

Preparation of Vocational Teachers: A Focus on Global Citizenship in Technical and Vocational Education

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Abstract

The preparation of vocational teachers in Indonesia has traditionally focused on professional and pedagogic mastery, neglecting their potential for global citizenship. Therefore, this research aimed to assess the knowledge, skills, and attitudes related to global citizenship among vocational education students as future teachers. A quantitative descriptive approach was adopted, utilizing analytical methods that included descriptive statistics and an Independent Sample T-test. Also, a questionnaire was distributed through Google Forms to 394 vocational education students from both state and private universities in Indonesia. The results showed that vocational education students met the criteria for global citizens. Although such students possessed knowledge of global issues, their articulation skills were still underdeveloped. Additionally, they had proficiency in exploration, communication, digital, and English skills, along with a strong sense of responsibility toward local and global communities. The measurement results showed no significant differences between students from both state and private universities. This research internally advocated for the integration of a vocational education curriculum grounded in global citizenship in Indonesia. Externally, it promoted and convinced entrepreneurs that graduates were prepared to assume roles with a global citizenship perspective. The results showed the preparedness of prospective vocational teachers to promote the importance of global citizenship and uphold its sustainability.

1. Introduction

Global citizens are not only residents of a specific country but also participants in a broader community. They actively engage and shoulder responsibility for collaboratively addressing diverse issues [1]; [2]. Each individual is not only expected to express sympathy for global events but also to comprehend their political responsibilities to the community [3]. Global citizens should be willing to understand, acknowledge, and effectively collaborate in multicultural environments within the framework of global citizenship that each country needs to develop. Naturally, every country will have its concepts for the application of citizenship education, considering the interdependence and interconnectedness in economic, cultural, and social aspects through factors such as increased international trade, migration, communication, and others [4]; [5]. Meanwhile, perspectives on national citizenship differed among countries, indicating differences in political context, history, and others [6]. Despite the variations, a country has a moral responsibility to ensure its citizens evolve into globally conscious individuals prepared to contribute positively to an increasingly interconnected world due to globalization. The growth of interdependence among individuals, regions, and different countries due to globalization [7] has led to the understanding that when one region faces a crisis, it affects others [8]. Therefore, individuals should learn to coexist and engage in sustainable development on this planet [9]. Individuals and the global community should also change their thinking and actions [10]; [11]; [12] to collaboratively address emerging global issues.

The current global landscape is confronted with various issues, including (i) The COVID-19 pandemic, which, beyond its immediate impacts, poses future challenges to health defense [13]. (ii) The continual

rise in Earth temperature, reported as the hottest year in 2022 by The World Meteorological Organization (WMO), indicates persistent global warming [14] that poses threats to climate and weather systems. (iii) Refugee crises and conflicts persist globally, creating social and political instability due to armed conflicts, human rights violations, and refugee crises [15]. (iv) The technological and digitalization revolution, characterized by massive developments transforming how individuals work, communicate, and access information [16]. The revolution brings challenges related to privacy and cyber security and extends global digital inequality [17]. (v) Economic inequality continues to widen among countries and communities, prompting questions about justice efforts and sustainable economic development [18].

In the face of global issues and dynamics, educational institutions play a crucial role in shaping a generation that is not just technically competent but also profoundly aware of their responsibilities as global citizens. The significance of instilling global citizenship values in education relies not only on introducing students to cultural diversity but also on engaging them in a profound learning process about evolving issues [19]. Educational institutions can serve as catalysts, empowering students to become positive agents of change amid the complexities of global issues. By integrating the perspective into the curriculum and daily teaching practices, teachers can guide students toward a broader understanding, ethical values, and active engagement in evolving issues [20]. The integration of global citizenship values in educational institutions can shape students' characters, stimulate critical thinking, and cultivate individuals ready to confront challenges [21]. This condition requires teachers not only to impart technical skills but also to guide students in understanding their roles as global players with an impact on the future of the Earth [22].

