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Long Paper

Exploring the Privacy and Security Implications in the Adoption of Teleradiology

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Abstract

Purpose – This study examines the impact of privacy, security, and individual intentions on teleradiology adoption, with an emphasis on attitudes, social norms, and perceived control.

Method – A quantitative approach was employed to assess behavioral intentions toward teleradiology through a survey conducted with 351 experienced respondents from January to March 2024. Using SMART PLS, the survey's validity was confirmed, with critical metrics

meeting reliability thresholds (AVE of 0.5, Cronbach's alpha, and composite reliability at 0.7).

Results – The study's findings show that perceived security and privacy strongly influence patient trust in teleradiology, while attitudes shaped by benefits and reliability drive adoption. Additionally, social influences and perceived behavioral control motivate the use of teleradiology.

Conclusions – Perceived security and privacy significantly affect patients' attitudes towards adopting teleradiology. Perceived security, in particular, enhances patients' trust and confidence in adopting the technology. A positive attitude, influenced by perceived benefits, usefulness, and reliability, increases the likelihood of adopting teleradiology. Social influence, together with self-efficacy, also impacts patients' willingness to adopt teleradiology.

Recommendations – Future studies should aim for a more balanced representation across all age groups. A more thorough examination of technologies related to data transmission, storage, and access is also recommended. Lastly, a mixed-methods study is recommended for future research.

Research Implications – The results highlighted the importance of patient trust and confidence. The study emphasized the need for a patient-centered approach to teleradiology, prioritizing security and privacy to improve the quality of healthcare delivery.

Keywords – Teleradiology, Theory of Planned Behavior, Security, Privacy, Attitude

INTRODUCTION

Teleradiology is a vital component of enhancing healthcare services, as it facilitates the easy and rapid accessibility of radiological information. It helps healthcare facilities overcome geographical barriers to ensure the prompt and accurate interpretation of medical records. Ranschaert (2016) talked about how IT affects radiology services. This is consistent with the expanding teleradiology and digital healthcare trends. Faster diagnosis and treatment decisions are made possible by the technology's streamlined process. (Chandramohan, 2023) highlights the importance of teleradiology in making healthcare more affordable and accessible for everyone. Because teleradiology provides coverage twenty-four hours a day, seven days a week, radiological specialists are always available, especially in times of crisis (Kruginski, 2014). Teleradiology improves processes, lowers costs, and fosters collaboration among medical experts to improve the overall efficacy and efficiency of healthcare delivery. Consequently, patient outcomes get better.

With teleradiology, new and improved medical technology has enabled the electronic transmission of radiological data between platforms for diagnosis and

consultation. This has changed the way healthcare is given. There are many benefits to it, but security and privacy issues still need to be addressed for it to continue functioning effectively (Ruotsalainen, 2010). Safety and privacy are crucial in Teleradiology because they significantly impact the accuracy and confidentiality of patient data. Unauthorized access to private data without permission is a big problem that needs to be fixed by putting in place strong security procedures and measures (Houser, 2023). Another issue is that the laws and morals governing teleradiology are not always clear (Ruotsalainen, 2010). The Philippine College of Radiology (PCR) has established a teleradiology task force to develop guidelines for the practice of teleradiology in the country. This task force is responsible for laying down recommendations for the ideal teleradiology setup in the country (PCR, 2017). However, there are implementation challenges in resource-limited settings, e.g., Security and Privacy, poor connectivity, and other technological issues, which are significant barriers to telemedicine use and satisfaction. These barriers also affect teleradiology implementation, as seen in the Philippines (Noceda et al., 2023).

Due to the way they operate, the technology they employ, and the environment in which they work, telehealth methods also pose risks to their privacy and safety. (Houser, 2023) says that some of these are worries about getting paid back, vulnerable groups not having enough privacy, data security, and having access to technology and the internet. These issues must be addressed immediately to ensure that patient data remains safe and secure and to foster trust among users. It's important to know how people feel about teleradiology because that affects how much they use and accept it. Information quality, performance standards, engagement, and enjoyment are some of the factors that influence people's plans to change their behavior due to telemedicine (Hossain et al., 2023). If we want more people to adopt teleradiology and be satisfied with it, these areas should be addressed first.

Although teleradiology has a promising future in healthcare, it is essential to address concerns about patient privacy and safety. Understanding what motivates individuals to use this technology is equally important. (Krupinski, 2014) says that this method will ensure that teleradiology continues to grow and be successful in the healthcare field.

Teleradiology has a lot of potential and importance in the field of healthcare, which is changing so quickly. Teleradiology utilizes digital technology to enhance healthcare services, making them more efficient and improving patient outcomes in ways that have never been seen before. The study aims to answer the following questions, anchored in the Theory of Planned Behavior (TPB), considering privacy and security in the healthcare system: What are the roles of attitude, subjective norm, and behavioral control in the intentions of individuals to adopt teleradiology? Furthermore, the study will look deeper into the following hypothesis:

H1: Perceived security positively affects the attitude of patients in the intention to adopt teleradiology.

H2: Perceived privacy positively affects the attitude of patients in the intention to adopt teleradiology.
H3: Attitude positively affects the behavioral intention of patients to adopt teleradiology.
H4: Subject norm positively affects the behavioral intention of patients to adopt teleradiology.
H5: Perceived behavioral control positively affects the behavioral intention of patients to adopt teleradiology.

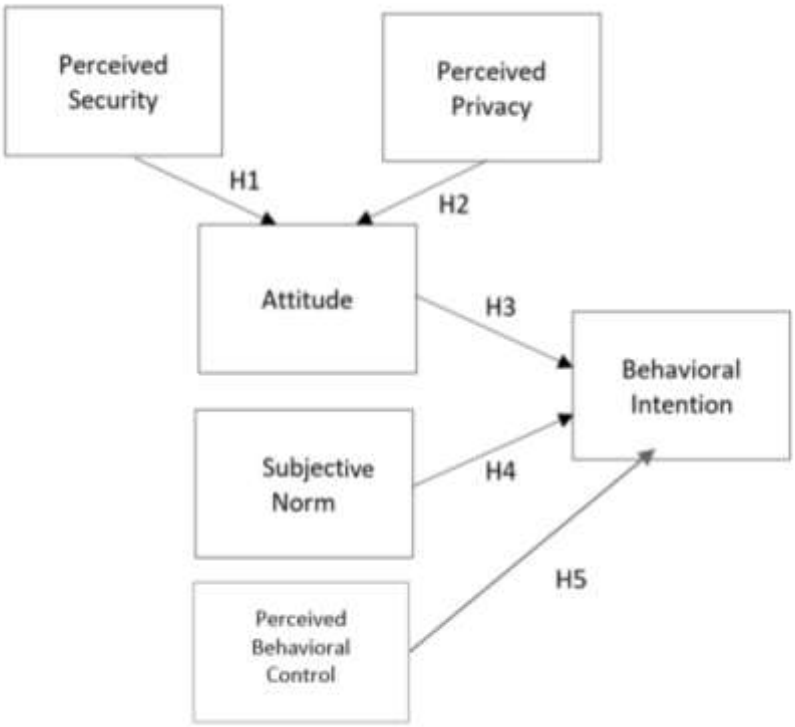

Figure 1. Theoretical Framework Theory of Planned Behavior (TPB)

The TPB proposes that behavioral intentions are influenced by attitudes, subjective norms, and perceived behavioral control (Ajzen 1991). In the context of teleradiology, these constructs can be influenced by factors such as security and privacy, as well as demographic characteristics like age, gender, and technological expertise (Ajzen, 2020).

