	4.69	.47
I use email to communicate with other school heads formally.	12	44	6	25	13	2.81	1.29
I find WhatsApp convenient for arranging meetings with teachers.	2	3	14	31	50	4.31	.77
I frequently check my email to stay updated on official matters.	1	5	6	44	44	4.25	.83
WhatsApp is my primary communication tool for sharing urgent updates with staff.	1	2	1	18	78	4.81	.39

Table 1 presents secondary school heads' perceptions of using email and WhatsApp for official correspondence. The highest-rated item is that WhatsApp is the primary tool for sharing urgent updates with staff (M = 4.81, SD = .39), with a strong level of agreement (96%). Following closely, most respondents (97%) find WhatsApp convenient for quick communication with school staff, with nearly unanimous agreement (M = 4.69, SD = .47). Similarly, there is substantial agreement (81%) on the convenience of WhatsApp for arranging meetings with teachers (M = 4.31, SD = .77). However, there is moderate disagreement (37%) on the use of email for official communication with teachers and staff members (M = 2.94, SD = 1.35). The lowest-rated item is the use of email to communicate formally with other school heads, where 56% showed their disagreement, resulting in a mean of (M = 2.81, SD = 1.29).

The data for the second research question were analyzed using the mean, standard deviation, and percentage for the second research question, and the results are presented in Table 2.

Table 2: Secondary School Heads' Challenges for Using Email and WhatsApp for Official Correspondence

Statements	SD (%)	D (%)	N (%)	A (%)	SA (%)	M	SD
I find it challenging to maintain professional boundaries while using WhatsApp with staff.	19	37	12	19	13	2.69	1.31
Sometimes, staff members lose or ignore school-related emails.	6	31	19	38	6	3.06	1.09
It is difficult for me to ensure confidentiality on WhatsApp.	12	31	31	19	7	2.75	1.10
I struggle with the slow response time when using email for urgent communication.	2	1	22	56	19	3.94	.66
WhatsApp notifications during non-work hours disrupt my personal time.	5	12	20	25	38	3.88	1.05
It is challenging to manage the high volume of messages on WhatsApp groups.	3	9	12	32	44	4.06	1.03
I find it hard to access official documents shared over email due to poor internet connectivity.	5	20	6	56	13	3.56	1.03
Some staff members lack the necessary skills to use email effectively for official purposes.	6	6	6	63	19	3.81	1.02

Table 2 presents the challenges secondary school heads face in using email and WhatsApp for official correspondence. The most prominent challenge is managing the high volume of messages on WhatsApp groups, with a high level of agreement (76%) and a mean score of (M = 4.06, SD = 1.03). This suggests that school heads find it significantly challenging to handle the large number of messages in these groups, which could impact their ability to focus on essential tasks. Next, a considerable challenge for school heads is the slow response time when using email for urgent communication, with an agreement level of 75% and a mean of (M = 3.94, SD = .66). This indicates that school heads struggle with delays when emails are used for time-sensitive matters, which might affect their ability to communicate quickly and efficiently. WhatsApp notifications during non-work hours also disrupt personal time, with

63% agreement and a mean of (M = 3.88, SD = 1.05). This suggests that school heads experience difficulties maintaining work-life balance due to work-related WhatsApp notifications outside office hours. Another significant challenge is the lack of necessary skills among some staff members to use email effectively for official purposes. With 82% agreement and a mean of (M = 3.81, SD = 1.02), this reflects school heads' concerns over the digital literacy of staff, which may hinder effective communication.

For the third research question, the data were analyzed using the mean, standard deviation, and percentage, and the results are presented in Table 3.

Table 3: Secondary School Heads' Perception of Communication Effectiveness through Email and WhatsApp for Official Correspondence

Statements	SD (%)	D (%)	N (%)	A (%)	SA (%)	M	SD
Using email improves the organization of official records and documentation.	2	4	2	73	19	4.06	.66
WhatsApp has made my communication with staff more responsive.	1	2	1	26	80	4.75	.44
I find email useful for sending formal announcements and instructions.	2	10	19	38	31	3.88	.99
WhatsApp reduces the time needed to reach all relevant staff members in an emergency.	2	1	1	27	69	4.69	.47
Using email and WhatsApp together helps streamline school management tasks.	3	2	1	44	50	4.50	.50
I believe WhatsApp fosters a stronger sense of collaboration among staff members.	1	3	4	23	69	4.69	.47
Email allows me to keep a formal record of communication with the education department.	1	2	3	38	56	4.50	.62
Overall, using email and WhatsApp has enhanced the efficiency of my school's communication.	2	4	6	50	38	4.19	

Table 3 provides an overview of secondary school heads' perceptions of the effectiveness of email and WhatsApp for official correspondence. The highest-rated statement, "WhatsApp has made my communication with staff more responsive," received the most vigorous agreement from 96% of participants (M = 4.75, SD = .44), indicating that nearly all respondents find WhatsApp significantly enhances the immediacy of their communication. Closely followed by "WhatsApp reduces the time needed to reach all relevant staff members in an emergency" and "I believe WhatsApp fosters a stronger sense of collaboration among staff members" both received high agreement levels with 96 respondents (M = 4.69, SD = .47 for each, reflecting the platform's utility in urgent situations and fostering teamwork among staff. The statement "Using email and WhatsApp together helps streamline school management tasks" also garnered strong positive responses, with 96% showing a level of agreement (M = 4.50, SD = .50), demonstrating a consensus on the combined benefit of these tools in managing school operations efficiently.