Teachers should possess a comprehensive grasp of global citizenship and effectively apply the concept. They are important in cultivating the spirit of global citizenship within the students [23]. However, the reality falls short of expectations, with teachers expressing challenges arising from a lack of understanding, skills, or tools to teach the concept [24]. There is a prevailing belief among teachers that both students and the curriculum are unprepared for the global context [23]. In an investigation conducted by [25], it was found that a staggering 84.3% of elementary school teachers in Malaysia were unaware of the essence of citizenship education. Similar results were found in the analysis of [19] regarding pre-service teacher education programs in New Zealand. This research examined the understanding of global citizenship among pre-service teachers, focusing on cultural diversity. The results showed a deficiency in pre-service teachers' understanding of global citizenship, casting uncertainty about its potential to foster harmony in culturally diverse relationships. In Spain, pre-service teachers also fall short of achieving the target of applying the spirit of global citizenship [26].

The Technical and Vocational Education (TVE) study program in Indonesian universities, responsible for producing prospective teachers for Vocational High Schools (SMK), is vested in ensuring the teachers can effectively apply the spirit of global citizenship. SMK customarily structures its learning processes with a focus on future career needs, supporting students with workforce demands [27]; [28]. Currently, SMK cannot solely address employment needs but should equip students with knowledge, skills, and attitudes that guide them toward values and behaviors contributing to global peace and harmony [29].

UNESCO advocates for a vision of "Transformative TVE," integrating economic development, equality, and environmental sustainability concerns [27]. There are three priority areas for TVE development, (i) Developing skills for all individuals to learn, work, and live, (ii) Developing skills for inclusive and sustainable economies, and (iii) Developing skills for inclusive and peaceful communities [30]. TVE organizers are expected to produce graduates not only with skill qualifications for employment but also with the ability to adapt to global dynamics and a full orientation toward humanity [31]. In this paradigm of TVE management supported with the spirit of global citizenship discourse, vocational teachers play a crucial role. Currently, such teachers are prepared only as individuals who master a vocational subject and possess teaching skills [32]. Students in TVE, who are prospective vocational teachers, are expected to possess insights and skills regarding global citizenship. Beyond mastering vocational and pedagogical fields, they need a comprehensive understanding of global citizenship. This is crucial in preparing students who can thrive in changing times without losing the nation identity but are capable of playing a role and competing globally. Therefore, this research focuses on analyzing the knowledge, attitudes, and skills related to global citizenship among vocational education students as prospective teachers.

2. Method

This study adopted a quantitative descriptive approach, focusing on undergraduate students enrolled in Technical and Vocational Education (TVE) study programs in Indonesia, including both public and private universities. Based on data retrieved from the official website (<https://pddikti.kemendikbud.go.id/>), the total population was 26,851 students. The sample size was determined using Slovin's formula with a 5% margin of error, resulting in a minimum sample of 394 respondents.

A non-probability sampling method, specifically voluntary response (accidental) sampling, was employed due to the absence of a comprehensive sampling frame [33]. This approach allowed participants who met the inclusion criteria to voluntarily take part in the study.

Data were collected digitally using an online questionnaire distributed via Google Forms from February to May 2023. The survey link was disseminated through various social media platforms, including WhatsApp, Instagram, and Twitter. It was shared with official accounts of study programs, student associations, and university administrators, who were requested to further distribute it to eligible students.

Participation in this study was entirely voluntary. Prior to participation, respondents were provided with an informed consent statement at the beginning of the questionnaire, outlining the purpose of the study, confidentiality of responses, and their right to withdraw at any time. Only those who agreed to the consent statement were able to proceed with the survey. All responses were collected anonymously. This study was approved by the Research Ethics Committee of the Faculty of Teacher Training and Education, Sebelas Maret University, under the Ministry of Education, Culture, Research, and Technology, Indonesia (Approval No. 03/UN27.02.11/PP/EC/2025).

The research instrument was adopted from the investigation conducted by [34], featured in an article titled "School Students Perception, Attitudes, and Skills Regarding Global Citizenship-Dataset from Vietnam" in 2021. The instrument, publicly available, allowed for broad adoption across various objectives within the global citizenship context. It provided a comprehensive overview of the knowledge, skills, attitudes, and behaviors of Vietnamese students regarding global citizenship and issues.

