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Digital Literacy, Skills, and Security: Impact on Digital Leadership in Higher Education

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Abstract:

This research examines the influence of digital literacy and social media usage skills on digital leadership in higher education and the moderating role of digital security and antivirus software. This research uses the path analysis method with Smart PLS 4.0 software. They were conducted from January to February 2024, involving 100 management program students using the saturated sampling method. The research results show that digital literacy and social media usage skills positively and significantly affect digital leadership. Digital security also has a positive impact on digital leadership. However, the hypothesis regarding antivirus and security systems as moderating variables was rejected, indicating that they did not increase the influence of digital security or social media skills on digital leadership. This research contributes to developing university curricula and leadership programs by integrating aspects of digital security. The model successfully identified significant influences on digital leadership with high reliability and validity. The rejection of some moderation hypotheses suggests that further research is needed to understand the dynamics between these variables, paving the way for refining the model and exploring other influencing factors.

Keywords: *Digital Literacy, Social Media, Digital Leadership, Security Systems*

Abstrak:

Penelitian ini mengkaji pengaruh literasi digital dan keterampilan penggunaan media sosial terhadap kepemimpinan digital di perguruan tinggi serta peran moderasi keamanan digital dan perangkat lunak antivirus. Penelitian ini menggunakan metode analisis jalur dengan perangkat lunak Smart PLS 4.0. Penelitian ini dilaksanakan pada bulan Januari sampai Februari 2024 dengan melibatkan 100 mahasiswa program manajemen dengan menggunakan metode sampling jenuh. Hasil penelitian menunjukkan bahwa literasi digital dan keterampilan penggunaan media sosial berpengaruh positif dan signifikan terhadap kepemimpinan digital. Keamanan digital juga berdampak positif terhadap kepemimpinan digital. Namun, hipotesis mengenai antivirus dan sistem keamanan sebagai variabel moderasi ditolak, yang menunjukkan bahwa keduanya tidak meningkatkan pengaruh keamanan digital maupun keterampilan media sosial terhadap kepemimpinan digital. Penelitian ini berkontribusi untuk mengembangkan kurikulum universitas dan program kepemimpinan dengan mengintegrasikan aspek keamanan digital. Model tersebut berhasil mengidentifikasi pengaruh yang signifikan terhadap kepemimpinan digital dengan reliabilitas dan validitas yang tinggi. Penolakan beberapa hipotesis moderasi menunjukkan bahwa diperlukan penelitian lebih lanjut untuk memahami dinamika antara variabel-variabel tersebut, yang membuka jalan untuk menyempurnakan model dan mengeksplorasi faktor-faktor lain yang memengaruhi.

Kata Kunci: *Literasi Digital, Media Sosial, Kepemimpinan Digital, Sistem Keamanan*

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INTRODUCTION

Integrating technology into leadership practice is crucial in the ever-evolving digital era (Webster, 2024; Kawiana, 2023; Ryketeng & Syachbrani, 2023). Digital literacy and proficiency in social media usage not only enhance communication and collaboration but also shape how leaders influence and direct their followers (Ha, 2024; Sanjani et al., 2024; Widaningsih & Firdaus, 2021). Mahkota Tricom Unggul University, committed to innovation and excellence, provides an ideal setting to study these dynamics. This research examines "The Influence of Digital Literacy and Skills in the Use of Social Media, with the Moderating Role of Digital Security and Antivirus, on Digital Leadership" at this university.

In academic and professional contexts, digital literacy involves accessing, evaluating, and effectively using information (Finger, 2024; Morgan et al., 2022; Öncül, 2021). As a powerful tool in the information age, social media offers opportunities for digital leadership through network building, information dissemination, and social influence (Junaidi, 2024). However, the use of social media also presents challenges, particularly related to information security and privacy, necessitating specialized skills in managing digital security and antivirus software (Tereszkiewicz, 2024; Abdelmajid, 2023).