Existing research using the Theory of Planned Behavior (TPB) often broadly examines technology adoption in healthcare or focuses on provider perspectives, overlooking the crucial patient viewpoint, particularly regarding teleradiology's unique sensitivities related to data security and privacy. This study addresses this gap by specifically contextualizing TPB for teleradiology patients, empirically demonstrating how

their perceived security and privacy significantly shape their attitudes and overall intention to adopt these services. This detailed analysis of security and privacy as direct antecedents to attitude offers novel insights highly relevant to the intimate nature of medical imaging data.

LITERATURE REVIEW

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is a suitable framework for studying the adoption of teleradiology, offering a more comprehensive understanding than other theories like the Technology Acceptance Model (TAM) (Rouidi, 2022) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Rouidi, 2022). TPB incorporates socio-psychological factors, including subjective norms and social pressures, which are crucial in understanding behavioral intentions (Paul et al., 2023).

TPB proposes that behavioral intentions are influenced by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). In the context of teleradiology, these constructs are shaped by factors like security, privacy, age, gender, and technological expertise (Ajzen, 2020). Perceptions of security and privacy influence attitudes (Paul et al., 2023), while subjective norms are shaped by societal expectations and peer opinions (Ajzen, 1991). Perceived behavioral control refers to an individual's ease or difficulty in managing security and privacy aspects (Ajzen, 1991).

The TPB framework suggests that positive attitudes, supportive subjective norms, and strong perceived behavioral control lead to higher intentions to adopt teleradiology (Ajzen, 1991). Demographic factors, such as age and technological expertise, also influence these intentions (Ajzen, 2020). Moreover, perceived security plays a significant role in shaping patients' attitudes and behavior towards teleradiology (Rouidi, 2022; Naik, 2021). When patients trust that their information is secure, they are more likely to use teleradiology services (Dawood, 2021). Understanding patients' perceptions and addressing apprehensions through targeted health education, positive communication, and behavioral modifications are essential for improving the utilization of teleradiology services (Naik, 2021). By applying the TPB framework, healthcare professionals can design interventions and strategies to promote the adoption of teleradiology, ultimately enhancing the quality of care and facilitating tasks for health professionals (Hamed, 2018)

Teleradiology

The growing field of teleradiology, while offering significant benefits in healthcare accessibility, necessitates a robust understanding of its security and privacy implications. The study conducted by (Smith et al., 2021), has identified weaknesses in authentication, encryption, and access control mechanisms within popular platforms. The reliance on

internet connections for image transmission exposes teleradiology to network security threats like denial-of-service attacks, malware infections, and man-in-the-middle attacks, as highlighted also in the study by (Jones & Brown, 2020). Secure data storage and backup strategies are paramount to protect patient data from accidental loss or malicious attacks, as emphasized in the study by (Davis et al., 2019).

Privacy concerns are equally crucial. In the study by (Miller, 2022) underscores the importance of adhering to regulations like Health Insurance Portability and Accountability Act of 1996 (HIPAA) and General Data Protection Regulation (GDPR), emphasizing the need for informed consent, data minimization, and access control. The sharing of patient data among multiple stakeholders in teleradiology raises concerns about data misuse and unauthorized disclosure, addressed by (Wilson & Garcia, 2023), which explores strategies like data anonymization, access control policies, and secure communication channels. (Rodriguez, 2021) stresses the importance of patient empowerment, advocating for transparent data access policies, patient portals, and data portability options.

Emerging trends, such as the integration of Artificial Intelligence (AI) and Machine Learning (ML) in teleradiology, present new security and privacy challenges. (Lee et al., 2022) examines these challenges, emphasizing the need for robust data governance and ethical guidelines. Blockchain technology offers potential solutions for secure data storage, transmission, and access control in teleradiology, as explored by (Chen & Zhang, 2020). The future of teleradiology hinges on prioritizing robust security measures, adhering to strict privacy regulations, and empowering patients to control their medical information. Continued research and collaboration among stakeholders are essential to ensure the safe and ethical practice of teleradiology.

Electronic Medical Records

Nearly every aspect of our everyday life is impacted by new technological advancements, and the healthcare industry is no exception. The healthcare industry has enormous amounts of data from patient examinations and results, as well as hospital and medical records. Manual medical recordkeeping is prevalent in developing countries because it is convenient and efficient in terms of time. This approach, however, does not ensure prompt and accurate medical treatment. Documents kept on paper are readily lost or manipulated, with potentially dire repercussions (Shan, 2022). Given the vast volume of data, the healthcare sector needs to transition from manual to digital processes to enhance operational effectiveness and facilitate seamless patient record interoperability. Digital health shows opportunities to boost patient satisfaction, reduce expenses, and enhance care quality (Busch-Casler, 2023). According to (Busch-Casler, 2023), a study conducted in Germany stated that under a specific circumstance, such as perceived information security and a noncommercial organization, German patients have a positive intent to disclose personal health information through health information exchanges (HIEs). Several factors, including age, legislation, trust-based tendencies, and technological experience, significantly impact privacy concerns. Face-to-face interactions with clinicians enhance

trust in digital health apps. HIE suppliers should emphasize the advantages, information security protocols, and ease of use to foster trust.

Furthermore, in the study of (Marcela et al., 2022), it was raised that the widespread use of electronic medical records (EMRs) and cloud computing allows healthcare systems to enhance data availability and professional exchange. However, safety and privacy should be considered, as patient EMR access must be constantly controlled based on individual needs. Thus, the results of the study have identified five areas: trust in technology, integrity, usefulness, quality of shared EMR data, and current problems.

Additionally, in the study of (Klaver et al., 2021), they investigated the association between older persons' intention to use mobile health (mHealth) applications and their perception of its dangers. The study found that while trust is positively correlated with the use of mHealth applications, performance risk, legal concern, and privacy risk are negatively correlated. The results imply that policymakers, mHealth application developers, and healthcare practitioners might use these results to reduce performance risks and customize campaigns to address privacy and legal issues. This purpose may also be positively impacted by trust.

Electronic medical records (EMR) are widely accepted by healthcare facilities and patients alike; nonetheless, their adoption is influenced by critical infrastructure and technology factors such as security, privacy, confidentiality, data access, and trust.

The adoption of EMR promises a variety of benefits. However, a study by Cruz and Tolentino (2021) in the Philippines noted that the country requires significant improvement in infrastructure, particularly in healthcare facilities and broadband accessibility. Also, there is a need for stringent policy processes and standards to protect digital information. The studies of Oga, et.al. (2023) and (2024), highlighted that collaboration and educational support are necessary for the advancement of teleradiology in the Philippines to foster collaboration among the domestic and international entities to address the gaps and promote successful adaption of teleradiology.

