

Determining factors of students' nationalistic attitudes in deep learning in the digital era



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Abstract Nationalism in Indonesia in the digital era faces serious challenges that require attention to strengthen the national consciousness of the younger generation. Phenomena on social media, such as the emergence of the hashtag *#kaburajadulu*, serve as a clear illustration of how certain issues can erode the spirit of nationalism if not responded to appropriately. Deep learning is a relevant educational paradigm for fostering students' nationalistic attitudes. This study aims to analyze the factors influencing students' nationalism through immersive learning in the digital era, focusing on three main determinants: social media use, involvement in student organizations, and interaction with peers. The mixed methods design combines quantitative and qualitative analysis and a sequential explanatory design to obtain a comprehensive understanding. The study was conducted on 182 students in Jakarta, selected using a purposive sampling technique. Quantitative data were collected via questionnaires and analyzed using Structural Equation Modeling (SEM) to examine relationships among variables. Qualitative data were analyzed using in-depth interviews to enrich the interpretation of the quantitative results. The findings indicate that social media, student organizations, and peer interactions each have a positive and significant influence on students' nationalistic attitudes in deep learning. Social media plays the strongest role in shaping national values, while organizations and peer interactions reinforce nationalism through real-life engagement. The findings of this study stress the need for deep learning that intentionally integrates national values in higher education. Combining vertical and horizontal approaches can achieve this goal. This method aims to produce graduates who are not only critical thinkers and globally competitive but also have strong character rooted in national identity and values. Learning in higher education goes beyond cognitive achievement. It also plays a strategic role in strengthening students' national awareness and social responsibility.

Keywords: nationality, learning, digital platforms, campus life

1. Introduction

Globalization and advances in digital technology have brought about significant changes in various aspects of life, including how the younger generation views national identity (Song & Ray, 2023; Zhang, 2022). Geographical boundaries are diminishing with the expansion of information access and global interactions facilitated by the internet and social media (Kusumaningrum & Sulistyaningsih, 2021). On the one hand, these changes present opportunities for students to broaden their horizons, forge cross-border collaborations, and enhance global competencies. However, the rapid flow of information also poses serious challenges to nationalism, as national values have the potential to be eroded by the dominance of global culture (Mihelj & Jiménez-Martínez, 2021). Maintaining national identity amidst digital globalization does not mean rejecting foreign cultures, but rather placing national values as the foundation for filtering incoming information and international influences. Students need digital literacy skills, critical thinking, and historical and cultural awareness to benefit from global interactions without losing their identity (Fadli et al., 2021; Wang & Tao, 2021).

Indonesia faces a national identity crisis marked by a weakening spirit of nationalism among the younger generation (Ismawati, 2018; Rizal et al., 2025). Social phenomena emerging in digital media, such as the hashtag *#kaburajadulu* (*just running away first*), are concrete examples of how national identity is at risk in cyberspace (Zaifudhin, 2025). The hashtag *#kaburajadulu* (*just running away first*) reflects the views of some young people who idealize life abroad over building their own nation. This situation is not simply a matter of individual choice, but indicates a shift in the values and priorities of the younger generation. A Populix survey revealed that approximately 65% of Indonesians believe that the spirit of nationalism among the younger generation is declining, a sentiment acknowledged by the majority of Generation Z (Pratiwi, 2023). This finding demonstrates that shifting nationalist attitudes has become a serious issue requiring academic attention.

As the nation's intellectual generation, students in higher education should play a vanguard role in maintaining, developing, and implementing national values (Putri et al., 2025). However, with all its conveniences, the digital era often presents a dilemma. Access to global information can strengthen national insight if managed critically, but it can also erode nationalism if students are trapped solely by pragmatic global narratives (Afrina et al., 2021; Fauzan et al., 2021). Therefore, deep learning in the digital era is crucial for fostering students' critical awareness in response to global phenomena and strengthening nationalist attitudes. Students are encouraged not only to understand the material conceptually. Nevertheless, they receive training to analyze, evaluate, and reflect on the values they encounter in both digital and social contexts in real life.

The application of deep learning in Indonesia is still relatively new and requires continued development in terms of curriculum design, teaching methods, and supporting technology (Widiana et al., 2021). Properly integrated deep learning can help students connect global knowledge with local contexts, build digital literacy skills, and strengthen their national identity. In doing so, deep learning has emerged as an innovative learning strategy and a crucial instrument for developing a critical, character-driven young generation that adheres to national values amidst the rapid flow of globalization.

