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Transforming Educational Leadership: Digital Applications of Ki Hajar Dewantara's Leadership Principles

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Abstract

In the face of rapid technological developments, digital leadership in the leadership of Ki Hadjar Dewantara plays an important role in ensuring that digital technology is used effectively and efficiently for educational goals. The research aims to develop a model of digital integration of leadership in the leadership trilogy of Ki Hadjar Dewantara at Tamansiswa College. The research used a quantitative approach with survey methods. The sampling technique used purposive sampling with a total sample of 116 people. The data collection technique in this research used a questionnaire using a five-option Likert. The data analysis technique is the Structural Equation Model (SEM) using SmartPLS version 3 software. The leadership trilogy by Ki Hajar Dewantara is highly suitable for school principals to implement in their digital leadership practices for principals and teachers. The concept of *Ing ngarso sung tuladha* is particularly relevant to modern digital leadership. Implementing *Ing ngarso sang tuladha* in the digital domain, leaders may motivate their people, establish trust, and successfully traverse the intricacies of the digital era. The school principal can implement the *Ing madya mangun karsa* concept in a digital context. The school principal encourages collaboration and co-creation, recognizing the immense potential for collaborative work in digital domains. The *Tut wuri handayani* approach encourages digital leaders to cultivate a culture of autonomous learning, empowering team members to actively pursue knowledge, acquire new abilities, and adjust to the evolving digital environment.

Keywords: autonomous learning, digital application, digital integration, digital leadership, educational technology, Ki Hadjar Dewantara, leadership trilogy, transforming education leadership

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1. Introduction

In the rapidly evolving landscape of leadership, characterized by technological advancements and shifting organizational paradigms, the role of a leader has become increasingly complex. Effective leadership now requires not only sensitivity to emerging issues and adaptability to rapid changes but also the ability to leverage digital tools for effective communication within organizations (Oberer & Erkol-lar, 2018). As organizations confront the challenges of the digital era, there is a critical need to redefine leadership models to meet the demands of this new age (Wilkesmann & Wilkesmann, 2018). This evolution in leadership involves not

only traditional management skills but also the integration and utilization of digital technologies to build cohesive teams, develop innovative solutions, and establish effective decision-making frameworks (Carpenter, Rosenberg, Kessler, Romero-Hall, & Fischer, 2024). The use of technology can increase potential, including in leadership (Awaludin et al., 2023; Fuadi et al., 2021; Onojah et al., 2021).

Digital leadership signifies a paradigm shift that emphasizes the incorporation of digital technologies into leadership practices, mirroring the broader trend towards digitalization in organizational operations and culture (Sağbaş & Erdoğan, 2022). This leadership model is particularly significant in the educational sector, where it supports alignment with national policies on human resource development and fosters innovative strategies to create a digitally adept workforce (Purnomo et al., 2024). In addition, there needs to be humanistic leadership (Budiningsih et al., 2023). Digital leaders must transcend traditional methods, utilizing information technology to overcome geographical and temporal barriers and achieve organizational goals (Uğural, Giritli, & Urbański, 2020). Unlike their traditional counterparts, digital leaders need practical skills that enable them to guide and manage teams effectively without necessarily requiring deep technical expertise (Gutkowski, 2022).

In educational institutions, the application of digital leadership is crucial for facilitating growth and addressing the multifaceted challenges of the digital era (Gabriel, 2021). Effective digital leaders use social media and other digital tools to enhance connectivity and collaboration among team members, navigating the complexities of remote interactions and virtual management (Mulyanti et al., 2024). This approach to leadership emphasizes a holistic view of digital transformation, focusing on integrating digital technologies in ways that align with organizational objectives and enhance overall performance (Morgül & Findikli, 2023). The ability of digital leaders to swiftly adapt to technological changes is essential for maintaining organizational relevance and achieving strategic goals in a rapidly evolving environment (Malik et al., 2024).

