Exploring Stakeholder Perspectives on Socioemotional Well-Being in Engineering Faculties of Federal Polytechnics in Northeast Nigeria

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Abstract

Background: Understanding stakeholder perspectives on socioemotional well-being (SEWB) in engineering faculties of Nigerian federal polytechnics is crucial for fostering conducive and supportive learning environment that contributes to overall success of the polytechnics. This study explores stakeholder perspectives on six SEWB dimensions in five federal polytechnics (Bali, Bauchi, Damaturu, Kaltungo, and Mubi) in Northeast Nigeria. *Methodology:* Cross-sectional survey design was employed. The data collected from 260 respondents (academic staff, management staff, non-academic staff, and students) were analysed using the Kruskal-Wallis test and Dunn's post hoc analysis with Bonferroni and Holm corrections. *Results:* No significant differences were found in stakeholder perceptions of SEWB dimensions across groups. However, variations were observed across institutions for positive relationships ($\chi^2(4) = 12.374$, p = 0.015) and borderline differences in resilience ($\chi^2(4) = 8.456$, p = 0.076). Moderate effect sizes were found for certain pairings, indicating practical significance. *Discussion:* Findings suggest that while stakeholders share common understandings of SEWB dimensions, unique polytechnic context plays a crucial role in shaping perceptions of positive relationships. This refines stakeholder theory's assumption of distinct stakeholder views and highlights the need for tailored interventions to address specific relational challenges in each polytechnic. *Conclusion:* The study contributes to the literature on SEWB in Nigerian polytechnics, highlighting the need for context-specific interventions to enhance SEWB in polytechnic environments. Future research should explore the reasons behind variations in positive relationships and explore the factors influencing SEWB perceptions.

Keywords: Socioemotional well-being, Stakeholder theory, Nigeria, Polytechnics, Positive relationships, Resilience.

Introduction

Socioemotional well-being (SEWB) is a multidimensional construct reflecting an individual's emotional, social, and psychological health (Ryff, 1989). SEWB has been shown to be crucial for academic success, influencing key factors like motivation, resilience (Abaidoo *et al.*, 2021), and interpersonal relationships (Bechter *et al.*, 2023). For instance, studies indicate that students with high SEWB are more likely to report higher academic engagement and persistence (Su, 2021). SEWB is particularly important in higher education institutions, where both students and staff navigate highly demanding academic environments, often balancing academic workloads, personal stress, and professional development (Assor and Yitshaki, 2023; Kang, 2023). Increasing number of students in Nigeria suffer from mental health issues, highlighting the critical need for promoting SEWB in academic settings (Kukoyi *et al.*, 2022). SEWB, therefore, plays an essential role in helping individuals thrive academically and personally in these challenging environments.

Engineering faculties, in particular, present unique challenges to SEWB due to the demanding nature of the curriculum, long hours, and high expectations placed on both students and staff (Kamanda *et al.*, 2022). Indeed, engineering students consistently report some of the highest levels of academic stress across disciplines (Stevens *et al.*, 2007). An overwhelming portion of engineering students reported feeling overwhelmed by their academic workload, or at least experienced burnout at some point during their studies (Marquez and Garcia, 2023). Similarly, Bork and Mondisa (2022) found that engineering students are more likely to experience anxiety compared to peers in non-technical fields, contributing to declining academic performance and overall well-being. Faculty members are equally stressed, with workload, time pressure, and poor working conditions negatively impacting their SEWB (Eni, 2023a). However, Makelele (2024) seems to think otherwise. Also, the competitive nature of engineering can lead to feelings of isolation, loneliness, and a lack of belonging (Polmear *et al.*, 2024). This sense of detachment can undermine emotional resilience and foster mental health challenges, which, in turn, impede students' ability to fully engage with their studies.