Deep learning in higher education is a learning process that emphasizes holistic, reflective, and applied understanding, enabling students to not only master theory but also connect knowledge to social, cultural, and national realities (Matsuo et al., 2022; Triwiyanto et al., 2023). It is crucial to clearly define the deep learning process so that higher education remains on par with elementary and secondary education, which the government has previously directed through national policies. This approach encourages students to cultivate national awareness by cultivating critical thinking, democratic attitudes, independence, and collaborative skills (Nayoga et al., 2021; Ryan & Aasetre, 2021). Students with these values will undoubtedly have a foundation that can strengthen the nationalism of the younger generation, ensuring they are not only prepared to face global challenges but also remain rooted in their national identity and committed to building Indonesia (Hastomo et al., 2021).

Students' nationalism in the digital age is shaped by various factors influencing their daily lives. Social media, student organizations, and peer interactions are three crucial aspects that strongly affect students' perspectives and national awareness (Skey, 2022; Triandafyllidou, 2022). The rapid flow of information on social media often instantly shapes public opinion, including among students (Tiantian et al., 2024). Therefore, understanding how social media influences students' political and national views is crucial to maintaining nationalism and preventing it from being easily eroded by global issues (Rosen, 2022).

In addition to social media, student organizations play a strategic role in instilling nationalist values. Student involvement in various organizations provides a space for leadership practices and critical thinking skills, and fosters a sense of social responsibility. Students can practice national values through organizational activities, such as cooperation, solidarity, and community care (Marzuki et al., 2023). Organizations are a platform for self-development and building a strong national identity among students. Peer interaction also plays an equally important role. Informal discussions, group work, and involvement in joint social projects can enrich students' understanding of unity and diversity (Alshammari & Alshammari, 2024; Brundage et al., 2023). Healthy interaction patterns enable students to influence each other and strengthen their sense of nationalism through everyday conversations and collaboration in academic and nonacademic activities. Therefore, strengthening nationalism in the digital age must focus on integrating the wise use of social media, active participation in student organizations, and constructive peer interactions. If they worked in harmony, all three would form a solid foundation for the growth of Indonesian student nationalism amidst the rapid flow of globalization (Kogoya et al., 2024).

Previous research (Jaskułowski et al., 2018; Kaufmann, 2023; Nurdin, 2017; Rajilun, 2019) has shown that social media, student groups, and friends can affect students' nationalist attitudes, as these three things share the values, experiences, and social situations that shape how young people think. Social media, for example, is a place to share information and shape public opinion, which can make nationalist feelings stronger or weaker. In the same way, student groups give students a chance to express themselves and a place to learn leadership, teamwork, and a sense of responsibility to the country. Friends help build social networks where students can share ideas, attitudes, and national values. Most of these studies have been done separately and have not been brought together into one clear way of looking at the issue. Using deep learning to study how students take in and understand nationalist values has also not been widely used.

Earlier research has also not really examined how student interactions are changing in the digital age, where the lines between official groups (student organizations), casual groups (friends), and online spaces (social media) are becoming less clear and more blurred. Because of this, we still do not fully understand how student nationalism is shaped by both digital and social experiences, especially as digital globalization can both weaken and rebuild national identity. This study aims to fill this gap by examining the effects of social media, student groups, and friends together. Unlike earlier studies, this research uses deep learning as the main way to understand how students not only learn nationalist values but also think about them and make them part of their lives at school and with friends. The goal of this research is not only to identify connections among different factors but also to understand how student nationalist attitudes are formed in the digital age. This research aims to create a model that can help colleges and universities make better plans to strengthen national identity as they face the challenges of digital globalization.

2. Materials and methods

2.1. Research design

This research employed a mixed methods approach with an exploratory sequential design, integrating quantitative and qualitative analyses to explore the factors shaping students' nationalistic attitudes during immersive learning in the digital age (Creswell, 2021; Nagpal et al., 2021). The study proceeded in two stages: the first focused on collecting and analyzing quantitative data, followed by qualitative data collection and analysis (Draucker et al., 2020). The study employed a survey to assess the condition and quality of students' nationalism and analyze the influence of theoretical factors. Furthermore, an exploratory analysis was conducted to investigate the causes of significant and insignificant influences, identifying additional determinants that may shape student nationalism and formulating strategies for its development within the university environment.