The principles of Ki Hadjar Dewantara, a pioneering figure in Indonesian education, offer a valuable framework for integrating digital leadership into educational settings. Dewantara's leadership philosophy, encapsulated in the principles of "Ing Ngarsa Sung Tuladha" (setting an example), "Ing Madya Mangun Karsa" (creating an intention), and "Tut Wuri Handayani" (providing supportive guidance) (Sugiharto, 2021), emphasizes a holistic and supportive approach to leadership that remains relevant in the digital age. This model fosters a familial relationship between leaders and followers, aligning with contemporary needs for motivation, support, and collaborative problem-solving (Sentono, 2019). Dewantara's approach is particularly pertinent in the context of digital transformation, as it encourages leaders to exemplify and motivate their teams while supporting their creative potential and technological adaptation (Gubernatorov et al., 2021).

As globalization continues to influence leadership practices, there is an increasing emphasis on leaders who embody strong ethical values and are committed to sustainability and social justice (Marliani & Djadjuli, 2019). Dewantara's leadership model, with its focus on integrating local cultural values with national educational goals, provides a framework for addressing modern challenges and opportunities in education (Mujahid et al., 2022). His approach advocates for an educational system that is both egalitarian and participatory, promoting an environment

where students can develop according to their unique potentials and cultural backgrounds (Triwiyanto & Prasojo, 2019).

This research aims to explore the integration of digital leadership principles within Ki Hadjar Dewantara's educational framework, focusing on their application at Tamansiswa College. By developing a model that aligns Dewantara's leadership philosophy with contemporary digital practices, this study seeks to address the challenges of digital transformation in education and enhance leadership effectiveness in preparing students for a digitally connected society (Al Nuaimi, Ahmad, & Khalid, 2024; Fang, 2023). This approach will contribute to a more comprehensive understanding of how traditional leadership models can be adapted to meet the demands of the digital age, ultimately advancing both educational outcomes and organizational performance.

2. Method

a. Research Design

This study employs a quantitative research approach utilizing survey methods to gather data on digital leadership and its alignment with Ki Hadjar Dewantara's leadership principles. The survey was conducted from April to May 2024 across Tamansiswa College schools located in the Special Region of Yogyakarta. This method is appropriate for assessing perceptions and practices of digital leadership among educational leaders in the specified region.

b. Population and Sampling

The target population for this study includes principals, deputy principals, and teachers from Tamansiswa College schools in the Special Region of Yogyakarta, comprising a total of 179 individuals. A purposive sampling technique was used to select a sample of 116 participants. Purposive sampling is chosen to ensure that respondents with relevant experience and insights into the leadership dynamics within the educational institutions are included in the study.

c. Data Collection

Data was collected through a structured questionnaire designed to measure various dimensions of digital leadership and adherence to Ki Hadjar Dewantara's leadership principles. The questionnaire was distributed to the sampled participants, and responses were collected during the survey period. The instrument used a five-point Likert scale to capture responses, where participants rated statements from 1 (Strongly Disagree) to 5 (Strongly Agree).

d. Instruments

1) Digital Leadership Instrument: The digital leadership construct was evaluated based on seven aspects adapted from Sullivan (2017):
   - Digital Literacy: This encompasses the knowledge and skills required to effectively use digital media, information technology, and the internet, including technical, cognitive, critical, and creative skills.
   - Digital Vision: The ability to foresee and communicate the long-term potential of new technologies and to develop strategic digital plans.
   - Defense: The capacity to determine the organizational needs and inspire commitment towards the digital vision, including fostering a culture of continuous improvement in digital literacy.
   - Presence: The tangible demonstration of leadership, ensuring that the

leader's digital vision is visible and actionable within the organization.

- Communication: The effectiveness of a leader's communication strategies in reinforcing and supporting the digital vision.
- Adaptability: The leader's ability to embrace and manage innovation and change.
- Self-Awareness: The extent of a leader's self-awareness and its role in effective leadership.

