Development and validation of a Good Governance Practices (GGP) scale of student leaders

Pengembangan dan validasi skala praktik Tata Kelola yang Baik (GGP) pemimpin mahasiswa

Romel C. Mutya ⓘ

College of Education, Arts and Sciences, Cebu Technological University-Danao Campus
Address: Poblacion, Danao, 6004 Cebu, Philippines
E-mail: romel.mutya@gmail.com

Abstract

Good governance is becoming an increasingly important component of public institutions; however, the instruments used to assess good governance practices among student leaders are inadequate, resulting in a gap in assessing and improving leadership. This study aims to produce an assessment instrument that can identify and measure the good governance practices (GGP) of prospective student leaders. The method used is a quantitative research design with 349 survey responses from student leaders at higher learning institutions in the Philippines. The Good Governance Practices scale for student leaders comprises 20 items distributed across five dimensions—accountability (3), effectiveness and efficiency (6), participation (5), rule of law (3), and transparency (3)—and shows strong factor loadings (0.710–0.907). The scale exhibited good reliability and model fit, as indicated by $\chi^2/df = 2.444$, RMSEA = 0.054, SRMR = 0.038, and CFI = 0.948. Composite reliability values ranged from 0.780 to 0.904, while Cronbach's alpha coefficients varied between 0.793 and 0.902, confirming strong internal consistency. Results report a psychometrically sound instrument to measure good governance practices of student leaders. This study concludes that the resulting instrument can educate leadership and inform policymaking to establish quality student governance.

Keywords: good governance practices; scale development; student leaders

Abstrak

Tata kelola yang baik semakin menjadi komponen penting; namun, instrumen yang digunakan untuk menilai praktik tata kelola yang baik di kalangan mahasiswa calon pemimpin belum memadai, sehingga menimbulkan kesenjangan dalam menilai dan meningkatkan kepemimpinan. Studi ini bertujuan untuk menghasilkan instrumen penilaian yang dapat mengidentifikasi dan mengukur Praktik Tata Kelola yang Baik (GGP) mahasiswa calon pemimpin. Metode yang digunakan adalah desain penelitian kuantitatif dengan 349 respons survei dari mahasiswa calon pemimpin di perguruan tinggi di Filipina. Skala Praktik Tata Kelola yang Baik untuk mahasiswa calon pemimpin terdiri dari 20 item yang didistribusikan ke dalam lima dimensi—akuntabilitas (3), efektivitas dan efisiensi (6), partisipasi (5), supremasi hukum (3), dan transparansi (3)—dan menunjukkan muatan faktor yang kuat (0,710–0,907). Skala ini menunjukkan reliabilitas dan kesesuaian model yang baik, sebagaimana ditunjukkan oleh $\chi^2/df = 2,444$, RMSEA = 0,054, SRMR = 0,038, dan CFI = 0,948. Nilai reliabilitas komposit berkisar antara 0,780 hingga 0,904, sementara koefisien alfa Cronbach bervariasi antara 0,793 dan 0,902, yang menegaskan konsistensi internal yang kuat. Hasilnya menunjukkan instrumen yang baik secara psikometrik untuk mengukur praktik tata kelola yang baik dari para pemimpin mahasiswa. Studi ini menyimpulkan bahwa instrumen yang dihasilkan dapat mendidik kepemimpinan dan menginformasikan pembuatan kebijakan untuk membangun tata kelola mahasiswa yang berkualitas.

Kata kunci: praktik tata kelola yang baik; pengembangan skala; pemimpin mahasiswa

Introduction

The significance of effective governance resonates across various sectors, influencing organizational success and societal development. Good governance is characterized by principles that collectively ensure that public institutions manage resources and affairs in a legitimate and efficient manner (Islam 2018, Keping 2018). These practices promote public trust and enhance the quality of service delivery by fostering an organizational culture committed to ethical standards and stakeholder engagement (Jafari et al. 2018, Mansoor 2021).

However, while governance has been a heavily researched area in businesses and government sectors, its applicability to education, especially in student leadership, still lags as an area of rich scholarly discourse. Assessing and measuring good governance practices among student leaders has yet to benefit from the development of suitable assessment instruments that take into account their unique roles and responsibilities. Student leaders are mediators with specific functions between peers, teachers, and administrators: they support student voice, promote participation, and help to articulate campus culture.

Based on previous research, the context of managing students in leadership positions inside educational institutions has been largely ignored; instead, more emphasis has been placed on the general governance principles or leadership evaluations (Vanlalhlimpuii 2018, Bekele & Ago 2020, Sedarmayanti et al. 2020, Zaitul et al. 2023). Therefore, with the above-identified gaps in consideration, this research aims to develop an instrument for measuring good governance practices among student leaders. It draws on well-known theories of governance and frameworks of educational leadership, this study aims to close this gap, as there is currently no available tool that enables educational institutions to conduct a comprehensive assessment of their student leaders' governance competencies and to take action to help those learners become better leaders and ensure the development of competent future leaders.

The purpose of assessing good governance among student leaders is closely connected to other academic works that highlight the need for instruments specifically designed to assess these skills within an academic context. Elucidated in their evaluation of governance practices among student leaders is the fact that an all-inclusive higher education governance plays a major role in the development of scholarly organizational governance, consequently creating a possibility for the convenient delivery of high-quality education, thereby fostering good university leadership. Indirectly, Meech & Koehler (2023) discussed how student leaders learn more about evaluating and developing their governance skills, as well as activating the roles they have in causing productive changes in their societies. Additionally, Austin & Jones (2018) drew attention to issues of transparency, accountability, and performance regarding higher education governance, a key principle that will be addressed when observing student leadership.