Privacy & Security

(Houser et al., 2023), in their study, they determined the security and privacy issues that arise during COVID-19 telehealth encounters. The SLR employed qualitative, quantitative (survey), mixed-methods (focus group discussion), and pre-post design in all 18 studies, with most of these studies focusing on the patient's perspective. After analysis of eighteen peer-reviewed publications, three risk variables were identified: operational, technological, and environmental. Thus, governments, legislators, and healthcare institutions should use the data to create best practices for telehealth privacy and security plans.

Furthermore, a study conducted by Ajayi et al. (2023) focused on the health and information-withholding practices of American women. According to the findings, 10.8% of women supported hiding health information because they were worried about security or privacy. A lower likelihood of concealing information was linked to higher favorable patient-provider communication scores. Age, race/ethnicity, education, psychological distress, and smoking status were among the variables that affected how willingly women disclosed health information. According to the findings, enhancing the quality of positive patient-provider communication may reduce women's fears about their privacy and security, and encourage them to disclose private medical information.

Additionally, data integrity is a crucial issue that presents severe risks to patient safety and poses significant obligations for medical professionals (Zarour et al., 2021). Patients' sensitive personal information can be found in medical data. Thus, maintaining security while satisfying the demand for medical data is a critical issue that needs to be resolved (Lee et al., 2022). (Zarour et al., 2021) stress blockchain's role in Saudi Arabia's data integrity management strategies, emphasizing how it can help address data integrity issues in the healthcare industry. This was supported by (Lee et al., 2022), who stated that the study presents a decentralized patient information exchange system built on blockchain technology to share electronic medical records between hospitals safely. The technology, validated using Hyperledger Fabric simulation models, safeguards EMRs against security risks and ensures data integrity, thereby improving efficiency and safety.

Furthermore, (Özmen et al., 2021) emphasize the importance of adopting teleradiology in terms of privacy, security, attitude, and subjective norms. It aligns with the Theory of Reasoned Action (TRA) and supports other research. The study emphasizes the need for robust measures to protect patient data, positive attitudes toward teleradiology adoption, and subjective norms based on the consensus of the Turkish Society of Radiology. By following these guidelines, healthcare professionals and organizations can ensure the secure and effective implementation of teleradiology, fostering users' trust and acceptance. This study can enhance the implementation of teleradiology and improve patient care.

METHODOLOGY

The study adopted the quantitative research method. Quantitative research relies on the methods of natural sciences, which produce figures and facts. This type of research demonstrates a cause-and-effect relationship between two variables by using mathematical, computational, and statistical methods (Ahmad et al., 2019). A survey was conducted using Google Forms to know the behavioral intentions of the respondents towards teleradiology. The research was conducted from January 2024 to March 2024. Three hundred fifty-one respondents with experience in teleradiology completed the online questionnaire. Due to practical considerations in reaching this specific and geographically dispersed professional group, these respondents were sampled using convenience sampling.

The study required respondents who had direct experience in teleradiology. Given the nature of an online questionnaire distributed via Google Forms, convenience sampling was the most feasible and efficient method for identifying and gathering responses from 351 individuals who met this specific criterion. It allowed the researchers to leverage existing networks and online communities where such professionals are likely to be found, enabling us to collect a substantial number of responses that might have been difficult to achieve with other sampling methods within the study's duration and resources.

Table 1. Theoretical Model Constructs Items

Construct	Item	Question
Perceived Security *Adapted from Ozmen et al., 2021; Ruotsalainen, 2010 and Houser, 2023*	S1	I am confident in the security measures implemented in teleradiology to protect my data during transmission
	S2	I am well-informed about the core elements of information security, such as confidentiality, integrity, availability, accountability, and non-repudiation, in teleradiology
	S3	I am comfortable with sharing my medical data through secure channels in teleradiology systems
	S4	I feel that the current security measures adequately protect me against unauthorized access, modification, or denial of service in teleradiology
Perceived Privacy *adapted from Rosenkrantz et al., 2019*	P1	I believe that patient privacy is adequately protected in teleradiology systems
	P2	I believe that the use of encryption in teleradiology systems is essential for maintaining my privacy
	P3	I am comfortable with sharing my data through secure channels in teleradiology systems
	P4	I consider patient consent and control over their data in teleradiology systems important
Attitude *adapted from Hashim et al., 2014*	A1	I believe that using teleradiology in medical practice is beneficial.
	A2	I think that teleradiology improves the convenience and accessibility of receiving radiological diagnosis.
	A3	I perceive teleradiology as a reliable and secure method of transmitting medical diagnostic results.
Subjective Norm *adapted from Hashim et al., 2014*	SN1	My healthcare provider recommends using teleradiology for my medical imaging needs.
	SN2	People who are important to me like my family or friends think that using teleradiology is a good idea.

While the convenience sampling allowed for efficient data collection from a substantial number of experienced professionals within the study's timeframe and

resources, the sample may not be fully representative of the entire population of individuals with teleradiology experience. This means the results, while providing valuable insights into the intentions of our surveyed group, cannot be strictly generalized to all professionals in the field. Moreover, a pilot test was not carried out in this study. The researchers' use of dependable techniques and standardized processes, which have been effectively applied in many earlier studies, served as the primary reason for the decision.

Survey methods can be utilized to gain insight into various aspects of clinical care, such as patient and family perspectives, quality of life, patterns of healthcare practice, and correlations between the clinical care provided and the results achieved (Kelley-Quon, 2018). Table 1 showed the final survey instrument of the study. It was constructed using Google Forms and consisted of four distinct sections: introduction and informed consent, demographics, and teleradiology perception measurement. The introduction section provided an operational definition of teleradiology and outlined the study's objectives. It also addressed key aspects of teleradiology relevant to the research, including perceived privacy, perceived security, attitude towards teleradiology, subjective norms regarding teleradiology use, and perceived behavioral control over teleradiology adoption and intention to adopt teleradiology. A written consent form was presented next after the introduction. This form ensured participants were fully informed about the study's purpose and voluntarily agreed to participate. The demographics section collects data from participants, including age group, gender, and level of technology proficiency. The final section of the questionnaire comprised 13 adapted items drawn from existing literature. These items were designed to measure participant perceptions of teleradiology across the following constructs: perceived privacy, perceived security, attitude towards teleradiology, subjective norms regarding teleradiology use, perceived behavioral control over teleradiology adoption, and intention to adopt teleradiology.

The researchers adapted the research instrument from existing literature. Significant questions were derived from existing questionnaires that utilized the Theory of Reasoned Action. The remaining survey questions were adapted from questionnaires relating to security and privacy. By using the Theory of Planned Behavior (TPB) as the overarching theory of the study, the researchers made sure that the construct alignment between the two theories mentioned was maintained. The TPB expands on the fundamental TRA components of Attitude and Subjective Norms by adding the construct of perceived behavioral control. Moreover, the constructs of perceived security and perceived privacy are included as extrinsic elements that are thought to affect the TPB constructs, especially attitude.