However, the increasing importance of SEWB in higher education contrasts with a notable lack of studies focused on stakeholders' emotional experiences in engineering faculties (Lönngren *et al.*, 2024; Shiekh and Nieusma, 2023), polytechnic engineering faculties in Nigeria inclusive. Also, the extant SEWB research are mostly foreign (Casado *et al.*, 2016) and focused largely on students (Wornast, 2018); the few local studies (Elegbeleye *et al.*, 2021) have similarly prioritised students' challenges in engineering faculties. This tend overlooks the perspectives of key stakeholders, including academic, non-academic, and management staff, operating in over 40 polytechnic-domiciled engineering faculties in employing/enrolling thousands of staff and students annually (NBTE, 2019). As a result, little is known about how excessive workloads and pressure to publish impact academic's SEWB (Karma *et al.*, 2021); or how job stress and limited recognition affect non-academics' emotional health (Bhui *et al.*, 2016); or how the under-researched perspectives of management staff shape faculties' psychosocial climate (Berglund *et al.*, 2024; McLinton *et al.*, 2018; Moylan *et al.*, 2022), thereby severally and collectively hindering meaningful stakeholder support for well-being.

This study engages the forgoing research gaps by exploring the perspectives of various stakeholders on SEWB in engineering faculties of federal polytechnics in Northeast Nigeria. Thus, six dimensions of SEWB—emotional regulation, self-esteem, social support, sense of belonging, positive relationships, and resilience—were investigated. Thus, the study uncovers the perceptions of engineering faculty academic, non-academic, and management staff and students on SEWB in Nigerian polytechnics towards improved academic outcomes and SEWB for all.

Conceptual Overview of SEWB

SEWB is a multidimensional construct capturing the extent to which individuals experience positive about emotional health, social connections, and psychological well-being, all of which are essential for personal development and effective social functioning among students (Kang, 2023) and faculty (Assor and Yitshaki, 2023) alike. In educational settings, such as engineering faculties (Casado *et al.*, 2016; Lönngren *et al.*, 2024), SEWB is particularly important due to the influence of interpersonal interactions, stressors, and support systems on various stakeholders, including students, academic staff, non-academic staff, and management. SEWB typically encompasses several interrelated dimensions—such as emotional regulation, self-esteem, social support, sense of belonging, positive relationships, and resilience—that collectively shape the emotional and social experiences of individuals (Bericat, 2014). Each dimension contributes uniquely to an individual's overall SEWB.

Emotional regulation refers to individuals' ability to manage and respond to emotional experiences in a way that promotes psychological well-being and stability (Jofré-Barrera, 2022). It is a

critical aspect of SEWB, enabling individuals to cope with stress and maintain focus, productivity, and resilience in various contexts (Aldao, 2013; McRae and Gross, 2020). In settings like engineering faculties, stakeholders such as students and staff encounter academic pressures, project deadlines, and administrative challenges that demand effective emotional regulation to navigate stress and maintain professionalism (Baik *et al.*, 2019; Lönngren *et al.*, 2024). Effective emotional regulation is associated with higher levels of well-being and resilience (Pena-Sarrionandia *et al.*, 2015; Veljković *et al.*, 2020), whereas difficulties in this area can contribute to emotional distress and mental health issues (Aldao *et al.*, 2010; Yotsidi *et al.*, 2023).

Self-esteem, the evaluative aspect of self-perception, plays a critical role in both personal and professional well-being (Makelele, 2024). It involves the appraisal of one's own worth and is a key determinant of psychological well-being, influencing confidence in social roles and overall happiness (Power *et al.*, 2023). High self-esteem is associated with positive life outcomes, such as improved mental health, successful interpersonal relationships, and greater SEWB (Orth *et al.*, 2012). In academic settings, such as an engineering faculty, both students and staff may struggle with self-esteem due to the demanding curriculum, career pressures, and the evaluative nature of academic feedback (Ahmed *et al.*, 2021; Barbayannis *et al.*, 2022). For students, the rigor of academic tasks can lead to self-doubt, while for academic staff, self-esteem may fluctuate based on research output, teaching evaluations, and career progression (Stanfield and Tay, 2024). Non-academic staff, similarly, may experience variations in self-esteem based on their contributions to the faculty's goals and the recognition they receive from peers and supervisors (Ahmeti and Stankovska, 2023). Thus, self-esteem remains a vital component for overall well-being across various roles within academic institutions.