George & Rose (2025) argued that ethical decision-making should be endorsed in higher education leadership to adequately examine the moral foundation of student leaders' governance practices. In addition, the UNESCO Education Sector-wide Approaches Working Group revised the significance of developing assessment tools of governance by student leaders. It acknowledged that effective governance systems in learning institutions were necessary to ensure quality education (Dovigo 2024). Based on the following academic observations, the study makes it clear that a specific tool is needed to deliver a detailed assessment and enhance the culture of good governance in terms of student leaders (Muthoni et al. 2018, Diaz et al. 2024).

Important information gaps need to be addressed in the body of research on evaluating student leaders' good governance practices. First, despite extensive research examining governance structures in educational institutions, there are still very few specialized evaluation instruments, especially to gauge student leaders' governance practices (Mangarin & Tajon 2024, Capito 2025). Second, one problem is that current assessment instruments often restrict their focus to leadership competencies or, in some cases, governance principles as well, but do not offer a combination of both in an integrated evaluation tool (Diaz et al. 2024). Moreover, the literature on the ethical dimensions of student leaders' governance activities is scarce, despite their importance for the development of responsible future leaders (Danganan et al. 2023). These gaps make it clear that there is a need for an instrument specifically designed to integrate the concepts of governance given the peculiar contexts in which student leadership exists in educational environments.

This research formulated and experimented with a tool designed to assess the good governance practices of student leaders, addressing the identified knowledge gaps. It aimed at devising a comprehensive assessment instrument by integrating structures of educational leadership with strongly established governance conceptions. This is a perfect tool in evaluating and enhancing the governance skills of the student leaders in specific cases because it encompasses multiple governance areas, including accountability, transparency, ethical decision- making, and participation of stakeholders. One of

the anticipated outcomes of the study was the establishment and validation of a worthy evaluation instrument to assess the good governance practices by student leaders. This resource is extremely valuable in learning institutions in that it can evaluate and refine the governance abilities of the student leadership. Moreover, it was expected that the conclusions of the study would contribute to the scholarly discussion on governance in educational settings which may, in turn, affect legislation and practices to enhance responsible and effective student leadership on a global scale.

Research Method

This study sought to design and test the Good Governance Practices (GGP) scale which assesses student leadership behaviors through a quantitative research design. The process followed the general steps of instrument development, the first of which was constructing the items on the basis of governance frameworks, and, subsequently, content validation by experts. To determine the factor structure and assess the scale's psychometric soundness, a maximum likelihood extraction based on EFA was applied. The KMO test assesses if the data are appropriate for factor extraction analysis and serves as a gauge of sampling adequacy. This is a sign that the sample size is sufficient. The test determines if sampling is appropriate for the model as a whole and for a specific variable in particular. The KMO index of the adequacy of the sampling could be calculated in the formula below, where R = [rij] is the correlation matrix, U = [uij] is the partial covariance matrix, and Σ = summation notation ("add up"). A KMO value of 0.70 indicated that the sample was adequate for factor analysis.

$$KMO = \frac{\sum_{j \neq k} \sum r_{jk}^2}{\sum_{j \neq k} \sum r_{jk}^2 + \sum_{j \neq k} \sum p_{jk}^2}$$

A test of the null hypothesis (H_0) that all k population variances are the same was performed using Bartlett's Test of Sphericity, as opposed to the alternative hypothesis that at least two variances differ, where $N = \sum_{i=1}^{k} n_i$ and $S_p^2 = \frac{1}{N-k} \sum_i (n_i - 1) S_i^2$ represent the pooled variance estimates used in the analysis.

$$\chi^2 = \frac{(N-k)\ln(S_p^2) - \sum_{i=1}^{k}(n_i - 1)\ln(S_i^2)}{1 + \frac{1}{3(k-1)}\left(\sum_{i=1}^{k}\left(\frac{1}{n_i - 1}\right) - \frac{1}{N-k}\right)}$$

Cronbach's alpha (α) and composite reliability (CR) were used to assess reliability and verify internal consistency. Strong correlations between the test items were shown by Cronbach's alpha values greater than 0.70, which were considered satisfactory.

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum \sigma_i^2}{\sigma_t^2}\right)$$

Covariance-based structural equation modeling (CB-SEM) and confirmatory factor analysis (CFA) in SmartPLS 4 were used to assess the proposed model. Convergent validity was assessed using average variance extracted (AVE), whereas model fit was evaluated using χ^2/df < 3, CFI/TLI $\geq$ 0.90, and RMSEA $\leq$ 0.08.

$$\left(AVE = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \theta_i}\right)$$

The Fornell-Larcker criterion and the HTMT ratio, with a threshold value of $\geq$ 0.50, were used to evaluate discriminant validity. The EFA used to explore the construct and the CFA to validate the model were combined, which guaranteed that the GGP scale was statistically sound and theoretically based (Hair et al. 2019, DeVellis & Thorpe 2021, Kline 2023).

Based on predefined inclusion and exclusion criteria as well as the type of data collected, the study divided participants into three groups (Patino & Ferreira 2018). The initial sample of participants included five professional validators (advisers of three student leaders and two professionals in the domain of public administration). In order to implement preliminary scale pilot testing, using Google Forms, 30 online student leaders who had different duties and responsibilities as student leaders across different college departments were selected with the assistance of a random sampling method (Noor et al. 2022).

Student leaders in the higher institutions of learning were the third group of participants. There were 349 participants in the total sample. Table 1 provides a summary of the third participant group's demographic attributes. The findings show that most participants were aged 20 to 22 years, with females comprising the larger proportion. In addition, they were mostly second and third-year college students. The majority of the participants are managers in terms of duties and responsibilities, and most of them are college representatives. The sample in the table is a non-homogeneous sample of student leaders. According to Hair et al. (2019), this study met the minmum sample size requirement, which is five times the number of measurement items.