The Google survey was distributed to 37 participants for validity and reliability testing. The study used SmartPLS to validate and prove the reliability of the questionnaire. For the validity check of the questionnaire, the survey questions were transformed into codes and then processed using the PLS SEM algorithm. Average variance extracted (AVE) must be at least 0.5 (Hair et al., 2022) for the survey instrument to be considered valid. For the questions to be reliable, the Cronbach alpha and composite reliability of SMART PLS

should be at least 0.7 (Hair et al., 2022). The model was tested using SMART PLS, employing path coefficients to assess positive or negative relationships. T-statistics must be at least 1.96 to indicate a significant relationship, and P-values must be less than or equal to 0.05.

Table 2 showed the results of the validity and reliability testing. The average variance extract of the constructs ranged from 0.547 to 0.813. Some questions from the constructs of security and privacy were dropped. The second item of Security (S2), the third and sixth items of Privacy (P3) and (P6), were removed from the final list of questions, and the entire process of reliability and validity had to be repeated until all items were proven to support their respective constructs. These deleted questions had adverse effects on the The results of their constructs were framed negatively, hence their removal from the final list.

Table 2. Constructs' Validity and Reliability Results

Constructs	**Cronbach's Alpha**	**Composite Reliability (rho_a)**	**Composite Reliability (rho_c)**	**Average Variance Extracted (AVE)**
Attitude	0.754	0.774	0.857	0.667
Behavioral Intention	0.884	0.889	0.929	0.813
Perceived Behavioral Control	0.861	0.871	0.915	0.783
Perceived Privacy	0.753	0.759	0.843	0.573
Perceived Security	0.725	0.729	0.828	0.547
Subjective Norm	0.909	0.915	0.943	0.846

The results presented above were sufficient to establish strong validation and reliability measures. The rigorous checking of the measurement model ensured that the constructs are well-measured and consistent, thus providing a strong foundation for the structural model despite the absence of other model fit indices.

RESULTS

Demographics

The demographics show a significant gender disparity. The majority of the participants, 54.7%, were male, indicating a higher involvement of men in this field. On the other hand, females made up a slightly lesser portion, constituting 44.3% of the study population. However, it's important to note that gender does not necessarily influence one's capabilities or contributions in the adoption of teleradiology.

Interestingly, 1% of the participants preferred not to be identified by their gender in the study. This small yet significant portion of the population represents a growing

awareness and acceptance of gender non-conforming individuals in the professional world. Their inclusion in the study underscores the importance of diversity and inclusivity in teleradiology and beyond.

The age demographics of the study encompass a wide range of ages, with the majority falling between 35 and 44 years old. This group comprises 35.9% of the study's participants, indicating a strong presence of mid-career professionals. These types of results can be attributed to the fact that these age groups are those who are employed and have HMOs. Their experience and knowledge significantly contribute to the advancements in the study.

The next largest group, making up 21.4% of the study, consists of individuals aged 45 to 54. This demographic comprises seasoned professionals who are likely to hold senior roles, guiding the direction of research and adoption in teleradiology. Their expertise and leadership play a crucial role in the development of the field.

Interestingly, the younger age group, 25 to 34 years old, makes up 19.8% of the study. This demonstrates the increasing interest of younger generations in adopting teleradiology, bringing fresh perspectives and innovative approaches. Their active involvement suggests a promising future for teleradiology.

The remaining participants are distributed among the 55- to 64-year-old age group (14.6%), the 18- to 24-year-old age group (7.8%), and those 65 and older (0.5%). Although smaller in number, these groups offer valuable insights from their unique perspectives. The older participants bring a wealth of experience. In contrast, the youngest group brings enthusiasm and a willingness to adopt new technologies, demonstrating that teleradiology is a field that spans across generations.

The study on teleradiology demographics reveals a diverse range of technology proficiency levels among participants. A significant portion, 44.8%, demonstrates advanced proficiency in technology. These individuals possess a deep understanding of the tools and systems used in teleradiology, allowing them to navigate and utilize the technology to its fullest potential efficiently. 42.7% of the participants have an intermediate level of technology proficiency. They have a solid grasp of the necessary skills and are comfortable using the technology in their work. While they may not have the same level of expertise as the advanced group, they are still competent and contribute effectively to the field.

A smaller percentage, 10.9%, are classified as experts in technology proficiency. These individuals possess an exceptional level of knowledge and skill in utilizing technology for teleradiology purposes. Their expertise often extends beyond the basic requirements, allowing them to innovate and find new solutions to challenges in the field. Lastly, 1.6% of the participants are categorized as novices in technology proficiency. These individuals are relatively new to the field and may require additional support and training to grasp the intricacies of the technology used in teleradiology fully. However, their inclusion in the

study demonstrates a willingness to learn and adapt, and with time and experience, they have the potential to grow and make significant contributions to the field.

Table 3 displayed the percentage of agreement and disagreement for six constructs related to the adoption of teleradiology: Attitude, Security, Privacy, Subjective Norms, Perceived Behavioral Control, and Behavioral Intention. A high percentage of respondents (91% and above) agree with the constructs related to Attitude (97%), Privacy (95%), Subjective Norms (92%), Perceived Behavioral Control (92%), and Behavioral Intention (95%) regarding the adoption of teleradiology. The results of the study showed general positive sentiments and willingness to adopt teleradiology among the respondents. Moreover, participants in the survey perceived teleradiology as easy to adopt and were influenced by social norms surrounding its use. However, the security construct had the highest disagreement rate of 9%. This result may suggest that some respondents had concerns about the security of teleradiology.

Table 3. Agreement and Disagreement for each Construct

Construct	Agree	Disagree
Attitude	97%	3%
Security	91%	9%
Privacy	95%	5%
Subjective Norms	92%	8%
Perceived Behavioral Control	92%	8%
Behavioral Intention	95%	5%

SMART PLS Results

H1: Perceived security positively affects the attitude of patients in the intention to adopt teleradiology

The relationship between perceived security and attitude in the intention to adopt teleradiology is a coefficient of 0.147, indicating a positive relationship between variables with a relatively small effect magnitude.

Table 4. Hypotheses Testing Result

Hypothesis	Coefficients	TStats	PValues	Decision
H1: S -> A	0.147	2.967	0.003	Supported
H2: P -> A	0.682	12.073	0.001	Supported
H3: A -> BI	0.373	6.959	0.001	Supported
H4: SN -> BI	0.220	3.889	0.001	Supported
H5: PBC -> BI	0.392	6.545	0.001	Supported

H2: Perceived privacy positively affects the attitude of patients in the intention to adopt teleradiology

The hypothesis states that when patients perceive a higher level of privacy in the use of teleradiology, it will lead to a more positive attitude towards the technology and increase their intention to adopt it. The coefficients, t-stats, and p-values provide statistical evidence to support H2. The coefficient of 0.682 indicates a positive relationship between perceived privacy and attitude. The t-stat of 13.073 demonstrates that the coefficient is statistically significant. Additionally, the p-value of 0.001 suggests that the relationship between perceived privacy and attitude is highly significant.