Social support refers to the availability of assistance from others and the perception of being part of a supportive social network, including family, friends, colleagues, and mentors (Kosi, 2021; Memon and Yusoff, 2022). It is essential for buffering against stress, fostering a sense of security, and promoting well-being by reducing feelings of isolation and enhancing coping mechanisms (Kosi, 2021). In engineering faculties, social support can be provided by peers, colleagues, and institutional policies aimed at promoting well-being (Elegbeleye *et al.*, 2021; Mahfud *et al.*, 2022). Students who feel supported by their peers and instructors are more likely to persevere through academic challenges (Memon and Yusoff, 2022), while academic and non-academic staff who receive support from colleagues and management are more resilient to stress and burnout (Mahfud *et al.*, 2022).

Sense of belonging refers to the feeling of being accepted and valued within a group or community, and is a critical dimension of SEWB (Ibarra, 2022). It satisfies fundamental human needs for connection and is strongly linked to mental health and overall well-being by mitigating loneliness and enhancing self-concept (Hansen-Brown *et al.*, 2022). In engineering faculties, fostering a strong sense of belonging among students, staff, and management is essential for promoting engagement and retention (Polmear *et al.*, 2024; Wilson and VanAntwerp, 2021). Students who feel they belong are more likely to engage in group work, participate in extracurricular activities, and persist in their studies, while for staff, a sense of belonging contributes to job satisfaction and loyalty to the institution (Greer, 2020; Naylor *et al.*, 2021).

Positive relationships refer to the quality of interpersonal connections that provide emotional fulfilment, support, and validation, fostering emotional well-being (Greer, 2020). These meaningful and supportive interactions act as a crucial resource during times of stress, enhancing psychological resilience (Jain *et al.*, 2022; Ozer *et al.*, 2022). In engineering faculties, where collaboration and teamwork are essential—whether among students working on projects or between staff and management implementing policies—positive relationships contribute to a culture of trust and

cooperation (Leary and DeRosier, 2012). This, in turn, enhances both productivity and overall well-being in the institution (Harwood, 2021).

Resilience is the ability to adapt and recover from adversity, closely related to other dimensions of SEWB such as emotional regulation and social support (Phillips-Berenstein *et al.*, 2023). Resilient individuals are better equipped to navigate challenges without significant detriment to their well-being, making the development of resilience essential for sustaining long-term well-being and coping with life's stressors (Afek *et al.*, 2020). In an engineering faculty, resilience is crucial for all stakeholders; students may face academic failures, academic staff contend with research rejections, and non-academic staff navigate administrative challenges (Kurete, 2020; Năstasă *et al.*, 2022). Developing resilience enables individuals to adapt to setbacks and continue striving toward their goals, thereby maintaining both personal and professional growth.

Theoretical Framework and Research Hypotheses

Stakeholder theory (Freeman, 1984) offers a valuable lens for understanding SEWB in higher education institutions (HEIs), particularly in the engineering faculties of Nigerian polytechnics (Usman and Adubasim, 2024). The theory posits that organisations should consider the interests of various stakeholders—such as employees, students, faculty members, non-academic staff, management, and the broader community—when striving for success (Freeman, 1984). In the context of SEWB, this theory implies that engineering faculties should foster an inclusive and supportive environment that caters to the needs and expectations of these diverse groups. The current study explores stakeholder perceptions of six dimensions of SEWB in northeast Nigerian polytechnics: emotional regulation (Jofré-Barrera, 2022), self-esteem (Makelele, 2024), social support (Kosi, 2021; Memon and Yusoff, 2022), sense of belonging (Ibarra, 2022), positive relationships (Greer, 2020), and resilience (Phillips-Berenstein *et al.*, 2023).