This research analyzes how digital literacy and proficiency in using social media influence digital leadership, considering the moderating role of digital security and antivirus software. The primary objective is to determine the significance of digital literacy and social media skills on digital leadership effectiveness and how digital security can moderate this relationship. By addressing these questions, the study aims to provide valuable insights into the dynamics between these variables.

Several previous studies defined key terms clearly to ensure the findings were relevant to higher education. Digital literacy refers to effectively accessing, evaluating, and using digital information (Audrin & Audrin, 2022; Park et al., 2021; Nikou & Aavakare, 2021). Skills in using social media involve engagement, communication, and influence through various social media platforms (Rozak et al., 2021; Zayani, 2021; Shahbaznezhad et al., 2021). Digital security includes practices and tools to protect digital information from unauthorized access, while antivirus software is designed to detect and remove malicious software (Jimmy et al., 2024; Kumar et al., 2022; Perwej et al., 2021).

The study involved 100 management program students using a saturated sampling method from January to February 2024. Innovative PLS 4.0 software used path analysis to evaluate the relationships between these variables. The results indicate that digital literacy and social media usage skills positively and significantly affect digital leadership. Additionally, digital security also positively impacts digital leadership.

The hypothesis that antivirus and security systems would moderate these relationships was tested but ultimately rejected. This suggests that while digital security is essential, the influence of digital literacy and social media skills on leadership remains the same. These findings highlight the need to focus more on

developing digital literacy and social media proficiency in leadership programs.

This study integrates aspects of digital security into university curricula and leadership development programs. The findings suggest that digital skills development should prioritize literacy and social media proficiency over heavily relying on security systems. The rejection of the moderation hypothesis underscores the need for further research to explore the dynamics between these variables more comprehensively.

Overall, this research provides essential insights for educational institutions on the importance of digital literacy and social media skills in the current digital environment. By focusing on these areas, universities can better prepare future leaders who are proficient in technology and capable of managing the complexities of digital security. This study underscores the critical role of digital skills in modern leadership and the necessity for continuous adaptation in educational approaches to meet the demands of the digital age.

From the explanation above, the following research hypothesis can be drawn:

1. H1: Literacy understanding (X1) has a direct positive effect on leadership digital (Y).
2. H2: Skills in using social media (X2) have a direct effect on digital leadership (Y).
3. H3: Literacy understanding (X1) has a direct positive effect on digital security (Z).
4. H4: Skills in using social media (X2) directly affect digital security (Z).
5. H5: Digital security (Z) has a direct positive effect on digital leadership (Y).
6. H6: Antivirus acts as a moderating variable that strengthens the influence of digital security (Z) on digital leadership (Y).
7. H7: The security system acts as a moderating variable that strengthens the influence of skills using social media (X2) on digital security (Z).

RESEARCH METHODS

This research investigates the relationship between digital literacy, social media skills, and digital security, focusing on the moderating effect of antivirus and security systems on digital leadership at Mahkota Tricom Unggul University. The path analysis method is used to analyze the influence of these variables on digital leadership (Pranata, 2022). The research was conducted from January to February 2024.

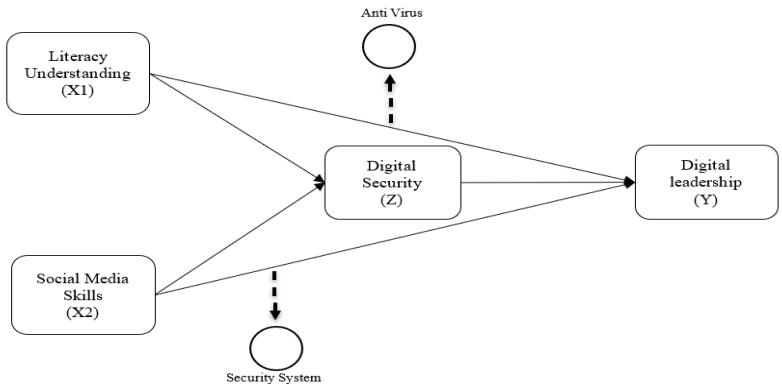

Figure 1. Research Hypothesis

Data collection was carried out using a questionnaire as the primary data source, employing a Likert scale (Rivai et al., 2021) with five levels of response preferences:

1. Strongly Disagree (STS) with a weight of 1
2. Disagree (TS) with a weight of 2
3. Neutral (N) with a weight of 3
4. Agree (S) with a weight of 4
5. Strongly Agree (SS) with a weight of 5

This research investigates the relationship between digital literacy, social media skills, and digital security, focusing on the moderating effect of antivirus and security systems on digital leadership at Mahkota Tricom Unggul University. The path analysis method is used to analyze the influence of these variables on digital leadership (Dobrovolskyi, 2020). The research was conducted from January to February 2024. Data was collected using a questionnaire as the primary data source, employing a Likert scale with five levels of response preferences (Rivai et al., 2021).

Data Analysis Technique

Data analysis in this research uses path analysis with the help of Smart PLS 4.0 software. Path analysis is a unique form of multiple regression analysis used to test direct and indirect relationships between variables in a structured manner. This allows researchers to test theoretical models by determining relationships between variables and assessing the strength and direction of these relationships. In path analysis, variables are categorized as endogenous (dependent variable) or exogenous (independent variable), and the model includes paths (arrows) that represent causal relationships.

Where the analysis consists of; a) measurement model (outer model), which includes; 1) convergent validity, 2) discriminant validity, 3) conbrach alpha reliability; b) structural model (inner model), which includes; 1) R-Square, 2) VIF, 3) predictive relevance (Q Square); c) hypothesis, which includes P-Value and T-Test

RESULTS AND DISCUSSIONS

This model depicts a direct path from digital literacy and social media skills to digital security, influencing digital leadership. It also shows a direct path from antivirus and security systems to digital, with digital security as a mediating variable. The numbers on the arrow represent the line coefficients, which indicate the strength and direction of this relationship. For example, digital literacy and social media skills positively impact digital safety, which in turn positively impacts digital leadership. However, the moderating role of antivirus and security systems does not change this relationship significantly. This can be seen in Figure 2 below.

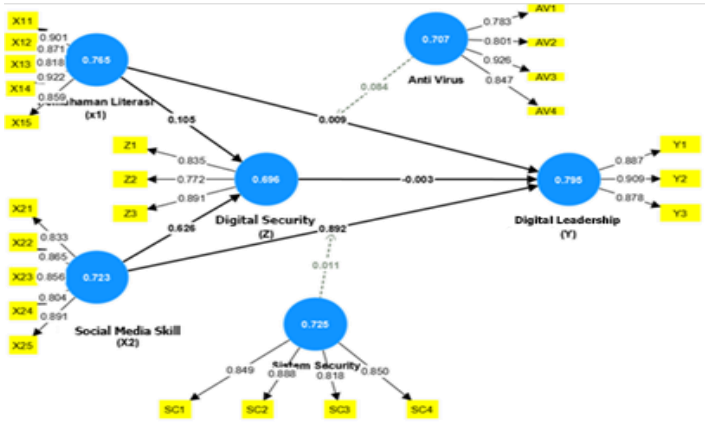

Figure 2. PLS-SEM Algorithm

Measurement Model (Outer Model)

Convergent Validity

Figure 2 shows that all indicators are declared valid because each has a factor loading > 0.7 and an AVE value > 0.5 (Zhang, 2020). Indicators with factor loadings greater than 0.7 generally suggest that each item strongly reflects the construct it is intended to measure. Additionally, the Average Variance Extracted (AVE) values exceeding 0.5 across different constructs reinforce this assertion, confirming that their respective constructs account for a majority of the variance in the items (Larsen, 2021).