Table 1.
Demographic characteristics (N=349)

Category	Descriptive statistics	
	Frequency	**Percentage**
Age		
17-19 years old	31	8.88
20-22 years old	191	54.73
23-25 years old	90	25.79
26 years old and above	37	10.61
Sex		
Male	156	44.70
Female	193	55.31
Year Level		
First Year	47	13.47
Second Year	113	32.38
Third Year	123	35.24
Fourth Year	66	18.91
Duties and Responsibilities		
Technical	92	26.36
Managerial	189	54.15
Supervisory	68	19.48
Organizational Position		
President/Governor/Mayor	26	7.45
Vice President/Vice Governor/Vice Mayor	87	24.93
Secretary	15	4.30
Finance (Treasurer and Auditor)	34	9.74
College Representatives	187	53.58

Source: Research data processed by the author

The development phase was an iterative procedure that included a systematic literature review, expert consultation, testing of the survey questionnaires, and the refinement of instruments that were declared to be valid and reliable. A thorough analysis of the body of research on the creation of governance scales and good governance practices was conducted. This was also the phase that generated constructs

and items on the basis of the various literature reviews. To validate the draft items, a panel of experts (advisors of three student leaders and two experts in the sphere of public administration) took part in the face validation and content validation (Lacson & Dejos 2022).

Table 2.
Dimensions of good governance practices

Dimensions	Description	Sample statements	References
Accountability	Being responsible for one's actions and decisions and being answerable to peers, advisors, and the organization for the outcomes of those actions.	"I take responsibility for my actions as a student leader." "I admit mistakes and work to correct them promptly."	Johnston (2006) Dayanandan (2013) Khotami (2017) Bekele and Ago (2020) Beshi and Kaur (2020) Balangon et al. (2023) Zaitul et al. (2023)
Effectiveness and Efficiency	Completing tasks successfully while using resources wisely to achieve organizational goals with minimal waste and maximum impact.	"I complete my tasks on time to help our student organization achieve its goals effectively." "I use resources wisely to avoid waste and ensure efficient use in student activities."	Supriadi et al. (2021) Zaitul et al. (2023)
Participation	When good involvement in the decision making processes to represent and advocate the student body and governance activities.	"I actively attend and contribute to meetings and activities." "I consistently attend and contribute to meetings and activities."	Alviento (2018) Bekele and Ago (2020) Supriadi et al. (2021) Zaitul et al. (2023)
Rule of Law	Follow the same transparent and fair rules equally, ensuring no one is above the law and decisions are made impartially and consistently.	"I follow the rules and laws set by our student organization without exception." "I support fair processes in all student government decisions."	Johnston (2006) Bekele and Ago (2020) Supriadi et al. (2021) Zaitul et al. (2023)
Transparency	Openly sharing information and decision-making processes in a clear, accessible, and timely manner so that all members can understand, monitor, and participate effectively.	information openly with all members of the student organization." "I ensure that rules and policies are visible and accessible to all students."	Johnston (2006) Dayanandan (2013) Bekele and Ago (2020) Beshi and Kaur (2020) Supriadi et al. (2021) Zaitul et al. (2023)

Source: Research data processed by the author

The first version consisted of 35 items. If there was a question a as to whether the items were important or not, the experts were requested to assess them. Responses were tallied and content validity ratios were calculated in accordance with Lawshe's (1975) formula. Feedback on the form and language of

the items given to the professionals was also provided and was incorporated (Lacson & Dejos 2022). To determine administration and content validity, the draft was administered to 30 student leaders in a survey via Google Forms. This was followed by including the student leaders' scale of good governance practices in the Google Forms.

Conceptual literature review is a synthesis made by means of theoretical and empirical sources that define, refine, and explore the main concepts concerning a particular topic (Dreher 2018, Frederiksen et al. 2018). The review focused on capturing dimensions of student leaders' good governance practices. The list of references given in Table 2 is determined by the credibility and reputation of the sources used, namely, reputable journals and publishers. The literature review found five possible dimensions of good governance practices, which include accountability, participation, effectiveness, efficiency, the rule of law, and transparency. The concepts mapped in the table were used to establish the elements of effective governance practices.

The professionals addressed whether the items were necessary for expert consultation. The CVR was calculated in accordance with the formula suggested by Lawshe (1975) (see Appendix B). The professionals also had an opportunity to comment on the structure and wording of the items considered. For pilot testing, quantitative analysis of pilot test data was carried out utilizing descriptive statistics to assess the instrument's reliability, validity, and internal consistency. Thus, a combined method was developed that will produce integrated tools that provide both qualitative depth and quantitative rigor to deeply evaluate the practice of good governance among students' leaders within educational institutions.

The validation phase involved content validation and construct validation. Content validation ensured that the assessment instrument comprehensively covers the relevant domains of good governance practices among student leaders, while construct validation assesses the appropriateness of the instrument to the constructs of interest (i.e., accountability, consensus orientation, equity and inclusiveness, adherence to the rule of law, responsiveness, and transparency). Assessing the items' appropriateness and the internal consistency of the constructs the instrument examined were the main goals of this study phase. The various statistical tests conducted include the following. Exploratory factor analysis (EFA) was used in such a way that the reliability of the scale could be better because it identified the items that could be dropped. By evaluating the items' relationship to their respective components, the process determines the dimensionality of constructs or factors, especially when dimensionality data are scarce (Lacson & Dejos 2022).