Understanding the perspectives of multiple stakeholder groups can illuminate factors that contribute to or detract from SEWB (Brown *et al.*, 2023). Each group brings unique challenges and insights into the emotional and psychological climate of engineering faculties, and addressing these perspectives is crucial for fostering a positive academic culture. For instance, students may require adequate academic support, mentoring, and social opportunities to enhance their SEWB (Chaudhry *et al.*, 2024), while faculty members may need sufficient resources, recognition, and professional development to sustain their own well-being (Askell-Williams *et al.*, 2013; Curren *et al.*, 2024). Meanwhile, non-academic staff may benefit from fair working conditions, job satisfaction, and opportunities for career growth (Majekodunmi and Olajide-Arise, 2024), and management staff may require effective leadership, clear communication, and a positive work environment to maintain an encouraging institutional culture (Kipasika, 2024). Thus, based on the stakeholder theory framework, we advance the following hypotheses:

H_1: *There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive emotional regulation.*

H_2: *There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive self-esteem.*

H_3: *There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive social support.*

H_4: *There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive sense of belonging.*

H_5: There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive positive relationships.

H_6: There is no discernible variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive resilience.

Methodology

Research Design:

Cross-sectional survey design (Vomberg and Klarmann, 2022) was employed to explore stakeholder perspectives on SEWB in engineering faculties of Nigerian polytechnics. Such surveys allow for data collection from a diverse sample of respondents at a single point in time (Vomberg and Klarmann, 2022), providing insights into the current state of SEWB among different stakeholder groups. Data was collected from four stakeholder groups, including academic staff (lecturers, instructors, and technicians), non-academic staff (works engineers, administrative staff, IT support, and technical staff), management staff (deans, heads of departments, and programme coordinators), and students (both National Diploma and Higher National Diploma Students). Two inclusion criteria were used (Rahman, 2023): a respondent must be affiliated with an engineering faculty in a federal polytechnic located in Northeast Nigeria, and must voluntarily be willing to participate in the study.

Study Sample:

A sample of 260 respondents drawn from the five federal polytechnics in Northeast Nigeria (Bali, Bauchi, Damaturu, Kaltungo, and Mubi). The distribution of respondents by polytechnics [Figure 1(a)] reveals that Federal Polytechnic Mubi accounts for 26.6% of the total sample, making it the largest group, followed by Bauchi with 20.2%, Damaturu with 19.8%, Bali with 19.4%, and Kaltungo with 17.1% (being the youngest federal polytechnic in the Northeast). In terms of stakeholder representation [Figure 1(b)], management staff make up a relatively small proportion across all locations (ranging from 3% to 9.3%), while academic staff contribute between 15.9% and 29.4%, and non-academic staff range from 24.4% to 36%. The largest group across all locations is students, who represent 37.7% to 44.8% of the total participants, reflecting their majority status in the sample.
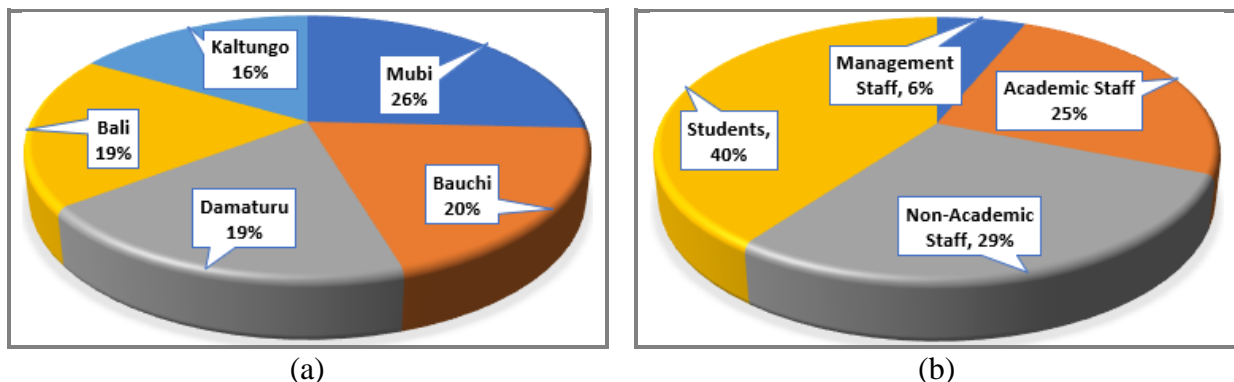