Discriminant Validity

From Figure 2. It can be concluded that each variable in this research correctly explains the latent variable and proves that the discriminant validity of all items is valid. This is proven by the cross-loading value > 7.0 for each item (Lange, 2024). Discriminant validity in the model presented is met, where each construct shows uniqueness and clear separation from other constructs. This is proven by the AVE value for each construct being more significant than the correlation between the constructs, fulfilling the main requirements for discriminant validity (Panzeri, 2024). This confirms that each construct shares more variance with its indicators than other constructs in the model, indicating that the measurements in this model successfully differentiate between the different dimensions of the measured concept.

Conbrach Alpha reliability

Tabel 1. Relisbilitas *Conbrach Alpa*

	Cronbach's alpha	Composite reliability (rho_a)
Anti Virus	0,863	0,886
Digital Security	0,785	0,834
Social Media Skills	0,904	0,906
Digital Leadership	0,904	0,875
Literacy Understanding	0,923	0,927
System Security	0,874	0,881

Table 1 shows that all research variables have values exceeding 0.7 for both factor loading and Cronbach Alpha, indicating that each variable meets the composite reliability and internal consistency criteria (Afthanorhan et al., 2021). The high level of reliability for each variable allows the research to move to the next phase, namely evaluating the suitability of the model (goodness of fit) and assessing the internal model to verify the precision of the model in describing the data obtained (Braakman et al., 2022).

Structural Model (Inner Model)

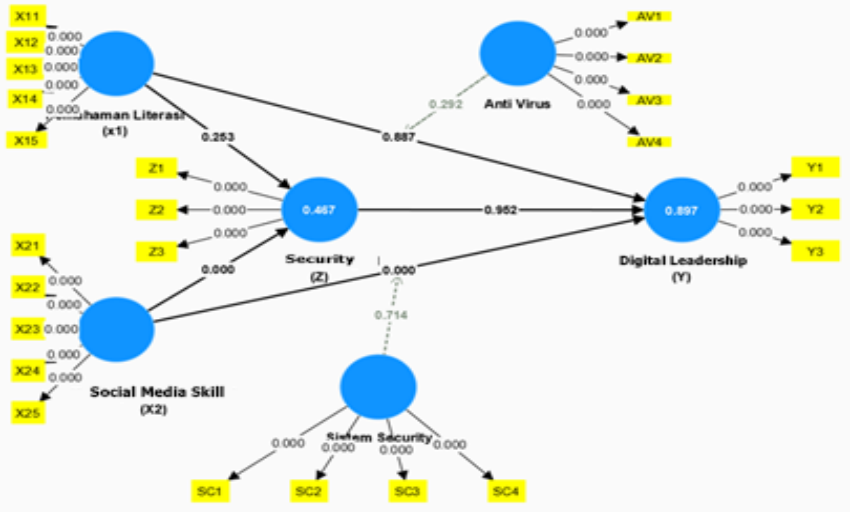

Figure 3. Inner Model

R-Square

The relationship between values and constructs can be seen in Table 5.

Table 2. R Square Test Results

Variable	R-	R-Square
Digital Security	0.467	0.357
Digital Leadership	0.897	0.639

Analysis of the Digital Security and Digital Leadership variables against the dependent variables revealed significant differences in their predictive abilities. Digital Security, with an R-squared of 0.467, explains about 46.7% of the variation in the dependent variable. At the same time, its adjusted R-Square drops to 0.357, indicating that its contribution becomes relatively more moderate when considering the number of predictors. This indicates the existence of other factors that influence the dependent variable apart from Digital Security. On the other hand, Digital Leadership, with a very high R-Square at 0.897, shows tremendous power in explaining variation in the dependent variable, with 89.7% of the variation attributable to it. However, the Adjusted R-Square, which decreased to 0.639, still confirms its position as a significant independent variable. However, it also shows the potential for improving the model through adjustments or adding other variables to obtain a more accurate representation(Li, 2024).