To assess construct validity and confirm that the data were appropriate for factor analysis, the EFA used KMO and Bartlett's tests. In the KMO case, it is supposed to be above 0.70, as proposed by Dalgety et al. (2003). A reliability study was performed to look at the scores' stability and consistency, and statistical significance was established at $p = 0.05$. Cronbach's alpha was used to gauge each item's reliability; good internal consistency is indicated by values greater than 0.9 (Hinton et al. 2004). Confirmatory factor analysis (CFA) using CB-SEM in SmartPLS 4 was employed to examine the GGP scale's factor structure for student leaders, such that each dimension is statistically discrete, and that scale items load within their corresponding constructs, thereby ensuring that both discriminant validity and measurement accuracy exist.

Results and Discussion

The preliminary results of the analysis are described in this section. The validity and reliability of the scale were confirmed by exploratory and confirmatory factor analyses. The final model and validated scale items are also reviewed, as well as the findings of the discriminant validity evaluation utilizing the Fornell-Larcker criterion. A theoretical basis for comprehending how the validated constructs fit with the concepts of accountability, transparency, and strategic leadership in educational contexts is provided by these analyses, which are further interpreted through the lens of governance theories and educational leadership frameworks.

Preliminary analysis

Table 3 illustrates the degree and direction of the relationships across the five dimensions of good governance practices by summarizing the associations across the research variables using zero-order correlations and descriptive statistics. It unveiled some important positive associations with all five

dimensions of good governance practices. Accountability and participation (r=0.820, p<.01) produced the best correlations, indicating that student leaders who include others in governance are more responsible and accountable. There were moderate correlations between effectiveness and efficiency with the rule of law (r=0.572, p<.01) and with accountability (r=0.589, p<.01), showing that efficient leadership correlates with both observance of legal norms and responsible behavior. Transparency also had moderate positive relationships with accountability (r=0.544, p<01) and effectiveness and efficiency (r=0.412, p<.01), which suggests that openness in processes contributes to both ethical behavior and performance in student leadership.

Table 3.
Zero-order correlations and descriptive statistics of the initial study variables

Study variables	1	2	3	4	5
1. ACC	1	0.589**	0.820**	0.258**	0.544**
2. EFE	0.589**	1	0.559**	0.572**	0.412**
3. PRT	0.820**	0.559**	1	0.184**	0.400**
4. ROL	0.258**	0.572**	0.184**	1	0.312**
5. TRN	0.544**	0.412**	0.400**	0.312**	1
Mean	4.454**	4.543**	4.562**	4.578**	4.573**
Standard Deviation	0.509**	0.435**	0.440**	0.396**	0.442**

Note: ACC = Accountability; EFE = Effectiveness and Efficiency;
PRT = Participation; ROL = Rule of Law; TRN = Transparency.
Source: SPSS analysis results

The average scores of all the variables were 4.454 to 4.578, which showed that student leaders saw themselves as exhibiting high levels of good governance practices at all times. The standard deviations (0.396 to 0.509) imply low variability in responses, and thus the respondents shared a fairly similar conception of all the dimensions of good governance practices. In accordance with Hair et al.'s (2010) guidelines, factor analysis was judged necessary in light of these findings in order to confirm the latent structure of the suggested scale. According to Creswell & Creswell (2017), when instruments are developed, there is a need to come up with meaningful correlations in determining the validity of constructs.

The correlation of accountability and participation is also very strong, meaning that responsible governance among student leaders is closely connected to inclusive decision-making. These results are consistent with the research of Wise et al. (2020), which advanced the idea that participatory governance heightens accountability within higher learning institutions. Likewise, the middle-ground relationships between effectiveness and efficiency, on the one hand, and accountability and the rule of law, on the other, are not novel to the findings on Austin & Jones (2018), who hypothesized the transparent, law-abiding, and ethical process of efficient institutional governance. The good association that transparency has with accountability underpins research by George & Rose (2025), who pointed out openness as a motivator of ethical behavior and confidence in leadership.

In addition, the large mean scores in all dimensions of governance indicate that student leaders tend to maintain high governance practices, which is in line with Paraiso et al. (2025), who established that high self-perceptions of governance competence in student organizations are common. Lastly, the minimal difference in answers highlights that there was a commitment to the values of good governance among the student leaders, which is in line with Adole (2024) who observed that the norms of collective governance help to enhance leadership solidarity in academic circles.

**Exploratory factor analysis**

To identify the latent components, exploratory factor analysis (EFA) was carried out in IBM SPSS 24 using the maximum likelihood extraction technique, varimax rotation, and eigenvalues as the basis for factor retention. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is equivalent to 0.834,

as seen in Table 4. According to Kaiser's (1958) evaluation criteria, the value obtained is considered meritorious, indicating that the dataset satisfies the prerequisites for factor analysis. This indicates that the sample size would be large enough to be subjected to factor analysis, implying that the trend of correlations is relatively small. Thus, the factor analysis is likely to generate valid and distinct factors. Bartlett's (1954) Test of Sphericity indicated a Chi-square value of 4214.880 (df = 253, p < 0.000), confirming that the correlations among variables were sufficient for factor analysis. Because the result reached statistical significance, it can be concluded that the correlation matrix is not an identity matrix, signifying that the variables are sufficiently correlated for factor analysis. This finding is corroborated by the scree plot, which clearly demonstrates an inflection point supporting a five-factor model as the best representation of the data, as indicated at the fifth point of the curve (see Figure 1).