| (a) | (b) |

Figure 1. Distribution of Respondents by (a) Polytechnics and (b) Stakeholder Groups

Measures:

A self-report was developed to measure SEWB among the four stakeholder groups (Bericat, 2014). It consisted of adapted items assessing the six dimensions of SEWB. The emotional regulation dimension was assessed using items adapted from Emotion Regulation Questionnaire (ERQ: Gross and John, 2003), self-esteem dimension from the Rosenberg Self-Esteem Scale (RSES: Rosenberg, 1965), social support from the Social Support Rating Scale (SSRS: Zimet *et al.*, 1988), sense of belonging from the

Organisational Belonging Scale (OBS: Blau *et al.*, 2023), positive relationships (PN-RQS: Rogge *et al.*, 2017), and resilience from the Connor-Davidson Resilience Scale (CD-RISC: Connor and Davidson, 2003) and the Resilience at University Scale (RAUS: Turner *et al.*, 2020).

The resulting SEWB-Engineers Questionnaire (SEWB-EQ) was content-validated by a 6-member panel of experts in the fields of psychology and psychomerics (Schmitz and Storey, 2021). The resultant content validity indices for the questionnaire's scales, according to Zamanzadeh *et al.*'s (2015) decision threshold, were excellent: ERQ (CVI = 0.94), RSES (CVI = 0.97), SSRS (CVI = 0.92), OBS (CVI = 0.94), PN-RQS (CVI = 0.94), and CD-RISC (CVI = 0.92). Furthermore, the SEWB-EQ was pilot-tested using data from a sample of 31 respondents ($\bar{x}_{age}$ = 35.08 $\pm$ 6.87) to assess the internal consistency reliability of its constituent scales based on the Guttman's (1945) λ_4 in JASP. The results indicate that the ERQ (λ_4 = 0.83), RSES (λ_4 = 0.88), SSRS (λ_4 = 0.94), OBS (λ_4 = 0.79), PN-RQS (λ_4 = 0.80), and CD-RISC (λ_4 = 0.91) demonstrate good to excellent internal consistency. We, therefore, adjudge the scales as reliable.

Data Analysis:

We analysed the data in JASP. Descriptive statistics were calculated as summaries of respondents' demographics and their perceptions of the SEWB dimensions. The six null hypotheses were tested using the Kruskal-Wallis one-way analysis of variance by ranks (1952) at α = 0.05 to compare SEWB scores across the four stakeholder groups. This non-parametric test statistic was used due to its robustness to violations of normality assumptions in the dataset (Nwobi and Akanno, 2021; Siegel, 1956). Consequently, test for homogeneity of variances was not conducted (Okoye and Hosseini, 2024). However, pairwise comparisons between the groups were conducted using Dunn's (1964) post hoc test to identify which specific pairs of polytechnics differ significantly with respect to the study's variates. Effect sizes were interpreted based on Lovakov and Agadullina's (2021) guidelines.