H3: Attitude positively affects the behavioral intention to adopt teleradiology

The coefficients, t-stats, and p-values in the table provide statistical evidence to support H3. The coefficient of 0.373 indicates a positive relationship between attitude and behavioral intention. The t-stat of 6.959 indicates that the coefficient is statistically significant. Additionally, the p-value of 0.001 suggests that the relationship between attitude and behavioral intention is highly significant.

H4: Subject norms positively affect the behavioral intention to adopt teleradiology

The coefficients, t-stats, and p-values in the table provide statistical evidence to support H4. The coefficient of 0.220 indicates a positive relationship between subjective norms and behavioral intention. The t-stat of 3.889 indicates that the coefficient is statistically significant. Additionally, the p-value of 0.001 suggests that the relationship between subjective norms and behavioral intention is highly significant.

H5: Perceived Behavioral Control positively affect the behavioral intention to adopt teleradiology

The coefficients, t-stats, and p-values in the table provide statistical evidence to support H5. The coefficient of 0.392 indicates a positive relationship between perceived behavioral control and behavioral intention. The t-stat of 6.545 indicates that the coefficient is statistically significant. Additionally, the p-value of 0.001 suggests that the relationship between perceived behavioral control and behavioral intention is highly significant.

DISCUSSION

Perceived security positively affects the attitude of patients in the intention to adopt teleradiology.

Hypothesis 1 test results revealed a positive relationship between perceived security and the intention to adopt teleradiology. For digital health to be entirely beneficial,

patients must trust the systems they use; this is equally true for teleradiology and online diagnostics. The study by (Noor, 2024) on the adoption of IoTWHD supports the result, stating that perceived security positively influences behavioral intent, suggesting that patients who believe teleradiology is secure are more likely to use it. However, there is no statistically significant correlation between perceived security and the intention to adopt in mobile health (Octavius & Antonio, 2021).

Thus, perceived security ensures that patients trust and have confidence in transmitting and storing their medical data. Patients' laboratory findings may reveal highly private and sensitive information to healthcare professionals when seeking medical attention. The security of this vital information is crucial for fostering entrusted medical health diagnostic services and maintaining strong patient relationships.

Older adults pay more attention to the design and implementation of security measures, transparency in data handling practices, and the reputation of the healthcare provider or technology provider than younger adults (Wan et al., 2021).

Gender differences in information security perceptions have been observed, with women often exhibiting higher levels of concern about security risks compared to men (Hyeon, 2022; McGill et al., 2018). This suggests that women may adopt a more cautious approach and prioritize security considerations when considering the adoption of teleradiology. Women tend to exhibit higher levels of risk aversion and privacy concerns, which can influence their perception of security in the adoption of technology (Hyeon, 2022; McGill et al., 2018). They may be more attentive to security measures and privacy protection when considering the adoption of teleradiology.

Technological expertise can enhance individuals' understanding of security measures and practices related to technology adoption, including teleradiology. Individuals with higher technological expertise may have a better understanding of potential security risks and concerns, resulting in a more informed perception of security (Nwaiwu et al., 2020; Rouidi, 2022). Individuals with higher technological expertise may have a better understanding of the technical aspects of teleradiology systems, such as encryption protocols, data handling practices, and access controls. This knowledge can contribute to a more favorable perception of security and a greater sense of trust in the technology (Mangiò et al., 2020).

Perceived privacy positively affects the attitude of patients in the intention to adopt teleradiology.

The results of Hypothesis 2 testing support the notion that perceived privacy plays a crucial role in shaping patients' attitudes toward teleradiology adoption. When patients perceive that their privacy is protected and their personal information is secure, it enhances their trust and confidence in the technology, leading to a more positive attitude

towards its adoption. This finding aligns with previous research that highlights the importance of privacy concerns in the acceptance and adoption of technology (Dhagarra, 2020).

Older adults may have distinct privacy concerns compared to younger adults regarding the use of technology in healthcare settings. They are more cautious about sharing personal health information and may have concerns about data security and confidentiality (Javad et al., 2022)

Gender differences in privacy concerns have been observed in studies of technology acceptance. Research suggests that women tend to have higher privacy concerns compared to men (Kendziorra & Winkler, 2022). This may imply that women are more cautious about sharing personal health information and have higher privacy concerns in the context of adopting teleradiology.

While the study notes gender doesn't influence capability, external factors might. In broader technology adoption, it sometimes explores whether differing societal roles, access to technology training, or even perceived work-life balance impact how readily different genders engage with new technologies, especially those that might alter traditional work structures. The findings suggest these broad gender-based differences might be less pronounced or non-existent within this specific professional group, which is a positive insight.

As teleradiology is no longer a new concept, even older adults, aged 45 to 54 years, have had more exposure, training, and opportunities to see its benefits and integrate it into their practice. Older adults contribute a wealth of long-term clinical experience, potentially demonstrating how teleradiology integrates with established medical practices. Younger adults, aged 35 to 44 years old, represent digital natives for whom technology integration is seamless, underscoring the "generational span" of teleradiology's appeal. Their lower numbers might reflect the fact that they are just starting their careers and have not yet fully entered roles where teleradiology is a primary tool.

Technological expertise can enhance individuals' understanding of privacy concerns related to technology adoption. Those with higher technological expertise may have a better awareness of potential privacy risks and concerns associated with teleradiology, leading to a more informed perception of privacy (Dhagarra, 2020). They may be more capable of assessing the privacy policies, data handling practices, and security measures of teleradiology systems, which can impact their perception of privacy (Hassandoust et al., 2021).

Attitude positively affects the behavioral intention to adopt teleradiology

The results of Hypothesis 3 testing align with the Theory of Planned Behavior, which posits that attitudes play a crucial role in shaping behavioral intentions (Ajzen, 1991). When patients have a positive attitude towards teleradiology, perceiving it as beneficial, helpful,

and reliable, it increases their intention to adopt the technology. This finding is consistent with previous research that has shown a positive association between attitude and behavioral intention in the context of technology adoption.

Older adults may have different attitudes towards adopting emerging technologies, including teleradiology. A systematic review of studies on older adults' attitudes towards technology adoption found that personal characteristics, technology-related factors, and the social context can influence their attitudes (Zhang, 2023). Factors such as perceived usefulness, ease of use, and familiarity with technology can shape their attitudes towards adopting teleradiology. Younger individuals who have grown up with

Technology may have a more positive attitude towards adopting teleradiology compared to older adults who may have less experience or familiarity with technology (Clarke et al., 2020).

Individuals with higher technological expertise are more likely to have a positive perception of the benefits and capabilities of teleradiology, leading to a more favorable attitude towards its adoption (Anuradha et al., 2024). Technological expertise can enhance individuals' confidence and self-efficacy in using technology. This increased confidence can contribute to a more positive attitude towards adopting teleradiology, as individuals feel capable and comfortable in utilizing the technology (Hanna et al., 2020).