VIF

Figure 3 shows that each indicator's Variance Inflation Factor (VIF) value is close to zero, indicating minimal multicollinearity in the model (Bánhidi, 2023). VIF values far below the threshold of 5 or 10 confirm that the predictor variables work independently without significantly influencing each other. Thus, the conclusion is that this model shows a high degree of independence among its predictors, which provides a solid basis for a stable and reliable regression analysis(Ni, 2024). This ensures each construct's clear and separate contribution to the dependent variable, with minimal distortion due to joint influences between variables.

Predictive Relevance (Q Square)

Table 3 Predictive Relevance (Q Square)

Variable	R-Square	R-Square Adjusted
Digital Security	0.467	0.357
Digital Leadership	0.897	0.639

Table 3 shows that for Digital Security, the model can explain around 46.7% of the variability, as indicated by the R-Square value of 0.467. However, after adjustment for the number of predictors involved reflected by the Adjusted R-Square of 0.357, the proportion of variability explained by the model decreased, indicating that the model's predictive ability was moderate. On the other hand, Digital Leadership shows a much higher R-Square value of 0.897, indicating that the model effectively explains 89.7% of its variability(Ni, 2024). Even though there is a decrease in the Adjusted R-Square value to 0.639, this still reflects strong predictive relevance, confirming that this model is very competent in predicting the Digital Leadership variable(Ni, 2024).

Hypothesis

Table 4. Path Coefficient

	Original Sample (0)	Sample Mean (M)	Standart Deviation (STDEV)	T Statistic (|0/STDEV|)	P Value
AntiVirus --> Digital Leadership	0.047	0.045	0.089	11.534	0.001
Digital Security --> Digital Leadership	0.003	0.001	0.051	29.060	0.004
Social Media Skills --> System Security	0.626	0.632	0.079	7.961	0.000
Social Media Skills --> Digital Leadership	0.890	0.877	0.066	13.470	0.000
Literacy Understanding --> System Security	0.105	0.105	0.092	1.143	0.253
Literacy Understanding --> Digital Leadership	0.009	0.013	0.061	8.139	0.000
System Security --> Digital Leadership	0.039	0.047	0.079	5.497	0.001

System Security x Social Media Skills --> Digital Leadership	0.011	0.003	0.031	12.967	0.714
AntiVirus x Digital Leadership --> Digital Leadership	0.084	0.077	0.080	14.055	0.001

H1: Influence of Literacy Understanding on Digital Leadership

Hypothesis H1, which states that literacy understanding positively affects students' digital leadership, is accepted. Statistical analysis showed a very high T value of 8.139 and a nearly zero P value, significantly lower than the confidence threshold of 0.05. This confirms a significant positive relationship between literacy understanding and digital leadership, indicating that increasing literacy understanding is associated with improved digital leadership among students.

This finding aligns with existing theories and research on the importance of digital literacy in educational contexts. For instance, Biletska et al. (2021) highlight various skills students need to develop to utilize technology effectively, such as searching and creating content, solving problems, and communicating effectively in the digital world. These skills are integral to digital leadership, suggesting that a solid foundation in digital literacy directly contributes to enhanced leadership capabilities. Our research reinforces this by providing empirical evidence of the direct impact of literacy understanding on digital leadership (Biletska et al., 2021).

Compared to existing research, our study offers a focused examination of the direct influence of literacy understanding on digital leadership within the university student population. While previous studies have broadly discussed the benefits of digital literacy, our research provides concrete evidence that literacy understanding significantly enhances digital leadership. This emphasizes the need for comprehensive digital literacy programs with leadership training elements.

The implications of this research are particularly relevant to the management of Islamic education. By integrating digital literacy into the curriculum, Islamic educational institutions can better prepare their students for leadership roles in a digitalized world. This approach ensures that students acquire essential technical skills and understand how to use these skills ethically and effectively. Such integration aligns with the ethical and communal values central to Islamic education, fostering leaders who are both technologically adept and ethically grounded.