This study aims to analyze the determinants of students' nationalistic attitudes through immersive learning in the digital age. This study utilizes a theoretical framework as a conceptual reference in explaining the relationships between variables. This model positions factors such as social media use, organizational involvement, and peer interaction as independent variables that can influence students' nationalistic attitudes as the dependent variable. A more detailed illustration of the theoretical framework model can be seen below figure 1.

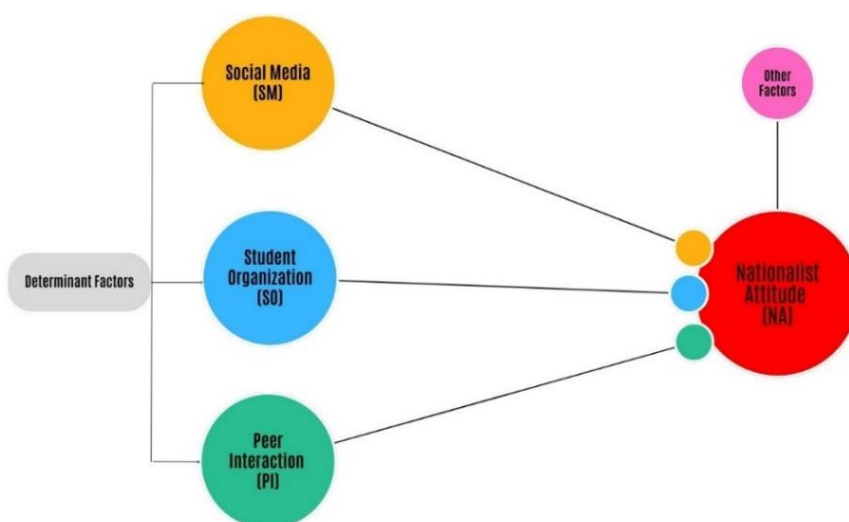


Figure 1 Theoretical framework model.

2.2. Research population and sample

The population of this study included students at Esa Unggul University in Jakarta. The sample comprised 182 students from the Faculty of Teacher Training and Education, specifically the Elementary School Teacher Education and English Language Education study programs. The sample was selected via a purposive sampling technique, which involves selecting a sample on the basis of specific criteria relevant to the research objectives. This selection is appropriate because it included respondents whose characteristics aligned with the variables studied, particularly those related to social media use, organizational experience, peer interaction, and understanding of national values.

2.3. Instruments and data collection

Quantitative data were collected through a questionnaire to measure several key indicators: intensity of social media use, level of involvement in student organizations, quality of interaction with peers, and student nationalist attitudes. This questionnaire uses a Likert scale, allowing respondents to provide objective assessments. Qualitative data were obtained through in-depth interviews with selected respondents. These interviews aimed to explore nonquantitative factors that could not be captured through surveys, such as personal motivations, direct experiences, and students' perspectives on nationalism in the digital age. Although a quantitative approach can identify patterns in relationships between variables, it has limitations. It is less effective for explaining the processes, meanings, and subjective experiences of students in forming nationalist attitudes in the digital era. Therefore, this study uses qualitative data from in-depth interviews to fill a gap in the literature. Such research remains minimal in uncovering non-quantitative dimensions, such as personal motivations, direct experiences in digital spaces and organizations, and students' interpretations of nationalism in everyday life. By combining quantitative and qualitative data, this study is positioned not only to measure the influence of variables but also to understand the mechanisms and internal dynamics underlying the formation of nationalist attitudes in students in the digital era.

2.4. Data analysis techniques

Data analysis was conducted in two stages via the mixed methods methodology. First, quantitative data were analyzed via partial least squares–structural equation modeling (PLS-SEM) with the help of SmartPLS 4.0 software. This technique was chosen because it offers advantages in processing data with relatively limited sample sizes, can handle nonnormal data distributions, and is suitable for exploratory research with complex causal relationships in education. Second, qualitative data were analyzed via an exploratory approach, encompassing the stages of data collection, data reduction, data presentation, and conclusion drawing or verification. This analysis helps uncover deeper meanings regarding the determinants of student nationalism that may not be revealed through quantitative surveys.