The collected data were subjected to processing using WPS Spreadsheet Ver.11.1.0 for numerical analysis and Jamovi Ver. 2.4.0 for statistical evaluation. Both were open-source applications accessible to anyone without the need for a legal license. They served for instrument validation, reliability tests, data processing to generate descriptive statistics, and an independent t-test. Descriptive statistics were adopted for data depiction, while the independent t-test scrutinized potential differences between students from state and private universities. The formula used to calculate scores from the questionnaire was derived from [35]:

$$M = \frac{\sum fx}{N} \times 100\%$$

Description:

M = Mean percentage of item score for each answer option

$\sum fx$ = Total item score for each answer option

N = Total respondents

Table 1
Likert Scale on Questionnaire

Variable	Category	Description
Knowledge of global issues (X1)	1	I have never heard of this issue
	2	I have heard about this issue but cannot explain it
	3	I am aware of this issue and can explain a little about it
	4	I know this issue and can explain it well
Global citizen skills (X2) & Global citizen attitudes (X3)	1	Strongly Disagree (SD)
	2	Disagree (D)
	3	Agree (A)
	4	Strongly Agree (SA)

The questionnaire was distributed after conducting instrument validity and reliability tests, and all items were valid because the r count exceeded the r table (0.361). The instrument also showed high reliability, with each variable having a Cronbach's Alpha > 0.77. The total statements presented to respondents

across the three variables amounted to 30 items, comprising 12 for knowledge of global issues, 10 for global citizen skills, and 8 for global citizen attitudes. Respondents were presented with answer options using a Likert scale with four categories, as shown in Table 1.

3. Results

3.1 Profile of Students as Respondents

Data from filled questionnaires totaled 408 responses, but four respondents expressed disagreement to continue filling out the questionnaire. Therefore, the total complete responses amounted to 404, and about 394 responses were taken in the order they were received for analysis. This research included 19 state and 21 private universities spread across 23 provinces in Indonesia, as presented in Fig. 1.

The graph provided that the top five regions contributing the highest number of respondents included Central Java, Yogyakarta, East Java, South Sulawesi, and West Java. Other regions each accounted for less than 5% of the total respondents. In terms of university origin, there were 180 and 214 respondents from state and private universities, respectively. Respondents represented 10 different study programs, including Vocational Education in Automotive Technology, Vocational Education in Information and Computer Technology, Vocational Education in Mechanical Engineering, Vocational Education in Electronic Engineering, Vocational Education in Construction, Vocational Education in Fashion Design, Vocational Education in Engineering, Vocational Education in Agricultural Engineering, Vocational Education in Family Welfare, and Vocational Education in Mechatronics. Of the 394 respondents, 242 or 61% were male, while 152 or 39% were female. Based on semester level, the majority of respondents were in semester 6 with 137 individuals, followed by semesters 4, 8, and 2 with 108, 81, and 68 individuals, respectively.

3.2 Knowledge of Global Issues

Descriptive statistical results in Table 2 showed that the items in the knowledge of global issues variable had a minimum value of 1 and a maximum value of 4, corresponding to the Likert scale answer options of 1–4. The mean ranged from 2.3 to 2.98, with a total mean of 2.56, while the standard deviation for each item ranged from 0.75 to 0.90. All items had a mean greater than the standard deviation, indicating reasonable results. The standard deviation showed very high deviations, signifying that the data distribution was normal and did not introduce bias.

In this variable, respondents reflected on their familiarity with topics related to several global issues. They responded to statements by selecting 1 out of 4 answer options, such as (i) I had never heard of this issue, (ii) I had heard of this issue but could not explain it, (iii) I was aware of this issue and could explain a little about it, and (iv) I knew this issue and could explain it well.