Results

Descriptive Statistics:

The descriptive analysis in Table 1 revealed significant variations in stakeholder perceptions of SEWB across the four stakeholder groups. Management staff consistently reported higher levels of sense of belonging ($\bar{x}$ = 3.125 $\pm$ 0.855), positive relationships ($\bar{x}$ = 3.281 $\pm$ 0.955), and resilience ($\bar{x}$ = 3.330 $\pm$ 0.798) compared to other groups. Surprisingly however, they also reported lower levels of emotional regulation ($\bar{x}$ = 1.920 $\pm$ 0.578) and social support ($\bar{x}$ = 2.089 $\pm$ 0.542) compared to other groups. Academic staff reported the highest levels of emotional regulation ($\bar{x}$ = 2.204 $\pm$ 0.906) and social support ($\bar{x}$ = 2.042 $\pm$ 0.743), but lower levels of sense of belonging ($\bar{x}$ = 2.998 $\pm$ 1.015), positive relationships ($\bar{x}$ = 3.179 $\pm$ 0.836), and resilience ($\bar{x}$ = 3.321 $\pm$ 0.998). Non-academic staff reported the highest levels of positive relationships ($\bar{x}$ = 3.097 $\pm$ 0.924) and resilience ($\bar{x}$ = 3.476 $\pm$ 0.834), but lower levels of sense of belonging ($\bar{x}$ = 3.164 $\pm$ 0.885) and emotional regulation ($\bar{x}$ = 1.998 $\pm$ 0.729). Students reported the highest levels of sense of belonging ($\bar{x}$ = 3.162 $\pm$ 0.914) and emotional regulation ($\bar{x}$ = 2.108 $\pm$ 0.719), but lower levels of positive relationships ($\bar{x}$ = 3.153 $\pm$ 0.854) and social support ($\bar{x}$ = 2.104 $\pm$ 0.835). These findings highlight the importance of addressing the specific needs of each stakeholder group to enhance their overall well-being.

Normality:

We tested for normality using the Shapiro-Wilk test (Shapiro *et al.*, 1968). The results revealed data for sense of belonging (W = 0.977, p < .001), emotional regulation (W = 0.951, p < .001), self-esteem (W = 0.976, p < .001), and social support (W = 0.952, p < .001) are not normally distributed, with all p < 0.05.

Similarly, data for positive relationships (W = 0.988, *p* = 0.028) and resilience (W = 0.981, *p* = 0.002) also significantly deviated from normality, though with slightly higher *p*-values. Overall, the study data are not normally distributed, suggesting the need for non-parametric statistical tests for further analysis. Accordingly, the non-parametric Kruskal-Wallis one-way analysis of variance by ranks was used.

Table 1. Descriptive Statistics

Variables	Stakeholders	Mean	SE	SD
Sense of Belonging	Management Staff	3.125	0.214	0.855
	Academic Staff	2.998	0.126	1.015
	Non-Academic Staff	3.164	0.102	0.885
	Students	3.162	0.090	0.914
Positive Relationships	Management Staff	3.281	0.239	0.955
	Academic Staff	3.179	0.104	0.836
	Non-Academic Staff	3.097	0.107	0.924
	Students	3.153	0.084	0.854
Emotional Regulation	Management Staff	1.920	0.145	0.578
	Academic Staff	2.204	0.112	0.906
	Non-Academic Staff	1.998	0.084	0.729
	Students	2.108	0.071	0.719
Self-Esteem	Management Staff	2.711	0.242	0.967
	Academic Staff	2.575	0.100	0.805
	Non-Academic Staff	2.583	0.103	0.894
	Students	2.630	0.085	0.871
Resilience	Management Staff	3.330	0.199	0.798
	Academic Staff	3.321	0.124	0.998
	Non-Academic Staff	3.476	0.096	0.834
	Students	3.306	0.091	0.931
Social Support	Management Staff	2.089	0.135	0.542
	Academic Staff	2.042	0.092	0.743
	Non-Academic Staff	2.074	0.091	0.784
	Students	2.104	0.082	0.835