3. Results

The quantitative research results were analyzed via structural equation modeling (SEM) via partial least squares (PLS) with the help of SmartPLS 4.0 software. This analysis tested the validity, reliability, and relationships among latent variables shaping students' nationalistic attitudes. The following section explains the results (Table 1).

Table 1 Construct validity and reliability.

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Peer Interactions (PI)	0.747	0.755	0.699
Social-Media (SM)	0.831	0.833	0.598
Student Organization (SO)	0.816	0.818	0.577

The results of the validity and reliability tests indicate that all the research constructs met the required criteria. A Cronbach's alpha value > 0.70 indicates good internal consistency, a composite reliability (CR) value > 0.70 suggests that the instrument is reliable, and an average variance extracted (AVE) value > 0.50 indicates that the indicators are valid and able to explain the construct variance well. Although several indicators in the peer interactions variable (PI3, PI4, and PI5) have loading factor values below 0.70, they remain above the minimum threshold of 0.60 and are theoretically relevant to the measured constructs. Therefore, the research model is considered feasible for further analysis and hypothesis testing, as presented in Table 2.

Table 2 Path coefficients.

Variable	Original Sample	Sample Mean	T-Statistics	P Values
PI → NA	0.052	0.050	1.159	0.047
SM → NA	0.801	0.801	20.519	0.000
SM → SO	0.629	0.629	18.769	0.000
SO → NA	0.043	0.046	1.231	0.019
SO → PI	0.582	0.581	15.931	0.000

The analysis results in the path coefficient table indicate that social media (SM) has the most dominant influence on students' nationalist attitudes (NAs), with a coefficient values of $\beta = 0.801$ and $p = 0.000$. This finding shows that the more positively and intensively students engage with social media, the stronger their nationalist attitudes become. Furthermore, social media significantly enhances student organization (SO) activities, with a coefficient value of $\beta = 0.629$ and $p = 0.000$. Furthermore, student organizations play an important role in forming peer interactions (PIs) with a coefficient of $\beta = 0.582$ and $p = 0.000$, which means that organizations are an effective means to expand student networks and collaboration. However, the influence of peer interactions on nationalist attitudes ($\beta = 0.052$; $p = 0.047$) and the influence of organizations on nationalism ($\beta = 0.043$; $p = 0.019$) are relatively weak, although both remain statistically significant. Thus, social media emerges as the most dominant factor in shaping students' nationalistic attitudes, whereas organizations and peer interactions make relatively smaller contributions. Moreover, the combined influence of these three variables is reflected in the coefficient of determination (r-square) Table 3.

Table 3 Coefficient of determination (R-square).

Variable	R-square	R-square adjusted
Nationalist Attitude (NA)	0.754	0.752
Peer Interactions (PI)	0.339	0.337
Student Organization (SO)	0.396	0.394

The results of the coefficient of determination (R-square) analysis show that the Nationalist Attitude (NA) variable has an R^2 value of 0.754, which means that the social media, Peer Interactions, and Student Organization variables can explain 75.4% of the variation in students' nationalist attitudes. Furthermore, the Student Organization (SO) variable has an R^2 value of 0.396, which indicates that the existence of student organizations is influenced by social media by 39.6%. Moreover, the peer interactions (PIs) variable has an R^2 value of 0.339, meaning that peer interactions are influenced by student organization



by 33.9%. This finding confirms that the research model has strong explanatory power, especially for the nationalist attitude (NA) variable, so it can be concluded that the contributions of these three factors are very relevant in explaining student nationalism. The overall picture can be seen in the SEM-PLS path analysis output presented in the following figure.

These findings highlight the interrelated nature of these variables, suggesting that student involvement in organizations and their online interactions play a significant role in shaping social dynamics related to nationalism. The high explanatory value also implies that external influences such as social media exposure and peer engagement foster a collective identity that reinforces nationalist attitudes. The relationship among these three factors reflect not only statistical significance but also the social reality of how digital participation and peer environments contribute to the development of national consciousness among students.

Figure 2 shows that students' nationalistic attitudes are influenced by three main aspects namely, social media, student organizations, and peer interactions, with social media being the most dominant factor. Student organizations shape interaction patterns, whereas peer interactions make a positive, albeit small, contribution. This situation aligns with implementing deep learning in higher education, which encourages students to think critically, reflectively, and socially responsibly, enabling them to connect knowledge with current phenomena and strengthen national values in the digital age.