2) Ki Hadjar Dewantara's Leadership Trilogy Instrument: This instrument was measured using three aspects developed by Sentono (2019):
   - *Ing Ngarsa Sung Tuladha*: This aspect includes guidance, togetherness, discipline, example, devotion, justice, simplicity, hope, protection, people, and tolerance.
   - *Ing Madya Mangun Karsa*: This aspect encompasses pride, comfort, motivation, openness, benefit, encouragement, innovation, improvement, creativity, dynamism, prestige, excellence, and quality.
   - *Tut Wuri Handayani*: This aspect involves democratic principles, freedom, supervision, collegiality, kinship, wisdom, independence, effectiveness, and efficiency.

e. Data Analysis

The collected data were analyzed using quantitative descriptive analysis to provide an overview of the key variables and their relationships. This initial analysis helps in summarizing the general trends and patterns within the data. Subsequently, a Structural Equation Modeling (SEM) approach was employed to assess the relationships among the constructs and to validate the proposed model of digital leadership integration with Dewantara's leadership principles. SEM is particularly suitable for this analysis as it allows for the examination of complex relationships between observed and latent variables, providing a robust framework for understanding the interactions among digital leadership dimensions and leadership principles.

f. Ethical Considerations

Prior to data collection, ethical approval was obtained, and participants were provided with informed consent detailing the purpose of the study, the nature of their participation, and their right to confidentiality. The study adhered to ethical standards for research involving human subjects, ensuring that participants' privacy and rights were respected throughout the research process.

The methodological approach outlined in this study aims to provide a comprehensive understanding of digital leadership practices and their alignment with Ki Hadjar Dewantara's educational leadership principles. The use of a quantitative survey, coupled with rigorous statistical analysis, ensures that the findings will be reliable and contribute valuable insights into the application of digital leadership in educational settings.

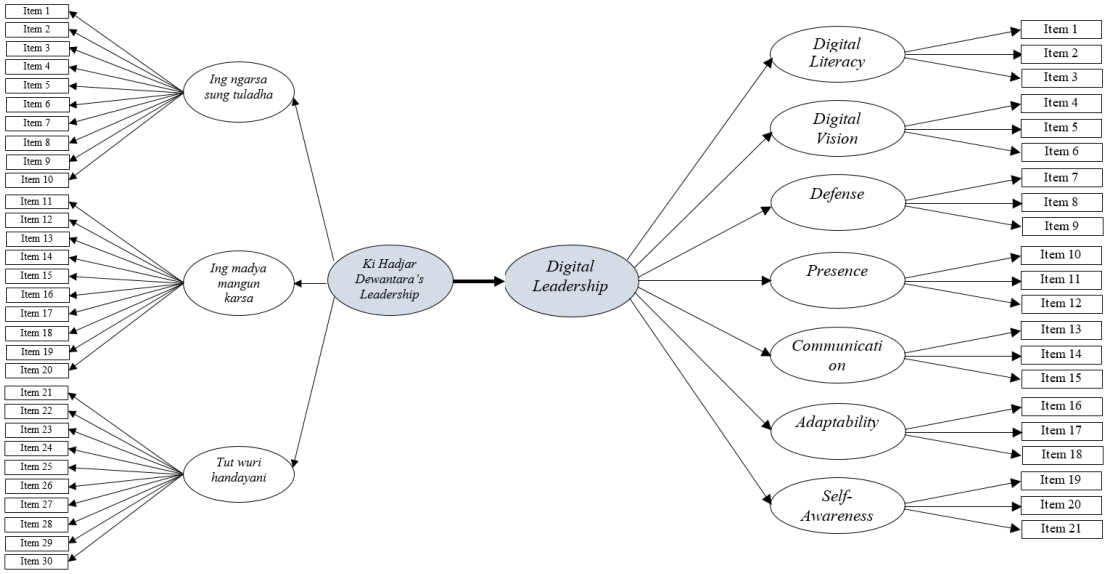

Figure 1. Structural Equation Model of Digital Leadership

3. Result and Discussion

The demographic profile data of the research sample presented in Table 1 summarizes the characteristics of the 116 respondents who participated in this study. Table 1 provides detailed details of the distribution of respondents' gender, age range, educational background, and years of teaching experience.