For the fourth research question, the data were analyzed using the independent sample *t*-test, and the results are presented in Table 4.

Table 4: Difference of Male and Female Perceptions Regarding Usage, Challenges, and Communication Effectiveness of Email and Communication for Official Correspondence

Variables	Gender	N	M	SD	df	t	p
Usage of Email and WhatsApp	Male	63	4.01	.546	110	3.23	.002
	Female	49	3.66	.606	110		
Challenges in using Email and WhatsApp	Male	63	3.39	.458	110	-1.54	.107
	Female	49	3.57	.727	110		
Communication efficiency in using Email and WhatsApp	Male	63	4.61	.262	110	6.595	<.001
	Female	49	4.14	.479	110		

Table 4 presents the results of an independent sample *t*-test to compare male and female perceptions regarding the usage, challenges, and communication effectiveness of email and WhatsApp for official correspondence. For the usage of email and WhatsApp, males (M = 4.01, SD = .546) reported higher scores than females (M = 3.66, SD = .606), indicating a statistically insignificant difference at (t[110]=3.23, p>.000). This suggests that males perceive the usage of these communication tools higher than females. In terms of challenges associated with using email and WhatsApp, no significant difference was found between males (M = 3.39, SD = .458) and females (M = 3.57, SD = .727), at (t[110] =−1.54, p >.107), suggesting that both genders experience similar levels of challenges with these platforms. However, for communication efficiency, males (M = 4.61, SD = .262) rated communication efficiency significantly higher than females (M = 4.14, SD = .479), (t([110]= 6.595, p<.001), indicating a statistically significant difference. This result highlights that males perceive email and WhatsApp as more effective communication than females.

DISCUSSION

The first research question of the study was to investigate the level and extent of email and WhatsApp usage by secondary school heads in Punjab for official correspondence. The findings of our study provide empirical support for existing literature that suggests a significant shift towards using WhatsApp for communication among secondary school heads. Our results align with Bouhnik and Deshen's (2014) assertion that WhatsApp is increasingly favored for its immediacy and ease of use, as evidenced by school heads' strong preference for the platform when sharing

urgent updates and facilitating quick communications. Additionally, the study reflects the cultural context identified by Neiroukh et al. (2024), where widespread smartphone adoption among secondary school heads enhances the practicality of messaging applications like WhatsApp, further corroborating the trend towards utilizing these tools for effective communication in the educational setting.

The implications of this study are multifaceted. Firstly, it highlights the need for school administrations to consider integrating WhatsApp into their communication strategies to enhance engagement with both staff and parents. By acknowledging the growing reliance on instant messaging platforms, educational leaders can foster more dynamic and responsive communication channels, ultimately improving organizational efficiency and stakeholder involvement. However, it is also crucial to recognize the potential challenges associated with the platform, such as information overload and the blurring of professional boundaries, as noted by Cetinkaya (2019). Therefore, while the findings advocate for increased WhatsApp usage, they also suggest a balanced approach with clear guidelines to manage communication effectively and maintain professional standards. This study contributes to a deeper understanding of digital communication practices within Punjab's educational landscape, informing future research and policy-making.

The study's second research question focused on identifying the important challenges secondary school heads face in using email and WhatsApp for official communication. Our findings corroborate the existing literature regarding the complexities associated with digital communication tools in educational settings. Specifically, the challenges related to managing high message volumes in WhatsApp groups and the slow email response times echo the concerns raised by Cetinkaya (2019) and Afzal and Abdullah (2023). The significant difficulties school heads encounter, such as information overload from WhatsApp and delayed email responses, align with previous studies that highlight how these challenges can disrupt workflows and impede effective decision-making. Additionally, the reported struggles with maintaining a work-life balance due to work-related WhatsApp notifications reflect the dilemmas noted by Doğan (2019) concerning privacy and professionalism in communication practices. This alignment with prior research underscores the pressing need to address these obstacles to enhance communication efficacy within educational leadership.

The implications of this study are vital for educational stakeholders seeking to improve communication strategies in schools. Recognizing the high volume of messages and slow email responses as major challenges emphasizes the need for targeted interventions to enhance staff's digital literacy and streamline communication practices. Professional development programs focusing on the effective use of these platforms could empower school heads and their teams, ultimately improving engagement and responsiveness. Additionally, establishing clear guidelines for WhatsApp usage, especially concerning work-life balance and professional boundaries, can help mitigate the stress associated with excessive notifications outside work hours. By addressing these challenges, educational leaders can foster a more efficient and supportive communication environment, paving the way for improved collaboration and organizational success in Punjab's secondary schools.