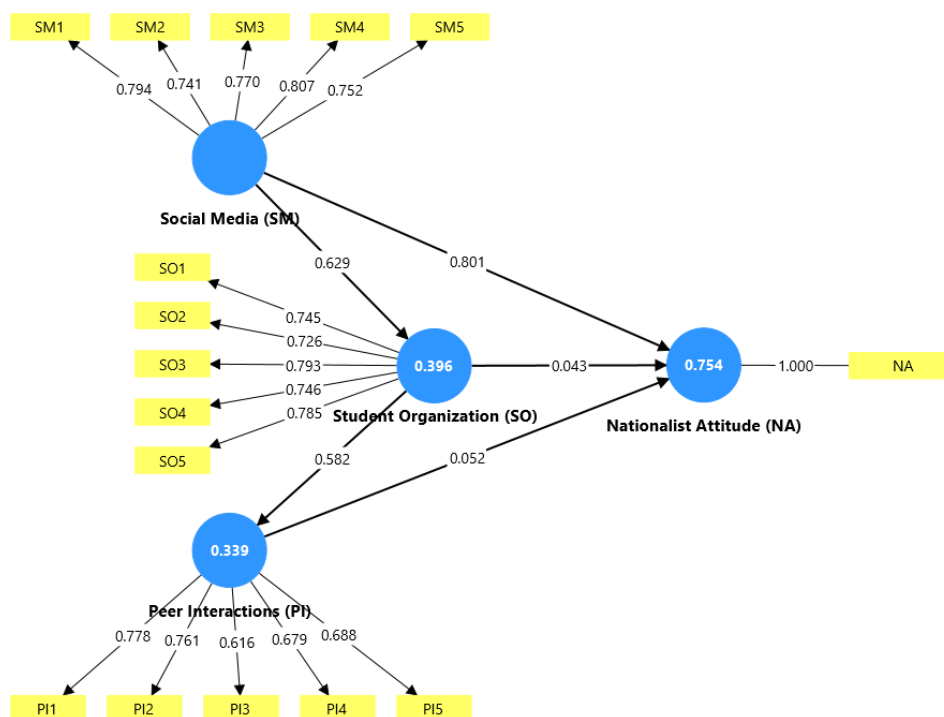


Figure 2 SEM-PLS path analysis output.

The results of the qualitative analysis obtained through data triangulation via an exploratory approach, with the results of an interview with Student A, who stated, "Nationalism is indeed necessary, but if the state does not support it properly, we become lazy." This finding indicates that state support significantly influences individual nationalistic enthusiasm. Student B expressed, "My nationalism in the digital age is still on the verge of confusion, because seeing the political situation in Indonesia makes me angry, making me want to live abroad." This finding demonstrates that national sociopolitical conditions play a significant role in shaping students' sense of nationalism. Student nationalism does not exist in isolation but is formed through the interaction of internal and external factors and daily experiences.

The results of this qualitative research demonstrate that student nationalism is not merely an abstract concept but an attitude reflected in how they think, interact, and take positions on national issues. Student statements reveal that active involvement in campus discussions, organizations, and social interactions fosters awareness of their role as citizens. Thematically, a key pattern emerges, involving a sense of identity, social responsibility, and pride in the nation, which develops through reflective and dialogical learning experiences. This confirms that the instillation of nationalism in higher education is not merely normative, but is experienced concretely in students' daily lives.

The strength of the variables shaping nationalism in this study is demonstrated not only by statistical significance but also by the intensity and consistency of students' experiences. Qualitative findings demonstrate that social media, student organizations, and peer interactions have a substantive effect on shaping nationalist attitudes, particularly when students are actively and meaningfully involved. Thus, the strength of this effect lies in the depth of learning experiences and internalization of values, not just in statistical magnitude, strengthening the argument that nationalism can be effectively developed through a contextual educational approach oriented toward national character development (Savitri et al., 2023).