Subject norms positively affect the behavioral intention to adopt teleradiology

The results of hypothesis 4 test align with the theory of planned behavior, which posits that subjective norms play a crucial role in shaping behavioral intentions (Ajzen, 1991). Subjective norms reflect an individual's perception of social pressure or influence from significant others to engage in or refrain from a behavior. When individuals perceive that their peers, healthcare professionals, or other influential individuals endorse and support the adoption of teleradiology, it positively influences their intention to adopt the technology (Ajzen, 1991).

Previous research has also shown that subjective norms have a significant impact on the adoption of technology in various contexts, including healthcare (Al-Momani et al., 2023). The influence of subjective norms highlights the importance of social influence and the endorsement of teleradiology by relevant individuals or groups.

A study on the behavioral intention to use telemedicine among older adults found that subjective norms, along with attitude and initial trust, played a significant role in shaping their intention to adopt telemedicine services (Ramírez-Correa et al., 2020). This suggests that subjective norms can influence the behavioral intention of older adults in adopting healthcare technologies, such as teleradiology.

Older adults may be influenced by subjective norms from healthcare professionals, family members, and peers when considering the adoption of new healthcare technologies

(Ramírez-Correa et al., 2020). The perception of social pressure and the opinions of important others can shape their intention to adopt teleradiology.

Gender can influence the perception of subjective norms and social pressure related to healthcare decisions. For example, a study on public space behaviors found that gender and culturally shaped gendered behaviors can impact the level of appropriateness and intention to perform certain behaviors (Jalalkamali & Doratli, 2022). This suggests that gender may play a role in shaping subjective norms and behavioral intentions in various contexts, including the adoption of healthcare technology. Societal expectations and gender roles can influence social norms and subjective norms. Gender-related factors may shape individuals' perceptions of what is considered appropriate or expected behavior, which can, in turn, affect their behavioral intentions (Itawalbeh et al., 2015; Jalalkamali & Doratli, 2022).

Those with higher technological expertise may have a better understanding of the benefits and capabilities of teleradiology, which can influence their perception of social pressure and expectations regarding its adoption (Ham et al., 2015). They have a stronger sense of self-efficacy and confidence in using technology. This can lead to a greater impact to adopt teleradiology and a reduced reliance on subjective norms (Teo, 2010).

Perceived Behavioral Control positively affect the behavioral intention to adopt teleradiology

The results of Hypothesis 5 testing align with the Theory of Planned Behavior, which posits that perceived behavioral control plays a crucial role in shaping behavioral intentions (Ajzen, 1991). Perceived behavioral control reflects an individual's belief in their capability to perform the behavior and control the necessary resources. When individuals perceive that they have the necessary skills, knowledge, and resources to adopt and use teleradiology, it positively influences their intention to adopt the technology (Ajzen, 1991).

Previous research has also shown that perceived behavioral control is a significant predictor of technology adoption in various contexts, including healthcare (Al-Momani et al., 2023). The influence of perceived behavioral control highlights the importance of individuals' confidence in their ability to use the technology effectively.

Concerning the demographics, Individuals with higher technological expertise, such as those who are more familiar and experienced with using technology, perceive higher levels of control over technology adoption. Technological expertise can enhance individuals' confidence in their ability to adopt and use teleradiology effectively (Gusti et al., 2013)

CONCLUSIONS AND RECOMMENDATIONS

Perceived security and privacy significantly impact patients' attitudes towards adopting teleradiology. Perceived security enhances patients' trust and confidence in the technology, aligning with previous research on the adoption of digital health. To strengthen this perception, teleradiology services can strategically incorporate advanced security measures, such as blockchain security for immutable data trails and enhanced data integrity, as well as AI-driven threat detection systems for real-time identification and mitigation of cyber threats.

Attitude towards teleradiology significantly influences patients' behavioral intention to adopt teleradiology, as per planned behavior theory. A positive attitude, influenced by perceived benefits, usefulness, and reliability, increases adoption. This highlights the importance of promoting favorable attitudes through the effective communication of the technology's benefits and capabilities.

Subjective norms and perceived behavioral control positively influence patients' behavioral intention to adopt teleradiology, while social factors and self-efficacy perceptions significantly shape their willingness to adopt this technology, highlighting the importance of social influence.

The limited number of respondents within a specific age group restricts the generalizability of the findings to the broader population of that age category. Future studies should aim for a more balanced representation across all age groups to ensure more robust and generalizable results. Moreover, this study did not dwell into the specific technological aspects of teleradiology that might influence privacy and security concerns. Future research can benefit from a more thorough examination of technologies related to data transmission, storage, and access. Future research can significantly benefit from a more thorough examination of technologies related to data transmission, storage, and access, including the potential of blockchain to secure patient data exchanges and the use of AI to predict and prevent unauthorized access. By identifying the specific IT infrastructure utilized in teleradiology, researchers can propose concrete measures for enhancing privacy and security within these services, such as implementing AI-powered anomaly detection in data transfers and leveraging blockchain for secure audit trails of image access.

Beyond merely proposing concrete security and privacy measures, the research will extend to formulating practical guidelines that detail how radiology departments can effectively integrate and implement advanced security and privacy protocols within their existing clinical workflows. These guidelines will encompass essential operational aspects, including step-by-step implementation, required staff training, cost-effective strategies, compliance with local and international data privacy standards, and best practices for maintaining ongoing data integrity and confidentiality.

The study's main source of data was the survey. Though the results presented were able to capture the main goals of the study, a deeper understanding of the privacy and security concerns needs to be conducted. An empirical research on the challenges of teleradiology on borders, conducted by Legido-Quigley et al. (2014), employed a qualitative research approach. A mixed-methods approach was used in the study by Goelz et al. (2021) on the obstacles to the development of teleradiology networks. Hence, a mixed method type of study is recommended for future research.

IMPLICATIONS

The implications of this study are relevant to the faster adoption of teleradiology among patients in general. The results of the constructs tested in the study, including attitude, security, privacy, subjective norms, perceived behavioral control, and behavioral intention, yielded significant findings regarding the adoption of teleradiology.

The importance of security and privacy is highlighted in the study. This implies that healthcare providers should reevaluate their policies on data privacy and also boost their security measures to safeguard medical data. Moreover, the positive behavior of patients towards teleradiology eventually leads to adoption. The results suggest that educational initiatives should be carefully planned and implemented to communicate the benefits of teleradiology to the public effectively. The study's results on the influence of behavioral control have significant implications for the way customer service should be handled in the medical field. Programs like tutorials and 24-hour technical assistance are effective in boosting confidence in the usage of teleradiology.

Overall, the study's results are valuable not only to medical institutions striving for more efficient operations but also to the public, who require faster and higher-quality healthcare assistance.

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DECLARATIONS

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this publication.

Informed Consent

We confirm that all participants provided their informed consent to participate in the survey. Before participating in the survey, all participants were provided with a clear explanation of the study's purpose, objectives, and scope, informed about the potential risks and benefits associated with participation, and assured of their anonymity and confidentiality.

Ethics Approval

This Internet-based survey posed minimal risk to participants, and anonymity was protected in the conduct of this study. Program guidelines did not require a formal ethics clearance.