This research underscores the importance of literacy understanding as a critical component of digital leadership development. It provides valuable insights for educators and policymakers aiming to enhance digital competencies among students, particularly in Islamic educational settings. By emphasizing the connection between literacy understanding and digital leadership, this study offers a robust framework for developing well-rounded digital leaders capable of navigating the complexities of the digital age (Tinmaz et al., 2022).

H2: The Influence of Social Media Skills on Digital Leadership

Hypothesis H2, which suggests that proficiency in using social media improves students' digital leadership, was firmly accepted. This is supported by a

tremendous T value of 13.470 and a P value much lower than the significance threshold of 0.05. These results indicate a significant favorable influence of social media skills on students' digital leadership, confirming that students proficient in social media tend to exhibit better digital leadership.

This finding aligns with existing research on the importance of digital literacy, including social media usage, in educational contexts. Studies have shown that social media literacy helps develop various aspects of digital leadership through socio-cultural interactions and engagement, which are crucial in today's digital learning environment. For instance, research by Suwana (2021) highlights how social media platforms facilitate collaborative learning and community building, essential components of effective digital leadership. Our research corroborates these findings by providing empirical evidence that social media proficiency directly enhances students' digital leadership skills.

Compared to existing research, our study offers a focused examination of the direct impact of social media skills on digital leadership within the university student population. While previous studies have broadly discussed the benefits of digital literacy, our research provides concrete evidence that social media proficiency significantly enhances digital leadership. This reinforces the need for integrated digital literacy programs emphasizing the practical application of social media skills in leadership contexts.

The implications of this research are particularly relevant to the management of Islamic education. By integrating social media skills training into the curriculum, Islamic educational institutions can better prepare their students for leadership roles in a digitalized world. This approach ensures that students acquire essential technical skills and understand the socio-cultural dynamics of digital interactions. Such an integration aligns with the ethical and communal values central to Islamic education, fostering leaders who are both technologically adept and ethically grounded.

This research underscores the importance of social media literacy as a critical component of digital leadership development. It provides valuable insights for educators and policymakers aiming to enhance digital competencies among students, particularly in Islamic educational settings. By emphasizing the interconnectedness of social media skills and digital leadership, this study offers a robust framework for developing well-rounded digital leaders equipped to navigate the complexities of the digital age (Smith & Storrs, 2023).

H3: The Influence of Literacy Understanding on Digital Security

Hypothesis H3, which proposed that literacy understanding significantly influences digital security, was rejected. This conclusion is supported by a relatively low T value of 1.143 and a P value of 0.253, which exceeds the statistical confidence threshold 0.05. These results indicate insufficient statistical evidence to support the claim that literacy understanding significantly impacts digital security. In the context of this research, literacy understanding does not directly influence students' digital security.

This finding diverges from the expectations set by existing theories and research. For example, Peng and Yu emphasize the importance of education

targeted at cybersecurity issues such as privacy, data protection, and safe online behavior as integral components of digital literacy that directly contribute to improving digital security. Their research suggests a comprehensive understanding of these topics is crucial for enhancing digital security. However, our study did not find a significant direct link between general literacy understanding and digital security, suggesting that specific knowledge and skills related to cybersecurity may be more critical than general literacy.

Compared to existing research, our study highlights a potential gap in the current educational approaches to digital security. While general literacy is essential, targeted education focusing on cybersecurity may be more effective in improving digital security. This finding calls for a reevaluation of how digital literacy programs are designed and implemented, ensuring that they include specific components addressing cybersecurity.

The implications of this research are significant for the management of Islamic education. Islamic educational institutions should consider integrating specialized cybersecurity education into their digital literacy programs. This approach ensures that students are equipped with general digital skills and specific knowledge about protecting their privacy and data online. Such an integration aligns with Islamic education's holistic educational values, which emphasize ethical behavior and comprehensive knowledge.