Table 1. Characteristics Respondents

Variables	Category	N(%)
Sex	Male	48 (41%)
	Female	68 (59%)
Ages	21-30 years	17 (15%)
	31-40 years	38 (33%)
	41-50 years	47 (41%)
	51-60 years	14 (12%)
Education level	Graduate	101 (87%)
	Postgraduate	15 (13%)
Length of work	1-10 years	59 (51%)
	11-20 years	38 (33%)
	20-30 years	19 (16%)

The distribution of male and female responders is about equal, with males accounting for 41% and females accounting for 59%. The largest proportion of respondents was within the age range of 41-50 years, accounting for 41% of the total. This was followed by respondents aged 31-40 years, comprising 33% of the sample. The vast majority of responders, 87%, have a graduated education level, while the remaining 13% are postgraduates. Fifty-one percent of respondents had worked as teachers for 1-10 years, while 33% had worked as teachers for 11-20 years.

The validity and reliability of the questionnaire, which served as the primary data collection instrument in this investigation, were initially assessed. The initial phase of the Partial Least Square analysis involves the assessment of the outer model. Analysis of the outer model is conducted using the PLS algorithm. In this investigation, the outer model was evaluated through reliability tests, discriminant validity tests, and convergent validity tests.

Table 2 displays the factor loading values for each item in Ki Hadjar Dewantara's leadership variable and the digital leadership variable, together with the results of the discriminant validity test. An indicator is declared valid if the outer loading value of the indicator is more than

0.60. The results of the analysis showed that all construct indicators had values above the rule of thumb of 0.60. Therefore, it can be concluded that all research variable items have passed the convergent validity test.

Table 2. Discriminant Validity Result

	Adaptability	Communication	Defense	Digital Literacy	Digital Vision	Presence	Self Awareness	Ing madya mangun karsa	Ing ngarsa sung tuladha	Tut wuri handayani
Adp1	0.919									
Adp2	0.794									
Adp3	0.926									
Com1		0.847								
Com2		0.758								
Com3		0.900								
DL1				0.885						
DL2				0.756						
DL3				0.904						
DV1					0.789					
DV2					0.856					
DV3					0.771					
Def1			0.911							
Def2			0.710							
Def3			0.910							
IMMK1								0.770		
IMMK10								0.865		
IMMK2								0.824		
IMMK3								0.687		
IMMK4								0.871		
IMMK5								0.835		
IMMK6								0.665		
IMMK7								0.858		
IMMK8								0.776		
IMMK9								0.845		
INST1									0.788	
INST10									0.811	
INST2									0.763	
INST3									0.695	
INST4									0.854	
INST5									0.793	
INST6									0.817	
INST7									0.819	
INST8									0.811	
INST9									0.765	
Pre1						0.897				
Pre2						0.655				
Pre3						0.843				
SA1							0.949			
SA2							0.736			
SA3							0.947			
TWH1										0.696
TWH10										0.847
TWH2										0.844
TWH3										0.658
TWH4										0.860
TWH5										0.679
TWH6										0.840
TWH7										0.841
TWH8										0.836
TWH9										0.795

The next test for convergent validity is to determine the average variance extracted (AVE) value. The AVE is calculated by comparing the amount of variance that can be captured from the construct to the variance caused by measurement error. The AVE is calculated using the PLS algorithm shown in Table 3.