References

Ab Hamid, M. R., Sami, W., & Mohamad, N. A. (2017). Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series, 890*(1). https://doi.org/10.1088/1742-6596/890/1/012163

Ahmad, S., Sajjad, K., & Khan, M. I. (2019). Qualitative vs. quantitative research-a summarized review. *Population, 1*(2),2828-2832.

Ajayi, K. V., Olowolaju, S., Bolarinwa, O. A., & Onyeka, H. (2023). Association between patient-provider communication and withholding information due to privacy concerns among women in the United States: an analysis of the 2011 to 2018 Health Information National Trends Survey. *BMC Health Services Research, 23*. https://doi.org/10.1186/s12913-023-10112-7

Ajzen I (2020). The theory of planned behavior: Frequently asked questions. Human Behavior & *Emerging Technology, 2*, 314–324. https://doi.org/10.1002/hbe2.195

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes.* 50, 179-211. 10.1016/0749-5978(91)90020-T.

Al-Momani, M., Al-Momani, A., & Nusairat, N. (2023). A Review of the Technology Acceptance Model in Electronic Health Records. *International Journal of Business and Technology Management,* 5, 2682-7646. 10.55057/ijbtm.2023.5.2.2.

Chandramohan, A., Rajendran, V., Singh, K., Sharma, S., & Puri, A. (2024). Teleradiology and technology innovations in radiology: status in India and its role in increasing access to primary health care. *The Lancet Regional Health - Southeast Asia, Volume 23*, 2772-3682, https://doi.org/10.1016/j.lansea.2023.100195.

Busch-Casler, J., & Radic, M. (2023). Trust and Health Information Exchanges: Qualitative Analysis of the Intent to Share Personal Health Information. *Journal of Medical Internet* Research, 25(2), e41635–e41635. https://doi.org/10.2196/41635

Chen, Y., & Zhang, Y. (2020). Blockchain-based secure data storage and transmission in teleradiology. *Journal of Medical Systems, 44*(10), 2103.

Clarke, M. A., Smith, R. G., & Smith, J. M. (2020). Impact of Age on Patients'

Communication and Technology Preferences in the Era of Meaningful Use: Mixed Methods Study. *JMed Internet Res. 2020 Jun 1, ;22*(6), e13470. doi: 10.2196/13470.

Cruz, L. A., & Tolentino, L. K. (2021). Telemedicine implementation challenges in underserved areas of the Philippines. *International Journal of Emerging Technology and* Advanced *Engineering*, *11*(7), 60-70. https://doi.org/10.46338/ijetae0721_08

Davis, J., Johnson, K., & Thompson, M. (2019). Secure data storage and backup strategies for teleradiology. *Radiology Management, 41(4), 14–19.*

Dawood, H. M., Al-Jumeily, D., Hussain, A. J., Lunn, J., & Al-Rahmi, W. M. (2021). Mobile perceived trust mediation on the intention and adoption of FinTech innovations using mobile technology: A systematic literature review. *F1000Res. 2021 Dec 7, 10,1252.* doi: 10.12688/f1000research.74656.2

Dhagarra, D., Bhargava, M., & Sinha, P. (2020). Impact of Trust and Privacy Concerns on Technology Acceptance in Healthcare: An Indian Perspective. *Int J Med Inform, 141, 104164*. doi: 10.1016/j.ijmedinf.2020.104164

Giantari, G. A. K., Zain, D., Rahayu, M., & Solimun. (2013). The role of perceived behavioral control and trust as mediator of experience on online purchasing intentions relationship a study on youths in denpasar city (Indonesia). *International Journal of Business and Management Invention*, *2*(1), 30–38

Hair, J. F., Hult, T., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM) (3rd ed.). Sage. https://doi.org/10.1186/s13244-022-01241-4

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31 (1), 2–24. https://doi. org/10.1108/EBR-11-2018-0203

Ham, M., Kim, J., & Kim, M. (2015). The role of subjective norms in forming the intention to purchase green food. https://doi.org/10.1080/1331677X.2015.1083875

Hanna, T. N., Otero, H. J., & Steenburg, S. D. (2020). Emerging Challenges and Opportunities in the Evolution of Teleradiology. *American Journal of Roentgenology, 215*(6), 1411–1416

Hashim, K. F., Tan, F. B., & Rashid, A. (2014). *Adult learners' intention to adopt mobile learning: A motivational perspective*. British Journal of Educational Technology, 46(2), 381–390. https://doi.org/10.1111/bjet.12148

Hassandoust, F., Akhlaghpour, S., & Johnston, A.C. (2021). Individuals' privacy concerns and adoption of contact tracing mobile applications in a pandemic: A situational privacy calculus perspective. *Journal of the American Medical Informatics Association*, *28* (3), 463–471. https://doi.org/10.1093/jamia/ocaa24057

Houser, S. H., Flite, C. A., & Foster, S. L. (2023). Privacy and security risk factors related to telehealth services – A systematic review. *Perspectives in Health Information Management, 20*(1), 1f

Jo, H. (2022). Gender differences in the perceptions of information security, usefulness, and enjoyment of metaverse. In *International Conference on Computational Science and Computational Intelligence (CSCI)*

Itawalbeh, M., Thiam, W., Alshourah, S., & Fong, S. F. (2015). The role of age and gender in the relationship between (attitude, subjective norm and perceived behavioural control) and adoption of E-Learning at Jordanian Universities.

Jalalkamali, A., & Doratli, N. (2022). Public space behaviors and intentions: The role of gender through the window of culture, case of Kerman. *Behavioral Sciences, 12*(10), 388. https://doi.org/10.3390/bs1210038865.

Pool, J., Akhlaghpour, S., Fatehi, F., & Gray, L. C. (2022). Data privacy concerns and use of telehealth in the aged care context: An integrative review and research agenda. *International Journal of Medical Informatics*, *160*, 104707. ISSN 1386-5056. https://doi.org/10.1016/j.ijmedinf.2022.104707.

Jones, D., & Brown, M. (2020). Network security threats in teleradiology: A review. *Journal of Digital Imaging, 33* (3), 531–539.

Kelley-Quon, L. (2018). Surveys: Merging qualitative and quantitative research methods. *Seminars in Pediatric* Surgery. *Volume 27*, (6), 361-366. https://doi.org/10.1053/j.sempedsurg.2018.10.007.

Kendziorra, J., & Winkler, T. (2022). Gender and perceived privacy risks in technology acceptance: Insights from a mobile urban sensing survey. *In Pacific Asia Conference on Information Systems (PACIS) 2022*.

Klaver, N. S., van de Klundert, J., van den Broek, R. J. G. M., & Askari, M. (2021). Relationship Between Perceived Risks of Using mHealth Applications and the Intention to Use Them Among Older Adults in the Netherlands: Cross-sectional Study. *JMIR mHealth and uHealth, 9* (8), e26845–e26845. https://doi.org/10.2196/26845

Krupinski, E.A. (2014). Teleradiology: current perspectives. *Reports in Medical Imaging, 7*, 5-14. DOI: 10.2147/RMI.S48140

Lee, S., Kim, J., & Lee, J. (2022). Security and privacy challenges in AI-powered teleradiology: A systematic review. *Computers in Biology and Medicine, 143*, 105174.