Table 2
Descriptive statistics for the knowledge of global issues variable

Statement	Mean	Std. Dev.	1	2	3	4
Environmental pollution issue	2.79	0.80	7%	25%	52%	17%
Climate change	2.57	0.75	7%	39%	46%	9%
Risks of scarcity and use of natural resources	2.54	0.84	12%	32%	45%	11%
Epidemic disease affecting a region in the world	2.30	0.90	21%	38%	31%	10%
Risks of aging and rapid, uneven population growth in various parts of the world	2.29	0.89	19%	44%	27%	10%
Cause of poverty	2.88	0.8	5%	24%	49%	22%
Global unemployment issue	2.68	0.82	8%	29%	48%	14%
Development and influence of the internet	2.98	0.79	4%	20%	50%	26%
Efforts to maintain world peace	2.44	0.90	15%	38%	34%	12%
Coherent, interactive, and interdependent global community relations	2.28	0.86	19%	41%	32%	7%
Global cultural diversity	2.48	0.87	14%	36%	39%	11%
Gender equality in various parts of the world	2.43	0.86	14%	39%	36%	10%
Mean	2.56		12%	34%	41%	13%

Table 2 indicated distinct percentages of selected answers for each issue. Environmental pollution was most prevalent in Category 3 at 52%, climate change in Category 3 at 46%, risks of scarcity and use of natural resources in Category 3 at 45%, and the epidemic disease affecting a region in the world in Category 2 at 38%. Additionally, risks of aging and rapid, uneven population growth in various parts of the world were most prevalent in Category 2 at 44%, the cause of poverty in Category 3 at 49%, global unemployment issue in Category 3 at 48%, and the development and influence of the internet in Category 3 at 50%. The efforts to maintain world peace were most prevalent in Category 2 at 38%, coherent, interactive, and interdependent global community relations in Category 2 at 41%, global cultural diversity in Category 3 at 39%, and gender equality in various parts of the world in Category 2 at 39%.

Examining the mean percentage in each category of this variable, the category with the highest percentage was 3 at 41%. The interpretation was that respondents were considered aware of developing global issues but could only provide limited explanations about them.

3.3 Global Citizen Skills

Descriptive statistics for the skills variable are presented in Table 3. The mean ranged from 2.78 to 3.33, with a total mean of 3.17, and the standard deviation for each item spanned from 0.49 to 0.71. All items

had a mean greater than the standard deviation, indicating reasonable results. This was because the standard deviation showed a very high deviation, signifying normal data dispersion without bias.

The assessment of global citizen skills comprised items related to exploration, communication, foreign language, and digital skills. According to the results in Table 3, the variable items garnered large values in category A, and respondents agreed with all presented statements. When examining the mean percentage, category A, SA, D, and SD were 60%, 29%, 10%, and 1%, respectively. The interpretation was that respondents were considered to have good global citizen skills, as their responses were predominantly agreed and strongly agreed options.

Table 3
Descriptive Statistics for Global Citizen Skills Variable

Statement	Mean	Std. Dev.	SD	D	A	SA
I enjoy exploring information on my own (both online and offline)	3.21	0.65	1%	9%	57%	32%
I can express my own opinion about an issue	3.15	0.58	1%	7%	68%	24%
I can socialize and interact with my friends even if we have differences (such as hobbies, and others)	3.33	0.66	3%	1%	55%	40%
I can work with my friends even if we have different perspectives	3.12	0.63	3%	7%	66%	24%
I behave the same towards my friends, regardless of gender, ethnicity, or religion	3.25	0.63	0%	10%	55%	36%
Before criticizing someone, I imagine how I would feel if I were in their position	3.15	0.7	2%	12%	55%	31%
I always listen carefully to what others say	3.28	0.49	0%	2%	68%	30%
If I speak and others do not understand, I will find another way (e.g., re-explaining, writing, giving specific examples, and others)	3.26	0.6	0%	8%	57%	35%
I can select information on the internet and determine the information that is suitable for me	3.17	0.53	0%	6%	70%	24%
I can discuss the information I have with foreigners in English	2.78	0.71	2%	33%	50%	15%
Mean	3.17		1%	10%	60%	29%

3.4 Global Citizen Attitudes

The variable of global citizen attitudes aimed to gauge the responsibility of Indonesian vocational education students toward society, both nationally and globally. Descriptive statistics for the variable are presented in Table 4. The mean ranged from 2.89 to 3.45, with a total mean of 3.27, and the standard deviation for each item varied from 0.52 to 0.66. All items had a mean greater than the standard

deviation, indicating favorable results. The standard deviation reflected minimal deviations, thereby ensuring normal data dispersion and avoiding bias.