Table 3. Average Variance Extracted Result

	AVE
Adaptability	0.778
Communication	0.701
Defense	0.721
Digital Literacy	0.724
Digital Vision	0.650
Presence	0.648
Self-Awareness	0.780
Ing madya mangun karsa	0.644
Ing ngarsa sung tuladha	0.628
Tut wuri handayani	0.629

A variable is considered legitimate if its AVE value exceeds 0.50. The AVE calculation findings presented in Table 3 indicate that all variables with reflective indicators have an AVE value over 0.5. All of these variables can be considered valid based on convergent validity.

The discriminant validity test employs the latent variable correlation value, which is computed using the Fornell Lacker criteria, to ascertain the correlation between variables. Additionally, the cross-loading value is calculated to determine the correlation between indicators and their respective variables. The table displaying the values of the Fornell Lacker criterion may be found in Table 4 below.

Table 4. Fornell-Larcker Criterion

	Adaptability	Communication	Defense	Digital Literacy	Digital Vision	Ing madya mangun karsa	Ing ngarsa sung tuladha	Presence	Self Awareness	Tut wuri handayani
Adaptability	**0.882**									
Communication	0.672	**0.837**								
Defense	0.642	0.638	**0.849**							
Digital Literacy	0.487	0.510	0.417	**0.851**						
Digital Vision	0.404	0.524	0.520	0.543	**0.806**					
Ing madya mangun karsa	0.716	0.601	0.540	0.381	0.373	**0.803**				
Ing ngarsa sung tuladha	0.681	0.679	0.626	0.466	0.450	0.693	**0.793**			
Presence	0.732	0.756	0.754	0.507	0.401	0.651	0.729	**0.805**		
Self-Awareness	0.739	0.716	0.708	0.580	0.465	0.630	0.745	0.737	**0.883**	
Tut wuri handayani	0.695	0.653	0.677	0.461	0.430	0.647	0.761	0.725	0.770	**0.793**

The Fornell-Larcker criteria table shows the root value of each AVE construct or variable. The AVE roots are indicated by numbers in bold. According to the Fornell Lacker Criterion, the latent variable correlation testing table indicates that the correlation value between the variables is higher than the correlation between these variables and other variables.

Apart from validity testing, model reliability is also evaluated through measurement. Reliability tests are carried out to show the precision, accuracy, and consistency of instruments when measuring constructs. Composite reliability and Cronbach alpha are two formative measures that can be used to assess construct reliability. However, Cronbach alpha will give lower results when used to measure value therefore, composite reliability is preferred. If the composite reliability and Cronbach alpha value are both more than 0.70, the reliability assessment of the construct used is generally considered

reliable. The results of the Cronbach alpha and composite reliability tests can be seen in Table 5.

Table 5. Reliability Test Result

	Cronbach's Alpha	rho_A	Composite Reliability
Adaptability	0.855	0.872	0.913
Communication	0.786	0.814	0.875
Defense	0.804	0.850	0.884
Digital Literacy	0.813	0.863	0.887
Digital Vision	0.743	0.801	0.848
Presence	0.727	0.791	0.845
Self-Awareness	0.856	0.906	0.913
Ing madya mangun karsa	0.938	0.946	0.947
Ing ngarsa sung tuladha	0.934	0.938	0.944
Tut wuri handayani	0.933	0.941	0.944

The composite reliability and Cronbach alpha values for each construct or latent variable are both greater than 0.70, as indicated by the aforementioned estimates. It is evident that each construct satisfies the composite reliability measurement criteria and exhibits satisfactory reliability.

A structural model for predicting causal relationships between variables or testing hypotheses is known as an inner model. Examining the Original Sample values in the path coefficient model and R-square table to test the inner model or structural model.

The second test is conducted to evaluate the inner model, and the path coefficient value and t-statistical significance value are employed to indicate the level of significance in hypothesis testing. The path coefficient or inner model value that must be demonstrated by the t-statistic value at 5% alpha is 1.96. Run the bootstrapping algorithm in SmartPLS 3.0 to ascertain the path coefficients. Table 6 contains the path coefficient values that were tested.