The strengthening of students' nationalism is strongly influenced by the context and quality of their university learning experiences. Students involved in academic and non-academic activities that provide space for reflection, value dialogue, and encourage interaction across backgrounds tend to demonstrate more mature, contextually grounded nationalist attitudes. These findings indicate that the powerful influence of learning on nationalism is not only quantitative but also qualitative, namely, it lies in the depth of meaning students construct in understanding their national identity. The research findings confirm that the effectiveness of instilling nationalism needs to be understood through a combination of statistical evidence and narratives of students' experiences as learning subjects (van der Brug & Hartevelde, 2021).

The research results indicate that social media is the most dominant factor influencing students' nationalistic attitudes. Further analysis reveals that students can be categorized into three complementary types of nationalism. First, civil nationalism, reflected in compliance with the law, political awareness, and active participation in community activities and national development. Second, cultural nationalism, manifests in pride in using the Indonesian language, preserving local traditions, and appreciating the nation's arts and cultural heritage amidst globalization. Third, religious nationalism, namely the appreciation of religious values that align with the spirit of nationalism, encourages students to be moderate and tolerant, and utilize religion as a unifying force. These three types of nationalism do not exist in isolation, but interact and collectively shape students' national identity in the digital age.

The pattern of nationalism instilled in higher education is divided into two parts: a vertical pattern through lecturers, curriculum, and formal policies, and a horizontal pattern through peer interactions, student organizations, and social activities. The research results indicate that the horizontal pattern is more influential in shaping the quality of students' nationalism because it provides real-world experiences, opportunities for interaction, and space for reflection in everyday life. This aligns with the interview results, where Student A emphasized the importance of state support for maintaining nationalism. At the same time, Student B admitted to remaining confused about how to position his nationalism in the digital age because the disappointing political climate. These two findings emphasize that formal regulations do not solely shape students' nationalism rather, they are more strongly shaped through social experiences and direct interactions within the campus and community.

4. Discussion

The results of the research show that students' nationalist attitudes are shaped by how much time they spend online and how they make sense of what they see. The research found that social media is the biggest influence, indicating that how often students use and read online content plays a significant role in shaping their nationalist attitudes. This shows that the internet is now the main place where students learn about national values, through conversations about the nation, social issues, and public discussions on social media (Pratiwi, 2023).

These research results are supported by interviews, which show that when students learn in a meaningful way, they can think more deeply about national identity and in ways that fit their own lives. However, the interviews also showed that a deep understanding of nationalism does not develop on its own but is shaped by students' past social lives, such as spending time with friends and participating in groups. The interviews help explain the numbers by showing that social media has a strong effect when students also have a good social background and real learning experiences, leading to nationalism that is not just in their thoughts but also shows in how they act (Ahmed et al., 2023).

Students' nationalist attitudes are a crucial aspect shaped by various factors, particularly social media, student organizations, and peer interactions (Clark & Rohrschneider, 2021). Social media, as the primary communication platform for the younger generation, can shape national narratives, positively and negatively, depending on the content consumed. Student organizations also serve as a strategic platform for fostering a spirit of nationalism through activities that emphasize leadership, solidarity, and community service. Meanwhile, peer interactions contribute to developing students' social identity by fostering national values through discussions, group work, and collaborative activities. These three factors demonstrate that the formal curriculum and students' social and digital environments are crucial in shaping their sense of nationalism (Hadiz et al., 2025; Özgenel, 2020; Wong & Chapman, 2023).

Deep learning has significant potential to strengthen nationalism in higher education (Mohammed & Kora, 2023; Prince, 2023). It emphasizes three important pillars: meaningful, which connects knowledge with the realities of life; mindful, which trains students to be reflective and critical in addressing national issues; and Joyful, which makes the learning process more engaging and participatory (Ahmed et al., 2023). Students using this approach understand the material and internalize nationalist values in their academic and daily activities, making learning a process that emphasizes cognition and the formation of national character (Chin, 2021).

As the forum for higher education, universities are responsible for designing learning formats that are clear, focused, and aligned with the needs of the digital era (Zhang et al., 2024; Zhu et al., 2021). Learning models that integrate technology with national values can be an effective strategy in addressing the challenges of globalization, which often blur national identity. Therefore, a curriculum design that combines academic content with contextual practices is needed, including the productive use of social media, strengthening student organizations as social laboratories, and facilitating constructive peer interactions. With these steps, universities can produce graduates who are not only intellectually intelligent but also possess a strong sense of national identity, ready to compete globally without losing their national identity.