Lee, S., Kim, J., Kwon, Y., Kim, T., & Cho, S. (2022). Privacy preservation in patient information exchange systems based on blockchain: System design study. *Journal of Medical Internet Research, 24* (3), e29108. https://doi.org/10.2196/29108

Legido-Quigley, H., Panteli, D., & Busse, R. (2014). Challenges facing teleradiology services across borders in the European union: A qualitative study. *Health Policy and* Technology. https://doi.org/10.1016/j.hlpt.2014.04.001

Mangiò, F., Andreini, D., & Pedeliento, G. (2020). Hands off my data: Users, security concerns and intention to adopt privacy enhancing technologies. *Italian Journal of Marketing*, *2020*, 309–342. https://doi.org/10.1007/s43039-020-00017-292

Marcela Tuler, d. O., Lúcio Henrik, A. R., Marquering, H., Zwinderman, A. H., & Sílvia, D. O. (2022). Perceptions of a Secure Cloud-Based Solution for Data Sharing During Acute Stroke Care: Qualitative Interview Study. *JMIR Formative Research, 6* (12). https://doi.org/10.2196/40061

McGill, T., & Thompson, N. (2018). Gender Differences in Information Security Perceptions and Behaviour. 10.5130/acis2018.co

Miller, R. (2022). HIPAA and GDPR compliance in teleradiology: A review of regulations and best practices. *Journal of Healthcare Management, 67* (4), 250–262.

Naik, N., Ibrahim, S., Sircar, S., Patil, V., Hameed, B. M. Z., Rai, B. P., Chłosta, P., & Somani, B. K. (2021). Attitudes and perceptions of outpatients towards adoption of telemedicine in healthcare during COVID-19 pandemic. *Irish Journal of Medical Science, 191* (4), 1505–1512. https://doi.org/10.1007/s11845-021-02729-6

Noceda, A.V.G., Acierto, L.M.M., & Bertiz, M. (2023). Patient satisfaction with telemedicine in the Philippines during the COVID-19 pandemic: a mixed methods study. *BMC Health Serv Res 23*, 277. https://doi.org/10.1186/s12913-023-09127

Noor, B. D., Katheeth, Z. D., & Noor, A. D. (2024). Internet of things in public healthcare organizations: The mediating role of attitude. *IAES International Journal of Artificial Intelligence (IJ-AI), 13* (1), 57. https://doi.org/10.11591/ijai.v13.i1.pp57-65

Nwaiwu, F., Kwarteng, M. A., Jibril, A. B., Buřita, L., & Pilik, M. (2020). Impact of security and trust as factors that influence the adoption and use of digital technologies that generate, collect and transmit user data. 10.34190/ICCWS.20.016.

Oga, T., Panganiban, K., Kudo, K., Celero, J., Ueda, S., Tomimatsu, S., Domino, J., & Moriyama, T. (2023). A quantitative analysis of barriers to international telemedicine education: The case of the Philippines. *Proceedings of the 9th International Conference on Information and Communication Technologies for Ageing Well and e-Health*, 75-80. https://doi.org/10.5220/0011997600003476

Oga, T., Panganiban, K., Kudo, K., Celero, J., Ueda, S., Tomimatsu, S., Domino, J., & Moriyama, T. (2024). Overcoming barriers in international telemedicine education: A mixed-method study in the Philippines. *Communications in Computer and Information Science*, 43-55. https://doi.org/10.1007/978-3-031-62753-8_3

Özmen, M. N., Dicle, O., Şenol, U., & Aydıngöz, Ü. (2021). TSR guidelines for the practice of teleradiology: 2021 update. *Diagnostic and Interventional Radiology, 27* (4), 504–510. https://doi.org/10.5152/dir.2021.20570

Octavius, G. S., & Antonio, F. (2021). Antecedents of Intention to Adopt Mobile Health (mHealth) Application and Its Impact on Intention to Recommend: An Evidence from Indonesian Customers. *International Journal of Telemedicine and Applications, 2021*, 1-24.

Paul, B., Kirubakaran, R., Isaac, R., Dozier, M., Grant, L., & Weller, D. (2023). A systematic review of the theory of planned behaviour interventions for chronic diseases in low health-literacy settings. *Journal of Global Health, 13*, 04079. https://doi.org/10.7189/jogh.13.04079

Ramírez-Correa, P., Ramírez-Rivas, C., Alfaro-Pérez, J., & Melo-Mariano, A. (2020). Telemedicine acceptance during the COVID-19 pandemic: An empirical example of robust consistent partial least squares path modeling. *Symmetry, 12*, 1593. https://doi.org/10.3390/sym12101593

Rodriguez, A. (2021). Patient empowerment in teleradiology: Transparent data access policies and patient portals. *Journal of Patient Experience, 8* (2), 1–8.

Rouidi, M., Elouadi, A., & Hamdoune, A. (2022). Acceptance and use of telemedicine technology by health professionals: Development of a conceptual model. *Digital Health, 2022, 8*. doi:10.1177/20552076221081693

Rosenkrantz, A.B., Hanna, T.N., & Steenburg, S.D. (2019). The Current State of Teleradiology Across the United States: A National Survey of Radiologists' Habits, Attitudes, and Perceptions on Teleradiology Practice. *J Digit Imaging 32*, 1024–1031

Ruotsalainen, Pekka (2010). Privacy and security in teleradiology. *European Journal of Radiology, 73,* (1), 31-35. https://doi.org/10.1016/j.ejrad.2009.10.018.

Smith, J., Johnson, K., & Williams, D. (2021). Security vulnerabilities in popular teleradiology platforms: A systematic review. *Journal of Medical Systems, 45*(1), 2101.

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing, Volume 22*, 960-967. https://doi.org/10.1016/j.promfg.2018.03.137.

Teo, T (2010). Examining the influence of subjective norm and facilitating conditions on the intention to use technology among pre-service teachers: a structural equation modeling of an extended technology acceptance model*. Asia Pacific Education Review, 11,* 253–262. https://doi.org/10.1007/s12564-009-9066-4

Wan Hanafi, W. N., & Toolib, S. (2021). Influences of perceived usefulness, perceived ease of use, and perceived security on intention to use digital payment: A comparative study among Malaysian younger and older adults. *3*, 15–24

Wilson, K., & Garcia, M. (2023). Data protection strategies in teleradiology: A review of data anonymization, access control policies, and secure communication channels. *Journal of Data Protection and Privacy, 3*(1), 1–12.

Zhang, M. (2023). Older people's attitudes towards emerging technologies: A systematic literature review. *Public Understanding of Science, 32* (8), 948-968. https://doi.org/10.1177/09636625231171677

Zarour, M., Alenezi, M., Ansari, M. T. J., Pandey, A. K., Ahmad, M., Agrawal, A., Kumar, R., & Khan, R. A. (2021). Ensuring data integrity of healthcare information in the era of digital health. *Healthcare Technology Letters, 8* (3), 66–77. https://doi.org/10.1049/htl2.12008

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