Table 6. Path Coefficients Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Digital Leadership -> Adaptability	0.846	0.847	0.031	27.318	0.000
Digital Leadership -> Communication	0.856	0.858	0.029	29.125	0.000
Digital Leadership -> Defense	0.834	0.835	0.047	17.553	0.000
Digital Leadership -> Digital Literacy	0.691	0.691	0.093	7.466	0.000
Digital Leadership -> Digital Vision	0.642	0.644	0.070	9.180	0.000
Digital Leadership -> Presence	0.876	0.880	0.018	47.548	0.000
Digital Leadership -> Self Awareness	0.891	0.894	0.015	60.538	0.000
Ki Hajar Dewantara Leadership -> Ing madya mangun karsa	0.868	0.868	0.037	23.429	0.000
Ki Hajar Dewantara Leadership -> Ing ngarsa sung tuladha	0.917	0.919	0.016	56.872	0.000
Ki Hajar Dewantara Leadership -> Tut wuri handayani	0.898	0.901	0.017	51.770	0.000
Ki Hajar Dewantara Leadership -> Digital Leadership	**0.850**	**0.856**	**0.024**	**35.188**	**0.000**

The PLS bootstrapping technique is employed to calculate the inner model. The statistical T value for each relationship or path will be determined based on the results of the bootstrapping calculations. The test results indicate that the factors Digital literacy (0.691), Digital vision (0.642), Defense (0.834), Presence (0.876), Communication (0.856), Adaptability (0.846), and Self-awareness (0.891) are

significant in the formation of the Digital Leadership construct. Likewise, the Ki Hajar Dewantara Leadership construct is significantly shaped by the factors *Ing madya mangun karsa* (0.868), *Ing ngarsa sung tuladha* (0.917), and *Tut wuri handayani* (0.898).

The test results demonstrate that Ki Hajar Dewantara's leadership has a substantial impact on digital leadership. This is supported by the estimated coefficient of 0.850, which is statistically significant at the 5% significance level. Once the measurement evaluation is completed, a subsequent evaluation of the structural model is conducted by examining the R-square, which serves as a test of the model's goodness of fit. This test assesses the extent to which exogenous factors can explain the variations in endogenous variables. The analysis yielded an R-square value of 0.723, indicating that Ki Hajar Dewantara's leadership had a 72.3% influence on digital leadership. The R-square value of 0.723 in Figure 2 signifies the impact of exogenous variables on endogenous variables, falling within the good category.

Figure 2. Structural Model of Ki Hajar Dewantara's Leadership on Digital Leadership

The results of the Structural Equation Model research have successfully demonstrated that Ki Hajar Dewantara's Leadership exerts a substantial impact on Digital Leadership. The leadership trilogy by Ki Hajar Dewantara is highly suitable for school principals to implement in their digital leadership practices.

Ing ngarso sung tuladha, a Javanese philosophy that signifies the notion of a leader setting an example in front of others, is highly pertinent to contemporary digital leadership. Although the digital environment poses distinct difficulties, the fundamental principles of setting a good example continue to be essential (Petrova, 2022). By embodying *Ing ngarso sung tuladha* in the digital realm, leaders can inspire their teams, build trust, and navigate the complexities of the digital age effectively. *Ing ngarso sung tuladha* extends to fostering a collaborative digital environment (Abbu et al., 2022). School principals can achieve this by encouraging knowledge sharing and open communication; recognizing and rewarding digital contributions from team members; and creating opportunities for virtual teamwork and innovation (Urs, Nisioi, & Roja, 2023).

Just as a traditional leader sets the tone through their actions, a digital leader must embody the desired online behavior. Regularly participate in online discussions, respond to queries, and share valuable insights. Maintain a respectful and courteous demeanor in all interactions, fostering a positive digital environment (Okdie & Ewoldsen, 2018). Openly share successes, challenges, and learnings to build trust and credibility. In a rapidly evolving digital world, leaders must demonstrate proficiency in relevant technologies and a commitment to continuous learning. This encourages team members to embrace digital tools and upskill themselves. Digital leaders have a responsibility to promote ethical behavior online.