Previous research has shown that students' nationalistic attitudes within the deep learning framework in the digital era are still relatively limited (Mithani, 2024). However, several studies have addressed determinants influenced by internal and external factors, such as social media, student organizations, and peer interactions. The application of deep learning in the digital era remains limited within higher education systems. Nevertheless, this approach integrates machine learning and technological innovations, which increasingly shape academic practices. Therefore, this study seeks to present a strategic position in the form of a formulation of deep learning based on national values in higher education, so that the learning process not only emphasizes cognitive achievement but is also meaningful, contextual, and able to foster students' nationalistic attitudes amidst the challenges of digital globalization (Kumar et al., 2024; Mei, 2023; Wu, 2024).

The formulation of deep learning in higher education is crucial in determining student nationalism in the digital era (Alruwais & Zakariah, 2024; Zhou et al., 2024). The results of this study indicate that student nationalism is influenced by three main factors: social media, student organizations, and peer interactions. Deep learning can equip students with theoretical knowledge while guiding them to analyze, reflect on, and connect the phenomena they encounter in the digital world with national values (Isnaeni et al., 2025; Putri et al., 2024). Through a meaningful learning approach, students can connect course material to social realities such as political, cultural, and religious dynamics encountered on social media. Through mindful learning, students become critical, aware, and reflective of the influence of organizations and peers (Lobo, 2025). Meanwhile, with Joyful Learning, students can learn in a fun, collaborative, and interactive atmosphere so that nationalism does not feel like a burden but becomes part of their daily lives.

Universities are crucial for developing a national character that aligns with current developments. The application of deep learning not only directs students to master concepts and theories but also guides them in connecting the knowledge they learn with the realities of digital life they face daily (Adytia et al., 2022; Rashid & Shaker, 2022). Using social media as an educational tool, optimizing student organizations as a venue for leadership training, and collaborative activities with peers on academic and social projects can be concrete examples of learning practices that internalize nationalist values.

The findings of this study demonstrate that by integrating the determinants of nationalism—social media, student organizations, and peer interactions—into a deep learning framework, universities have the potential to produce graduates who are not only academically proficient but also possess a strong sense of nationalism. Students engaged in reflective and contextual learning will develop into critical thinkers, democratic minds, and a strong social conscience. This enables them to remain rooted in their national identity while competing globally. Therefore, deep learning based on national values can effectively strengthen nationalism among the younger generation in the digital age.

5. Conclusions

Social media, student organizations, and peer interaction play a central role in shaping the determinants of students' nationalistic attitudes during deep learning in the digital era. Social media is the most dominant of the three, as it can shape students' opinions, values, and even behavior directly and through strengthening student organization activities. Student organizations are an important platform for developing leadership skills and instilling a sense of social responsibility, contributing to positive peer interaction patterns. Students' nationalism is formed through a combination of digital factors and the daily social environment, demonstrating that deep learning occurs not only in the classroom but is also influenced by real-life dynamics.

This research provides a new perspective on the need for implementing deep learning based on national values in higher education. Instilling nationalism can be achieved through two channels: a vertical pattern derived from the curriculum, lecturers, and campus policies, and a horizontal pattern developed through social interactions, organizational activities, and students' daily experiences. The results indicate that the horizontal pattern is more influential in strengthening nationalistic feelings because it is more practical, contextual, and closer to students' lives. The implications of these findings emphasize that universities need to develop deep learning policies and strategies that not only emphasize cognitive aspects but also foster a sense of nationalism, so that the graduates produced can compete globally without losing their national identity.

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6. Declarations

6.1. Ethical considerations

This research was conducted in accordance with the ethical standards set by Universitas Esa Unggul, ensuring that all procedures involving human participants complied with institutional and academic research ethics. Before data collection, the study received official approval from the university's ethics review committee. Informed consent was obtained from all

participants, participation was voluntary, and confidentiality of personal data was strictly maintained throughout the research process.

6.2. Use of artificial intelligence (AI)

This research utilizes generative artificial intelligence (AI) technology, namely ChatGPT, to aid in conceptualizing and designing the research and to improve the clarity, coherence, and quality of the manuscript. The use of AI is assistive and does not affect the scientific substance, methodology, data analysis, interpretation of findings, or conclusions of the study.

6.3. Conflict of Interest

The authors declare no conflicts of interest.

6.4. Funding

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