Table 4.
Kaiser–Meyer–Olkin (KMO) and Bartlett's Sphericity tests

Kaiser-Meyer-Olkin measure of sampling adequacy.		.834
Bartlett's test of sphericity	Approx. Chi-Square	4214.880
	df	253
	Sig.	.000

Source: SPSS analysis results

Scree Plot
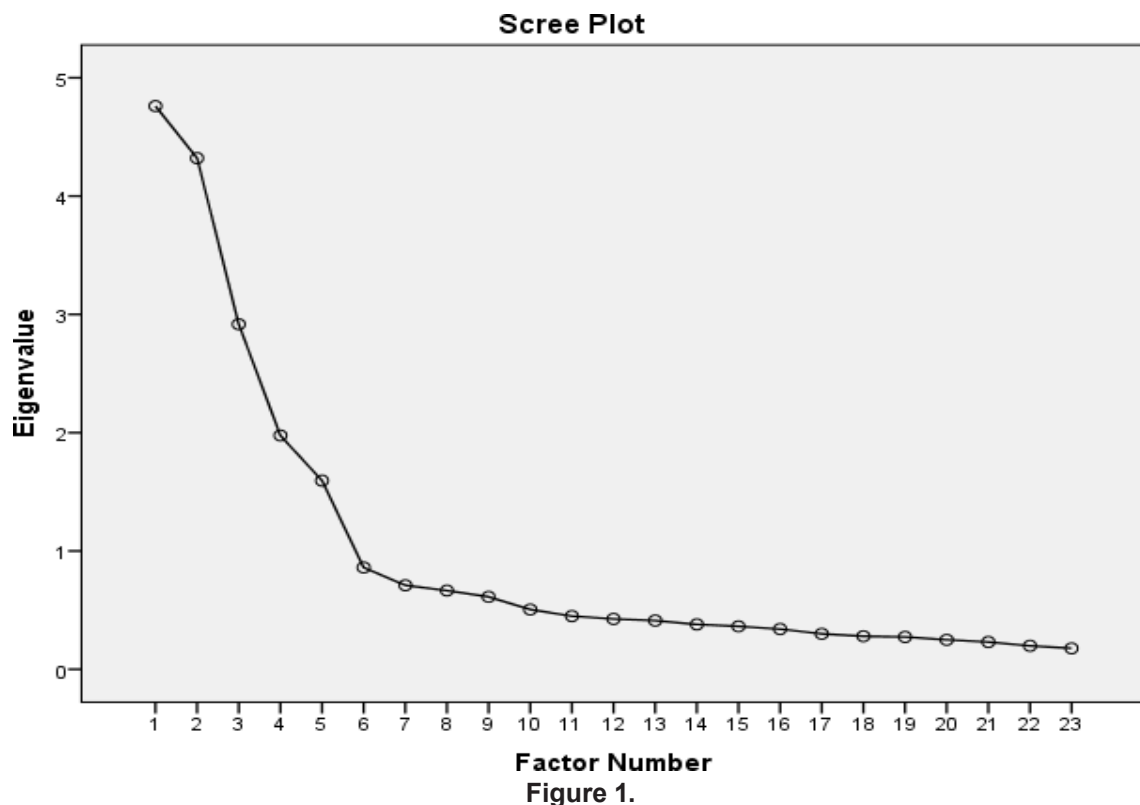
Figure 1.
Scree plot
Source: SPSS analysis results

Values of KMO above 0.80 are considered meritorious, which implies that the data set can be factorable and give credible constructs (Hair et al. 2019). According to Shrestha (2021), the Kaiser-Meyer-Olkin measure is used to assess whether the dataset is appropriate for factor analysis and whether the sample size is adequate. Values approaching 1.0 indicate strong factorability. KMO values within the 0.80–1.0 range signify that the data matrix is suitable for producing valid and dependable constructs using factor analysis. Similarly, the KMO and Bartlett's tests were used by Thao et al. (2022), reporting consistent results between the scale and survey data when assessing the motivation and loyalty aspect, and KMO was 0.667, indicating sufficient sampling adequacy and fit to the factor analysis.

Table 5 depicts the EFA results with a five-factor construct validity of the Good Governance Practices (GGP) scale with student leaders. The majority of the items had extensive factor loading, i.e., they best represent their own latent construct. A loading value equal to or greater than 0.70 signifies good representation (Hair et al. 2019), and most of the items in the table reached this value or higher. The internal consistency of the scale is indicated by communalities ranging from 0.493 to 0.898, which means that the factors account for a significant portion of item variance.

Results contribute toward the multidimensionality of good governance as indicated by major indicators of accountability, effectiveness, efficiency, participation, rule of law, and transparency principles in line with the global governance systems (United Nations Development Programme 1997). The EFA confirmed the psychometric quality of the GGP scale; thus, it is a potential tool in determining the governance behaviors of student leaders in learning institutions.

Table 5.
Exploratory Factor Analysis (EFA) results

Factor	Item	1	2	3	4	5	Communality	α
Accountability	ACC5	0.831					0.728	0.898
	ACC6	0.907					0.847	
	ACC7	0.784					0.686	
Effectiveness and Efficiency	EFE1		0.800				0.662	0.898
	EFE2		0.710				0.514	
	EFE3		0.724				0.528	
	EFE4		0.808				0.665	
	EFE5		0.749				0.565	
	EFE7		0.804				0.653	
Participation	PRT2			0.761			0.588	0.906
	PRT3			0.788			0.641	
	PRT4			0.886			0.798	
	PRT5			0.770			0.607	
	PRT6			0.781			0.634	
Rule of Law	ROL3				0.770		0.493	0.735
	ROL5				0.787		0.655	
	ROL7				0.779		0.686	
Transparency	TRN1					0.706	0.504	0.793
	TRN3					0.757	0.559	
	TRN7					0.867	0.785	

Source: SPSS analysis results

The EFA supported the five-factor structure of the GGP scale, showing reliable results with factor loadings between 0.710 and 0.907, all surpassing the 0.70 criterion for strong measures (Hair et al. 2019). With a considerable percentage of the varianwce in each item being explained, the scale's internal consistency, which ranged between 0.493 and 0.898, enhanced the items' communality ratings. Communalities and high loadings are important to demonstrate construct validity, and the results are consistent with the other validation studies (Schreiber 2021, Koç & Yavuz 2022). The complexity of the instrument, which is consistent with the ideas of global governance and is integrated with accountability, effectiveness, efficiency, participation, rule of law, and openness, underlines its importance in the educational leadership context (Adole 2024, Timidi & Okuro 2024). On the whole, the EFA gives substantial empirical support to the psychometric validity of the GGP scale, which validates it as a sound instrument in the measurement of the student leader's governance practices.