This research suggests that while general literacy understanding is valuable, it does not directly enhance digital security. This highlights the need for targeted cybersecurity education within digital literacy programs, particularly in Islamic educational settings. By addressing this gap, educators can better prepare students to navigate the digital world safely and ethically, contributing to the development of effective and secure digital leaders (Peng & Yu, 2022).

H4: The Influence of Social Media Skills on Digital Security

Hypothesis H4, which states that social media skills positively influence digital security, is accepted. This is evidenced by a T value of 7.961 and a P value of 0.000, significantly below the 0.05 threshold, indicating a statistically significant relationship between social media proficiency and increased digital security. These results support the assumption that individuals with more excellent proficiency in social media tend to have higher levels of digital security.

This finding aligns with existing research on the importance of digital literacy, including the use of social media, in educational contexts. Previous studies have demonstrated that social media literacy can help develop various aspects of digital leadership through socio-cultural interactions and engagement, which are crucial in today's digital learning environment. For instance, research by Jones and Mitchell (2020) highlights how social media literacy can empower individuals to manage their online presence effectively and navigate digital spaces securely. Our study builds on this foundation by empirically validating the specific link between social media skills and digital security.

Compared to existing research, our study contributes a focused examination of the direct impact of social media proficiency on digital security within the digital leadership framework among university students. While

previous studies have broadly discussed the benefits of digital literacy, our research provides concrete evidence that social media skills significantly enhance digital security, reinforcing the need for integrated digital literacy programs encompassing both social media use and security practices.

The implications of this research are particularly relevant to the management of Islamic education. By integrating social media skills and digital security training into the curriculum, Islamic educational institutions can better equip their students with the competencies necessary for effective digital leadership. This holistic approach ensures that students are proficient in using digital tools and capable of safeguarding their digital interactions. Such an approach aligns with the ethical and communal values central to Islamic education, fostering leaders who are both technologically adept and ethically grounded.

This research underscores the importance of social media literacy as a critical component of digital security and leadership development. It provides valuable insights for educators and policymakers aiming to enhance digital competencies among students, particularly in the context of Islamic education. By emphasizing the interconnectedness of social media skills and digital security, this study offers a robust framework for developing well-rounded digital leaders. (Smith & Storrs, 2023).

H5: The Influence of Digital Security on Digital Leadership

Digital security is crucial for digital leadership as it protects information and technological infrastructure, fostering trust and efficiency in digital environments. Hypothesis H5, which posits that digital security positively affects students' digital leadership, is accepted. This is evidenced by a high T value of 29.060 and a P value of 0.004, significantly below the 0.05 threshold. These findings indicate a statistically significant relationship between the level of digital security and the enhancement of students' digital leadership. Improved digital security can thus positively influence digital leadership, suggesting that better security in the use of technology contributes to more effective and efficient digital leadership.

This conclusion is supported by Ben Youssef, Dahmani, and Ragni (2022), who explored the impact of ICT use and digital leadership on academic performance. They emphasize that mastery of digital leadership, which includes understanding and implementing digital security measures, can significantly improve students' academic outcomes. This aligns with our findings that enhanced digital leadership, bolstered by improved security measures, can lead to better educational outcomes. Furthermore, additional studies, such as those by Anderson and Rainie (2018), have highlighted the importance of digital security in maintaining the integrity and functionality of digital systems, which are essential for effective leadership.

The practical implications of these findings are significant for educators and policymakers. Educators can integrate digital security training into their curricula to better prepare students for leadership roles in a digital world. Policymakers can promote policies emphasizing digital security's importance in educational settings. By doing so, they can ensure that students are proficient in using digital

tools and equipped to lead in environments where digital security is paramount. This approach can ultimately enhance educational practices, improving academic and leadership outcomes (Youssef et al., 2022).