Based on the results in Table 4, the variable items consistently received high values in category A, indicating agreement with all presented statements. The mean percentages for category A, SA, D, and SD were 57%, 36%, 6%, and 1%, respectively. The interpretation suggested that respondents possessed positive attitudes as global citizens, with their responses predominantly consistent with agree and strongly agree options.

Table 4
Descriptive Statistics for Attitude Towards Global Citizenship Variable

Statement	Mean	Std. Dev.	SD	D	A	SA
I am willing to be friends with strangers/foreigners	3.29	0.56	0%	5%	60%	35%
I am willing to introduce my local (country) culture and history to foreign friends	3.35	0.52	0%	2%	61%	37%
I want to learn about the history and culture of other countries, and then share with my friends what I have learned	3.19	0.64	2%	8%	61%	30%
I want to identify global issues on my own, and then share with my friends what I have found	2.89	0.64	1%	22%	62%	14%
I am willing to participate in activities to protect the environment or conserve resources on campus or where I live (for example: planting green trees, cleaning, maintaining cleanliness in public places, using water, electricity, and others)	3.27	0.66	3%	4%	57%	36%
I often use resources sparingly (for example: turning off lights when leaving a room, turning off the TV when not watching, always turning off the tap after use, and others)	3.38	0.58	0%	5%	52%	43%
I am willing to defend my friends when they are harassed/bullied	3.37	0.54	0%	3%	57%	40%
I am willing to help people in need according to my capacity (in any context of kindness)	3.45	0.61	1%	3%	46%	50%
Mean	3.27		1%	6%	57%	36%

3.4 Independent T-Test Results

Based on the independent t-test results provided in Table 5 below, there were no significant differences in outcomes between students from state and private universities. This conclusion was drawn from both the Levene test and t-test values for each variable. In the Levene test, all significance values surpassed

the alpha value of 0.05, signifying homogeneous data. Additionally, all t-test significance values exceeding 0.05 showed the absence of differences between the two groups.

Table 5
Independent Samples t-test Results

Variable	Levene's Test for Equality of Variances		T-Test for Equality of Means	
	F	Sig.	t	Sig. (2-tailed)
X1	0.32	0.574	0.25	0.802
X2	0.13	0.721	0.53	0.598
X3	1.77	0.184	0.25	0.802

4. Discussion

Based on the conducted research, Indonesian vocational education students were aware of developing global issues but might have encountered challenges in articulating them. Students perceived social issues to be less mastered, specifically (i) Epidemic disease affecting a specific region, (ii) Risks associated with aging and uneven population growth, (iii) Efforts to maintain world peace, (iv) Coherent, interactive, and interdependent global community relations, and (v) Gender equality in various parts of the world. Despite this, students can be considered to possess an awareness of developing global issues and fulfill the criteria as global citizens [36]. Global citizens were characterized by an understanding of current issues and an informed perspective on global affairs [37]. However, it was observed that mere awareness was insufficient, and active participation in solving existing problems was essential for fulfilling the role of global citizens [38]; [39].

Transitioning to the global citizen skills variable, Indonesian vocational education students had exploration, communication, digital, and English skills that qualified them as global citizens [40]; [41]. The items in the variable were in line with the characteristics proposed by John C Cogan [42], regarding what should have been evident in global citizens. The characteristics included the ability to collaborate with others, assume roles and responsibilities in the community, understand, accept, and respect cultural differences, think critically and systematically, as well as have sensitivity to human rights, specifically gender equality and ethnic minorities. Global citizenship skills empower individuals to act effectively and responsibly in both local and global communities while understanding global standards to maintain world peace [3]. In the skills variable, one item, particularly the ability to discuss information with foreigners in English, received the lowest score. This moderately unsatisfactory result was relevant, specifically when considering data from the English Proficiency Index Report for 2022, where Indonesia was ranked 81st out of 111 countries studied, experiencing a drop from the 2021 ranking. Indonesia also remained below the regional mean scores for Asian countries [43].