Confirmatory factor analysis

Confirmatory factor analysis (CFA) using SmartPLS 4 was a continuation of the evaluation on the scale structure. The results of this study provided evidence for the construct validity of the Good Governance Practices (GGP) Scale, which also supported those suggesting that the five-factor model was an excellent fit for their data. This model, which is depicted in Table 6, adequately captures good governance practice by student leaders. Model fit indices showed acceptable results: Ratio Chi-square/df (2.444) was less than maximum recommended value of 3.0 while values of RMSEA (0.054) and SRMR (0.038) were within acceptable limits.

Table 6.
Model fit indices

Fit index	Recommendation	Estimates
Chi-square/Degrees of Freedom (ChiSqr/df)	<3.000	2.444
Root Mean Square Error (RMSEA)	≤ 0.070	0.054
Standardized Root Mean Square Residual (SRMR)	≤ 0.080	0.038
Goodness-of-Fit Index (GFI)	≥ 0.900	0.930
Adjusted Goodness-of-Fit Index (AGFI)	≥ 0.900	0.909
Tucker-Lewis Index (TLI)	≥ 0.900	0.948
Comparative Fit Index (CFI)	≥ 0.900	0.957
Normed Fit Index (NFI)	≥ 0.800	0.929

Source: SmartPLS4 analysis result

Table 7.
CFA results of the final measurement model

Factor	Item	Standardized loadings	CR	AVE	α
Accountability	ACC5	0.850	0.900	0.749	0.898
	ACC6	0.906			
	ACC7	0.828			
Effectiveness and Efficiency	EFE1	0.807	0.897	0.589	0.895
	EFE2	0.711			
	EFE3	0.717			
	EFE4	0.818			
	EFE5	0.746			
	EFE7	0.800			
Participation	PRT2	0.777	0.904	0.651	0.902
	PRT3	0.812			
	PRT4	0.893			
	PRT5	0.766			
	PRT6	0.779			
Rule of Law	ROL3	0.690	0.820	0.606	0.818
	ROL5	0.808			
	ROL7	0.830			
Transparency	TRN1	0.694	0.780	0.571	0.793
	TRN3	0.669			
	TRN7	0.885			

Note: CR = Composite Reliability; AVE = Average Variance Extracted; α = Cronbach's Alpha
Source: SmartPLS4 analysis result

These findings collectively indicate that the hypothesized five-factor model is the best approximation of the factor structure. Furthermore, the high values of GPI (0.930) and AGFI (0.909), both above 0.90, also suggest a good fit. Finally, the TPI (0.948), CFI (0.957), and NFI values were far beyond the common standards, which indicates that the developed model is efficient and has domain validity. Thus, it can be justifiably concluded that the results indicate the devised scale was reliable and valid in gauging quality governance practices among student leaders in this context.

Table 7, derived through confirmatory factor analysis, indicates that all five factors reported high psychometric positive values. Standardized loadings between 0.669 and 0.906 (all above the recommended 0.50 by Hair et al. 2019) show that all items have their own considerable contribution to the respective factor. Composite reliability (CR) scores were found to be between 0.780 and 0.904 because the value is above the 0.70 mark, which indicates internal consistency among items within a given construct (Fornell & Lacker 1981). Likewise, Cronbach's alpha numbers were also within the reliability range of 0.793 to 0.902, which also confirms that the model employed to measure the variables is reliable. The findings validate that each item within the finalized scale effectively measures its intended construct. The average variance extracted (AVE) values were 0.571 -0.749, and all of them exceeded the cutoff of 0.50 or the level of relationship between items measuring the same construct (Fornell & Larcker 1981). The CFA confirms that the end-mile measurement model is valid and is good, and thus a suitable tool to measure the good governance practices by student leaders.

The CFA findings confirm significant construct validity, with all model fit indices within acceptable standards, suggesting an adequate model fit (Sahoo 2019, Kline 2023). The standardized 0.669-0.906 item loads exceeded 0.50, and it was concluded that all the items made significant contributions to their respective constructs (Hair et al. 2019). The study further examined reliability, obtaining composite reliability (CR) scores from 0.780 to 0.904 and Cronbach's alpha values ranging between 0.793 and 0.902, both of which are higher than the 0.70 criterion for satisfactory internal consistency (Karaman et al. 2023). Besides, the AVE values of 0.571-0.749 were also positive regarding convergent validity because they implied that the constructs sufficiently accounted for the variance of their measures (Cheung et al. 2024). These findings validate that the GGP scale is a psychometrically suitable scale that can be compared to the well-established and multidimensional governance and educational leadership research paradigm.

Discriminant validity Fornell-Larcker criterion

As shown in Table 8, the Fornell-Larcker criterion was applied to determine the discriminant validity of the five identified dimensions of good governance practices. Based on the criterion proposed by Fornell & Larcker (1981), discriminant validity is considered satisfactory when the square root of the AVE for each construct, represented diagonally, is greater than its correlation values with other constructs, demonstrating their empirical distinctiveness.