The school principal has implemented the application of *Ing ngarso sung tuladha* values, such as humility and leading by example, in digital leadership. The school principal frequently emphasizes the accomplishments of team members in virtual meetings, school newsletters, or online forums. Emphasize the collaborative character of digital work and refrain from claiming sole credit for successes.

The school principal establishes online platforms or employs digital tools to collect feedback and suggestions from team members at all levels. Demonstrate the impact of these contributions on decision-making and publicly acknowledge their value. In a digital age, the school principal is emphasizing the importance of work-life balance (Adigüzel & Eryilmaz, 2023). This illustrates a dedication to personal health and serves as an example of healthy digital behaviors. The school principal is actively involved in the continuous development of skills and knowledge. This fosters a culture of perpetual learning and positions the leader as an active participant in their development. The principal of the school engages in digital discussions with respect and promotes the responsible use of technology. This establishes a positive precedent for others to emulate and cultivates a culture of ethical digital leadership (Tinmaz, Fanea-Ivanovici, & Baber, 2023). These values can be embodied by digital leaders to establish a more ethical, productive, and positive online environment for their followers and teams.

Ing madya mangun karsa meaning "in the middle, building the spirit," is another facet of Ki Hajar Dewantara's philosophy that translates beautifully to digital leadership (Agus et al., 2020). The school

principal can apply this principle in a digital context. The school principal empowers collaboration and co-creation which digital spaces offer incredible opportunities for collaborative work. Leaders embodying *Ing madya mangun karsa* can utilize collaborative platforms. The school principal encourages the use of project management tools, shared documents, and communication channels that allow for real-time input and idea exchange.

Leaders can implement *Ing madya mangun karsa* by offering opportunities for growth, such as online training, mentorship programs, or support for attending virtual industry events, to assist team members in enhancing their digital skills and advancing their professions. In the digital era, it is essential to establish a shared objective among teams. A clear digital strategy can be communicated by leaders through the use of online platforms to articulate the organization's digital objectives, which will clearly define the contributions of each team member to the overarching vision (Ghamrawi, Shal, & Ghamrawi, 2024). By adopting the principle of "Ing madya mangun karsa," digital leaders can foster a team that is motivated, collaborative, and engaged, and that flourishes in the digital environment.

The practical measures that digital leaders can implement to exemplify *Ing madya mangun karsa* and promote innovation and value in a digital context (Shobron, 2020). The school principal establishes digital idea incubators by utilizing collaboration tools or creating online platforms that enable team members to freely share innovative ideas. The school principal will foster a culture in which calculated risks are encouraged and failures are regarded as learning opportunities by embracing digital experimentation and learning. Utilizing data and analytics to monitor the outcomes of digital experiments and adjust accordingly.

Digital leaders can establish a digital environment that is conducive to innovation and empowers teams to generate significant value for the educational organization by following these practical steps. By implementing the principle of *Ing madya mangun karsa* through these actions, digital leaders may establish a dynamic digital ecosystem where innovation is not only promoted but also ingrained inside the team. By using the principle of *Ing madya mangun karsa* in these ways, digital leaders can establish a digital atmosphere in which all team members feel appreciated, esteemed, and empowered to contribute their distinct abilities to the process of innovation.

Tut wuri handayani is a principle in Indonesian education that emphasizes a principal role as a guide and facilitator rather than an authoritarian figure. While not directly related to digital leadership, this concept can be applied to the digital age (Oberer & Erkollar, 2018). A *Tut wuri handayani* approach encourages digital leaders to foster a culture of self-directed learning, where team members are empowered to seek information, develop new skills, and adapt to the changing digital landscape.