For the variable of global citizen attitudes, the research indicated that Indonesian vocational education students had positive attitudes as global citizens. The students were considered capable of fulfilling

their responsibilities to be global citizens. In this context, responsibility represented the level of interdependence and social concern felt toward others, society, and the environment [44]; [45]. Individuals were expected to respect diverse perspectives, identify and evaluate global disparities, as well as comprehend the interconnectedness between local behavior and its global consequences [46]. This was because, to be global citizens, students should be willing to engage, take responsibility, and be responsive to surrounding issues [8].

The positive results instilled confidence that vocational education students, as prospective teachers in SMK, adeptly fostered and advanced the discourse on the global citizenship concept in Indonesia. Regarding the efforts to integrate the concept, Yusof et al. [44] explained that introducing global education elements across various subjects was necessary. The approach equipped students with knowledge, skills, and attitudes grounded in and fostering respect for human rights, social justice, diversity, gender equality, and environmental sustainability, empowering them to shoulder responsibility as global citizens. According to UNESCO, the Indonesian curriculum included competencies related to global citizenship education [12], manifested in social attitudes indicating honest behavior, responsibility, care, tolerance, and mutual understanding. Currently, the Pancasila Student Profile was introduced, outlining a lifelong learner with global competencies who embodied Pancasila values [47]. The Pancasila Student Profile consisted of being (i) faithful to God and noble, (ii) independent, (iii) critical thinking, (iv) collaborative, (v) creative, and (vi) embracing global diversity. Global diversity signified that Indonesian students were expected to preserve their noble culture, locality, and identity, remaining open-minded when interacting with other cultures, fostering mutual understanding, and potentially creating new positive cultures supported by the nations noble values [47].

The research limitation resided in using only a questionnaire with a Likert scale as the instrument. The analysis did not extend to further interviews with universities, students, and vocational high school administrators regarding the integration of global citizenship values in the school environment. However, the results established a foundational understanding for future investigations related to the integration and evaluation of global citizenship values in technical and vocational education institutions.

5. Conclusion

In conclusion, the research showed that Indonesian vocational education students met the criteria as global citizens, evidenced by assessments of their knowledge of global issues, global citizen skills, and global citizen attitudes. Although students had knowledge of global issues, the ability to explain them may have been imperfect. They possessed proficient exploration, communication, digital, and English skills. Moreover, students showed a strong sense of responsibility toward society, both on a national and global scale. The measurement results indicated no significant differences between groups of students from state and private universities.

These positive results inspired confidence that vocational education students, as prospective teachers in SMK, would effectively promote and contribute to achieving global citizenship goals. Vocational teachers

play a crucial role in guiding children and adolescents toward a sustainable ecological future, using knowledge, skills, and values of global citizenship. Teachers, as exemplary global citizens, were crucial for attaining transformative pedagogical goals, and fostering a learning environment that promoted sustainable problem-solving. Leveraging the existing potential in students and various supporting instruments, particularly government education policies, was expected to expedite the integration of the global citizenship education discourse.'

Declarations

Ethical Statement

This study was approved by the Research Ethics Committee of the Faculty of Teacher Training and Education, Sebelas Maret University, under the Ministry of Education, Culture, Research, and Technology, Indonesia (Approval No. 03/UN27.02.11/PP/EC/2025).

Clinical Trial Number

Not applicable

Consent to Participate

Informed consent was obtained from all participants involved in this study.

Consent to Publish

Not applicable

Author Contributions Statement

The contributions of each author to this manuscript are as follows: **F.I.**: writing—original draft, methodology, software. **S.**: writing—original draft, conceptualization, formal analysis. **N.A.P.**: validation, data curation. **M.A.**: investigation, resources, supervision. **D.K.U.**: writing—review and editing, visualization, project administration. All authors have read and approved the published version of the manuscript.