Table 8.
Discriminant validity Fornell-Larcker criterion

	1	2	3	4	5
Accountability	0.865				
Effectiveness and Efficiency	0.025	0.748			
Participation	0.350	-0.071	0.787		
Rule of Law	-0.011	0.089	0.008	0.778	
Transparency	-0.026	0.093	0.041	0.424	0.756

Source: SmartPLS4 analysis result

Additionally, the analysis confirmed discriminant validity because the square root values of the AVE, varying from 0.748 to 0.865, were greater than the inter-construct correlations, adhering to the criterion outlined by Hair et al. (2019). The square root of AVE of accountability is 0.865, larger than the square root of accountability and participation (0.350) and lack of transparency (- 0.026), which supports the

constructs' independence in terms of statistical and conceptual differences. Another indication that there is no multicollinearity and a sound structure of the measurement model is the presence of low or negative correlations. Similarly, the result above is also supported by Malhotra (2020), who found that the model is more discriminative in nature, i.e., each dimension of good governance practice is functioning as a separate and independent construct.

The CFA (Figure 2) confirms the five-factor structure of the Good Governance Practices (GGP) scale, which aligns with the results of EFA and further strengthens the validity of its constructs. The standardized factor loadings of all the latent variables were high, implying that the observed items provide a sound basis for their interpretation. The statements of items in Table 9 are grounded in behaviorally anchored practices, thereby intensifying the position of the scale within real-world student leadership contexts and making it more practically relevant for the governance assessment process.

Table 9.
Factor loadings for items based on exploratory factor analysis

| Items	Statements
Accountability	
ACC5	I take responsibility for my actions as a student leader.
ACC6	I answer to my peers and advisors for the decisions I make.
ACC7	I admit mistakes and work to correct them promptly.
Effectiveness and Efficiency	
EFE1	I complete my tasks on time to help our student organization achieve its goals effectively.
EFE2	I use resources wisely to avoid waste and ensure efficient use in student activities.
EFE3	I communicate clearly with my team to avoid confusion and increase our productivity.
EFE4	I regularly check the progress of our projects and make changes when needed.
EFE5	I delegate tasks to team members based on their strengths.
EFE7	I seek feedback to improve my leadership performance.
Participation	
PRT2	I actively attend and contribute to meetings and activities.
PRT3	I consistently attend and contribute to meetings and activities.
PRT4	I collaborate with fellow student leaders to achieve the organization's objectives.
PRT5	I volunteer for leadership roles and additional responsibilities when opportunities arise.
PRT6	I advocate for the interests and concerns of the students.
Rule of Law	
ROL3	I follow the rules and laws set by our student organization without exception.
ROL5	I support fair processes in all student government decisions.
ROL7	I hold myself and others accountable to the rules to maintain trust in our leadership.
Transparency	
TRN1	I share important information openly with all members of the student organization.
TRN3	I explain decisions clearly so everyone understands the reason behind them.
TRN7	I ensure that rules and policies are visible and accessible to all students.

Source: Literature review
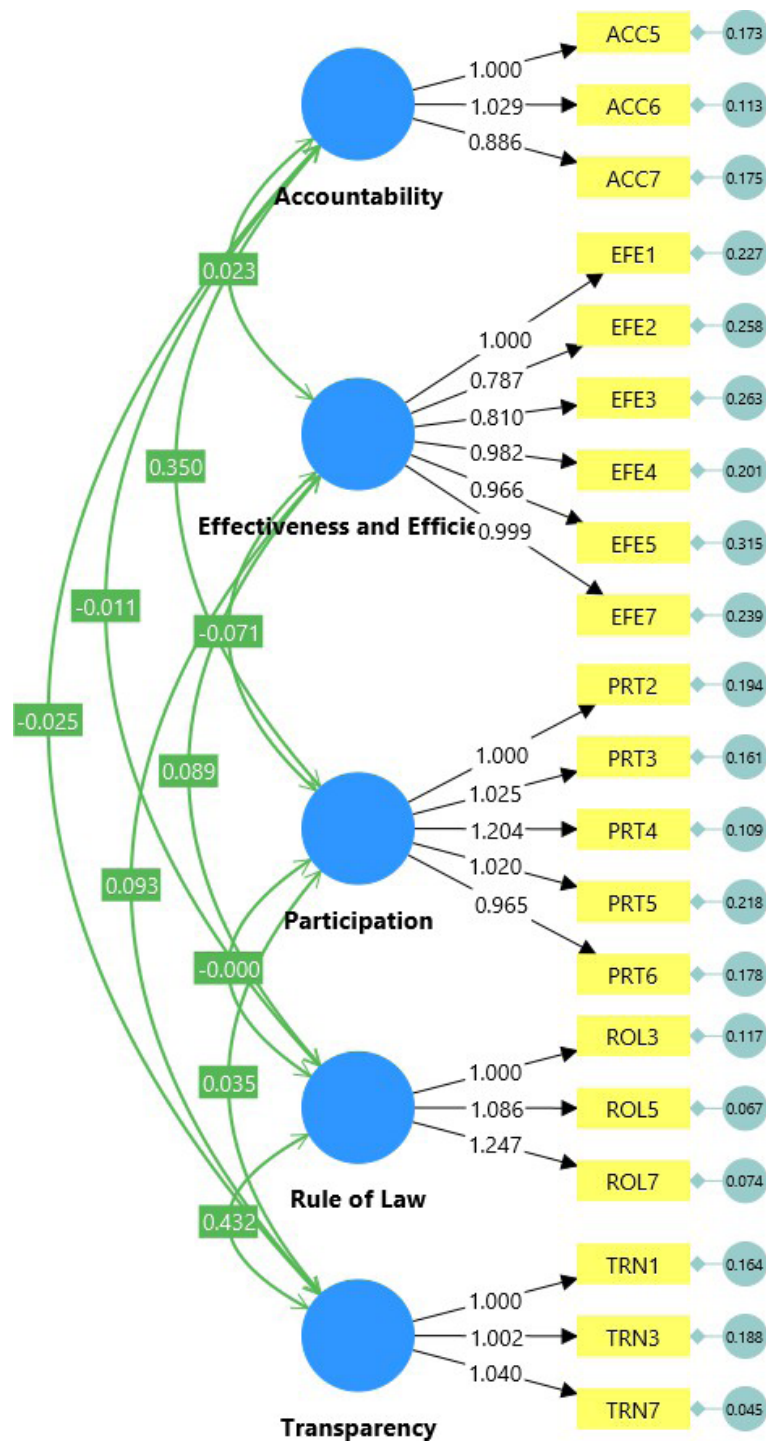
Figure 2.
CB-SEM confirmatory factor analysis
Source: SmartPLS4 analysis result