The school principal can adopt the *Tut wuri handayani* principle by facilitating these collaborations, providing guidance and mentorship, and encouraging innovation within their teams. A key aspect of *Tut wuri handayani* is guiding teachers and students to be responsible individuals. In the digital world, this translates to promoting digital literacy, ethical online behavior, and critical thinking skills among team members

(Adigüzel & Eryilmaz, 2023). Essentially, applying the principles of *Tut wuri handayani* to digital leadership encourages a more decentralized, adaptable, and empowered approach, which is highly relevant in our rapidly evolving digital world.

In essence, *Tut wuri handayani* in leadership development is about nurturing a culture of trust, empowerment, and continuous learning, where individuals are encouraged to discover and develop their leadership potential from within (de Jong, Lockhorst, de Kleijn, Noordegraaf, & van Tartwijk, 2022). In the practice of *Tut wuri handayani* leadership, the school principal fosters knowledge sharing and collaboration among participants and establishes platforms for peer mentoring, feedback sessions, and co-creation of solutions (Ghamrawi et al., 2024). Organizations can foster a new generation of empowered, independent, and effective leaders by incorporating the principles of *Tut wuri handayani* into the design, facilitation, and ongoing culture of leadership development programs.

Digital leadership development programs offer unique opportunities to incorporate mentorship and guidance in a way that aligns perfectly with *Tut wuri handayani*. School principals utilize online platforms specifically designed for mentorship, connecting emerging leaders with experienced mentors within or outside the organization (Butler-Henderson & Crawford, 2020). These platforms can facilitate communication, goal setting, resource sharing, and progress tracking. School principals use email, instant messaging, or video conferencing to facilitate regular communication and guidance between mentors and mentees (Guthrie & Meriwether, 2018). This allows for flexibility and accessibility, especially for geographically dispersed teams. School principals create virtual communities where aspiring leaders can connect with peers, share experiences, ask questions, and learn from each other in a supportive environment.

Integrating *Tut wuri handayani* principles with encourage teachers to trust their mentees' abilities and give them the autonomy to make decisions and learn from their experiences. By thoughtfully integrating mentorship and guidance into digital leadership development programs, school organizations can create a powerful framework for fostering empowerment, independence, and growth (Karakose & Tülübaş, 2023), embodying the true essence of *Tut wuri handayani*.

4. Conclusion

The leadership trilogy by Ki Hajar Dewantara comprising *Ing Ngarso Sung Tuladha*, *Ing Madya Mangun Karsa*, and *Tut Wuri Handayani* offers a highly relevant framework for school principals in the context of digital leadership. This study demonstrates that integrating these principles into digital leadership practices can significantly enhance the effectiveness of school leaders. *Ing Ngarso Sung Tuladha*, which emphasizes setting an exemplary standard, proves especially pertinent in the digital realm. By embodying this principle, leaders can inspire their teams, build trust, and effectively manage the complexities of digital environments. Leaders who set a positive example in their digital interactions foster a culture of accountability and collaboration. *Ing Madya Mangun Karsa*, which focuses on empowering collaboration and co-creation, is equally applicable in digital contexts. School principals who utilize digital tools to facilitate teamwork, recognize collective efforts, and support professional growth create an environment that leverages the potential of digital

collaboration. This approach enhances team engagement and drives innovation. *Tut Wuri Handayani*, which positions the leader as a mentor and facilitator, is crucial for fostering a culture of autonomous learning. By adopting this principle, school principals can empower their team members to pursue knowledge independently, develop new skills, and adapt to the ever-changing digital landscape. This mentoring approach promotes a supportive and dynamic learning environment. In conclusion, the integration of Dewantara's principles into digital leadership practices offers valuable insights for school principals aiming to navigate the challenges of the digital age. The study underscores the importance of setting exemplary standards, fostering collaboration, and empowering team members. Future research should explore the application of these principles in diverse educational settings and investigate additional ways to enhance digital leadership. By embracing these principles, educational leaders can significantly improve their leadership effectiveness and drive positive outcomes in their digital practices.

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