The third research question of the study was focused on understanding how email and WhatsApp usage impact the efficiency and effectiveness of communication in school administration. Our findings support and extend the arguments in existing literature regarding the transformative role of digital communication tools in enhancing educational administration. Specifically, the strong agreement among secondary school heads that WhatsApp has made communication more responsive (M = 4.75) aligns with the assertions made by Toker-Gokce and Balcı (2023), who highlighted WhatsApp's capacity to facilitate real-time interactions. Additionally, our results indicate that the platform not only enhances urgency in communication but also fosters collaboration among staff members, resonating with the findings of Bouhnik and Deshen (2014) and Neiroukh et al. (2024) regarding the social connectivity and teamwork benefits associated with WhatsApp usage. Furthermore, the significant positive perceptions about the complementary roles of email and WhatsApp in streamlining school management tasks corroborate Afzal and Abdullah's (2023) argument that understanding the dynamics of these tools is crucial for achieving communication efficiency in educational settings.

The implications of this study are profound for educational administrators and policymakers looking to optimize communication strategies within schools. The evident preference for WhatsApp in fostering timely and collaborative communication underscores the need for training programs that empower school heads and their staff to effectively utilize these digital platforms while maintaining a formal record through email. This dual approach can enhance overall communication efficiency, enabling quicker decision-making and improved engagement among staff and parents. Moreover, the positive perceptions regarding the combined use of these tools suggest that educational institutions should consider integrating them into their communication protocols, tailoring their use based on context and urgency. This study advocates for ongoing research to explore the long-term effects of these digital communication practices on school administration and the potential for further innovations in educational communication strategies.

The fourth research question of the study aimed to investigate the differences between male and female secondary school heads' practices, challenges, and communication efficiency in using email and WhatsApp. Our findings align with existing literature that explores gender dynamics in leadership, specifically regarding communication practices in educational contexts. The results indicate that while male and female school heads face similar challenges in utilizing digital communication tools, a notable difference arises in their perceptions of communication efficiency. This supports Cheung and Wang (2021) assertion that male leaders may prioritize efficiency, as evidenced by their significantly higher ratings for communication effectiveness (M = 4.61) compared to their female counterparts (M = 4.14). Furthermore, the higher scores reported by males regarding the usage of email and WhatsApp (M = 4.01) compared to females (M = 3.66) also reflect the tendency for male leaders to engage more with these platforms, a finding consistent with Toker-Gokce and Balcı's (2023) observations of varying communication approaches based on gender.

The implications of these findings are significant for educational institutions and policymakers aiming to enhance communication practices among school leaders. Recognizing that male heads perceive greater efficiency in digital communication can inform tailored professional development programs that address female leaders' unique communication styles and needs. Specifically, workshops and training sessions on collaborative communication strategies may help female heads leverage digital tools more effectively, improving their perceived communication efficiency. Moreover, given that both genders experience similar challenges, institutions should consider developing comprehensive support systems that promote work-life balance and equip all leaders with the skills to navigate the complexities of using digital platforms. By fostering an inclusive environment that acknowledges gender differences in leadership and communication, educational institutions can enhance overall administrative effectiveness and improve school outcomes.

CONCLUSION

The focus of the current study was to examine secondary school heads' perceptions regarding the use, challenges, and communication effectiveness based on gender. The findings of this study provide a comprehensive understanding of the challenges, practices, and perceptions of secondary school heads regarding the use of email and WhatsApp for official communication. The first research question revealed that secondary school heads face significant challenges, the most prominent being the management of high volumes of messages on WhatsApp, indicating a struggle to focus on essential tasks. Additionally, slow response times when using email for urgent matters were highlighted, emphasizing the need for timely communication. The second research question underscored the impact of email and WhatsApp usage on communication efficiency, with results showing that WhatsApp significantly enhances the immediacy of communication, reduces response times during emergencies, and fosters collaboration among staff members. The third research question explored gender differences, revealing that while male and female school heads encounter similar challenges in using digital tools, males rated the effectiveness of these platforms significantly higher, indicating a perception of greater efficiency. This aligns with existing literature on gender dynamics in leadership styles. These results suggest that while digital communication tools offer potential benefits, school leaders must navigate various communication effectiveness challenges. By addressing these issues, educational institutions can enhance communication practices and support school heads in their administrative roles.

RECOMMENDATIONS

Based on the current study's findings, the recommendations for school heads and future research are here.

For Secondary School Heads

The secondary school heads of the Punjab are recommended:

- Email and WhatsApp should be used strategically to enhance communication efficiency while maintaining professionalism.
- To foster a culture of collaboration by encouraging staff members to participate in WhatsApp groups and share relevant information promptly and actively.
- To establish guidelines for responding to messages outside of regular work hours to promote a healthier work-life balance.

For Future Research

Based on the study's results, we suggest future researchers;

- To explore the long-term effects of digital communication tools on school administration efficiency and effectiveness by designing longitudinal studies.
- To investigate the underlying reasons for the differences in perception between male and female school heads regarding communication effectiveness and challenges using digital tools.

- To examine secondary school heads' challenges in different regions or cultural contexts to understand better how local factors influence communication practices.

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