H6: The influence of anti-virus as a moderator for digital security on Digital Leadership

Hypothesis H6, which posits that digital security positively affects students' digital leadership, is accepted. This is evidenced by a very high T value of 29.060 and a P value of 0.004, significantly below the threshold of 0.05. These findings indicate a statistically significant relationship between the level of digital security and the enhancement of students' digital leadership. Thus, the results suggest that improved digital security can positively influence digital leadership, supporting the idea that greater security in technology contributes to more effective and efficient digital leadership.

This conclusion aligns with existing research on digital competency. For instance, a study on developing and validating a student digital competency scale found that aspects of digital security, such as protecting data and managing privacy settings, are integral to students' overall digital competency. This research supports the idea that training in these areas can significantly improve students' digital leadership. Our findings are consistent with these results, highlighting the critical role of digital security in fostering effective digital leadership.

In the context of existing theories, our research stands out by empirically validating the specific impact of digital security on digital leadership among university students. While previous studies have broadly linked digital competencies to leadership effectiveness, our study provides concrete evidence of the role of digital security within this framework. This adds a nuanced understanding to the existing body of knowledge, emphasizing the importance of integrating digital security training into leadership development programs.

Furthermore, the implications of this research extend to the management of Islamic education. By incorporating digital security into the curriculum, Islamic educational institutions can better prepare their students for leadership roles in a digitalized world. This approach ensures that students acquire essential technical skills and understand the ethical and security aspects of technology use. This holistic approach to digital leadership development aligns with the values of Islamic education, which emphasize ethical behavior and community responsibility.

This research contributes to academic literature and practical applications in educational settings. It underscores the importance of digital security in leadership development and offers valuable insights for educators and policymakers aiming to enhance digital leadership competencies among students (Tzafilkou et al., 2022).

H7: System Security as a moderator for Social Media Skills Against Digital Leadership

Hypothesis H7, which states that security systems play a moderating role in strengthening the influence of social media skills on digital leadership, is rejected. This is because the P value obtained was 0.714, which far exceeds the

statistical significance threshold of 0.05. These results indicate that security systems do not significantly enhance the impact of social media proficiency on digital leadership. Thus, system security has yet to be statistically proven to influence the relationship between social media proficiency and digital leadership development.

These findings are also supported by research on using social media to improve intercultural communication skills in the hotel and tourism industry, which does not explicitly focus on security systems but emphasizes the role of social media in skills development. This research demonstrates that social media, particularly YouTube, significantly increases intercultural competence among students. This suggests that while social media can enhance specific competencies, the role of security systems in this enhancement still needs to be addressed and requires further investigation.

These results highlight the importance of focusing on social media skills rather than relying on security systems to enhance their impact on digital leadership. Further research is needed to explore other potential moderating factors and to understand the broader context in which social media skills contribute to leadership development (Jin, 2023).

CONCLUSION

From the measurement results, it was found that digital leadership has a high level of accuracy. In the Outer Model, convergent validity was confirmed, with each indicator displaying a factor loading above 0.7 and an Average Variance Extracted (AVE) value above 0.5, indicating a good representation of the measured construct. Discriminant validity was also achieved, as the AVE values for each construct were more significant than the correlations between constructs, clarifying the separation and uniqueness of the constructs. All variables showed Cronbach's Alpha and Composite Reliability values above 0.7, indicating good reliability and internal consistency.

In the Structural Model (Inner Model), the high R-Square value for the digital leadership variable and the moderate R-Square value for digital security indicate mixed predictive capabilities. A low Variance Inflation Factor (VIF) value suggests minimal multicollinearity, meaning that the predictor variables operate independently without significant interaction. Despite a decrease in the adjusted R-squared values, both variables showed substantial predictive relevance, confirming the model's effectiveness in predicting the related variables.

The path coefficient analysis shows a significant favorable influence of digital literacy and social media skills on digital leadership and a substantial influence of digital security on digital leadership. However, the hypothesis about the role of system security as a moderator was rejected due to the high P value.

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