Declaration of Competing Interest

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

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Data Availability Statement

All data associated with this study wasn't deposited into a publicly available repository, because it will be made available on request from the corresponding author.

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Figures

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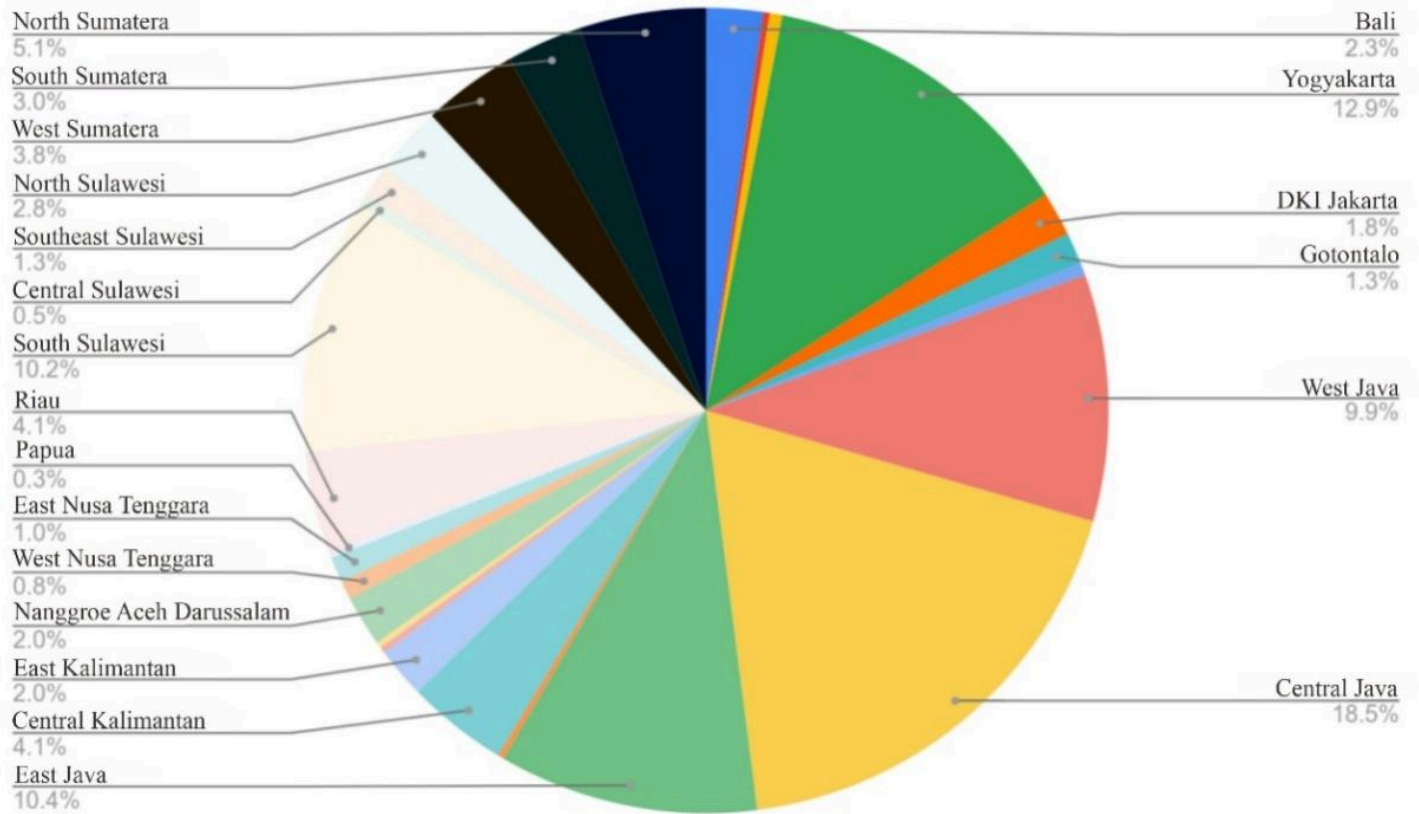


Figure 1

Respondents by region