A construct is considered to exhibit discriminant validity if the square root of its average variance extracted (AVE) exceeds the extent of its correlations with other constructs. It demonstrates that there are empirical differences between each of the governance dimensions (Hair et al. 2019). This precision of measurement is indicative of best practices emphasized in the recent psychometric literature that suggests that both the Fornell-Larker criterion and the HTMT approach are needed to enhance the determination of discriminant validity (Henseler et al. 2018, Afthanorhan et al. 2021). For instance, a survey on governance scales has demonstrated discriminant validity, as observed by both the Fornell-Larcker criterion and the HTMT-ratio, which are methods for validating multimethod research designs (Acuña-Hurtado et al. 2024). Generally, it was confirmed that the validation guaranteed the structural validity of the GGP scale.

Theoretical discussion

To promote student leadership governance, the theoretical implications of this study emphasize the need to integrate theories of governance and frameworks of educational leadership. The above-mentioned principles are key in building moral, responsible, and effective governance institutions that are based on responsibilities such as transparency, participation, efficiency, and the rule of law, among others, all of which have their foundations in governance theories. The Good Governance Practices (GGP) scale is an instrument developed for this purpose, following these principles and ensuring that it safeguards internationally recognized governance norms. Educational leadership frameworks help in understanding where these principles fit into a specific context of student leadership within classrooms and make evident what student leaders are doing in facilitating inclusive leadership, ethical conduct, and engagement in decision-making processes. Integration provides a sound theoretical foundation for the heightened emphasis on research, indicating that governance assessment should have specialized tools that combine both ideals mentioned above and reality, including the leadership aspect. Thus, an integrated approach provides a general framework suitable for studying the complex nature of students' governance, with the application of theory, promoting a more serious debate around the chosen theme or area. In return, it adds more rigor to both the theoretical underpinnings and the practical aspects to the field.

Conclusion

The validity and reliability of the GGP scale were examined in the context of student leaders through rigorous statistical analysis in this study. Through exploratory factor analysis (EFA), a five-factor construct was identified, comprising accountability, effectiveness and efficiency, participation, rule of law, and transparency. These were supported by strong factor loadings (ranging from 0.70) and communalities of 0.493–0.898, which provide good evidence of construct validity. The constructs' structure was also tested through confirmatory factor analysis (CFA); fit indices showed good model fit (χ^2/df = 2.444, RMSEA = 0.054, SRMR = 0.038, CFI = 0.957, TLI = 0.948). And it also provided reliability measures, and convergent validity was demonstrated by significant values of composite reliability (0.780-0.904), Cronbach's alpha (0.793-0.902), and AVE (0.571-0.749).

Similarly, results based on the Fornell-Larcker criterion revealed adequate discriminant validity. The AVE square roots in this case (0.748 to 0.865) were higher than the inter-construct correlations and therefore confirmed discriminant validity of the scale. In terms of its distinct contribution, it was found that one can speak about the adaptation and validation of the Good Governance Practices (GGP) scale in relation to student leadership, despite governance principles not being often measured empirically with such instruments in this domain. These results support the conclusion that the GGP scale is a reliable psychometric and statistical instrument for assessing governance activities among student leaders, and that they expand the application of governance theory from institutional/governmental settings into the educational leadership context.

The study recommends the use of a newly created GGP scale as a psychometric tool designed for assessing and enhancing governance competencies among student leaders in HEIs. They provide an avenue for utilizing such tools not only for guidance on training leadership and policy formulation, but also to enrich the quality of student governance, which will mold the pathways toward competent student leaders. One of its limitations is that it focuses on student leaders from Philippine higher education institutions, which may limit the applicability of this finding to other educational contexts or settings. The study argues for the first time for the application of leadership theory to sound governance principles, and subsequently outlines a novel, multifaceted instrument developed by integrating governance concepts into diverse student leadership functions. The dimensionality of the instrument is checked using exploratory factor analysis and confirmed through factor analysis, which is content-specific to student leader roles at all academic levels, representing an innovative gap in the field of measuring good governance practices within the student leader context of educational institutions. These findings further ensured that the scale was a strong instrument with good psychometric properties, making it a valuable tool to inform ongoing research and practice in enhancing student leadership governance.

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Author Biography

Romel C. Mutya is an instructor at Cebu Technological University-Danao Campus, teaching biology and research subjects in undergraduate and graduate schools. He is the Research and Development Office Chair and a regular member of the National Research Council of the Philippines. His research interests include science education, social sciences, public administration, and educational management.