Kruskal-Wallis Tests:

The Kruskal-Wallis test (Table 2) revealed no discernible variation in how different stakeholder groups (management staff, academic staff, non-academic staff, and students) perceive the six dimensions of SEWB: emotional regulation ($\chi^2(3)$ = 1.702, *p* = 0.636), self-esteem ($\chi^2(3)$ = 0.374, *p* = 0.945), social support ($\chi^2(3)$ = 0.316, *p* = 0.957), sense of belonging ($\chi^2(3)$ = 1.302, *p* = 0.729), positive relationships ($\chi^2(3)$ = 0.239, *p* = 0.971), and resilience ($\chi^2(3)$ = 2.154, *p* = 0.541). These findings suggest that stakeholder perceptions of SEWB are relatively consistent across the four groups. Furthermore, the effect sizes [assessed using rank epsilon-squared (ε^2)] for all variables were small, indicating negligible magnitude in perspectival differences along with minimal practical significance: emotional regulation (rank ε^2 = 0.007, 95% ci [8.050×10^{-4}, 0.047]), self-esteem (rank ε^2 = 0.001, 95% ci [8.692×10^{-4}, 0.034]), social support (rank ε^2 = 0.001, 95% CI [8.030×10^{-4}, 0.041]), sense of belonging (rank ε^2 = 0.005, 95% ci [0.002, 0.056]), positive relationships (rank ε^2 = 9.230×10^{-4}, 95% ci [8.920×10^{-4}, 0.043]), and resilience (rank ε^2 = 0.008, 95% ci [0.002, 0.050]).

Table 2. Kruskal-Wallis Test for Stakeholder Groups

SEWB Dimensions	Statistic	*df*	*p*	95% CI for Rank ε^2		
				Rank ε^2	Lower	Upper
Sense of Belonging	1.302	3	0.729	0.005	0.002	0.056
Positive Relationships	0.239	3	0.971	9.230×10^{-4}	8.920×10^{-4}	0.043
Emotional Regulation	1.702	3	0.636	0.007	8.050×10^{-4}	0.047
Self-Esteem	0.374	3	0.945	0.001	8.692×10^{-4}	0.034
Resilience	2.154	3	0.541	0.008	0.002	0.050
Social Support	0.316	3	0.957	0.001	8.030×10^{-4}	0.041

The Kruskal-Wallis test was also used in examining the differences in the perceptions of SEWB across five polytechnics studied. The results in Table 3 revealed statistically significant differences for positive relationships ($\chi^2(4) = 12.374$, $p = 0.015$), suggesting that stakeholders' perceptions of positive relationships vary across institutions. Resilience showed a borderline significant difference across five institutions studied ($\chi^2(4) = 8.456$, $p = 0.076$), suggesting that resilience levels vary among the federal polytechnics but do not reach the conventional threshold for statistical significance. However, no statistically significant differences were found for the other dimensions: sense of belonging ($\chi^2(4) = 7.617$, $p = 0.107$), emotional regulation ($\chi^2(4) = 2.225$, $p = 0.694$), self-esteem ($\chi^2(4) = 4.589$, $p = 0.332$), and social support ($\chi^2(4) = 2.685$, $p = 0.612$). Interestingly, the effect sizes for positive relationships ($\varepsilon^2 = 0.048$, 95% CI [0.017, 0.133]). social support ($\varepsilon^2 = 0.010$, 95% CI [0.004, 0.062]), and for sense of belonging ($\varepsilon^2 = 0.029$, 95% CI [0.008, 0.112]) are moderate, indicating meaningful variations in stakeholder perceptions of the three variates across some polytechnics. The effect sizes for the remaining dimensions are negligible: emotional regulation ($\varepsilon^2 = 0.009$, 95% CI [0.002, 0.059]), self-esteem ($\varepsilon^2 = 0.018$, 95% CI [0.006, 0.077]), resilience ($\varepsilon^2 = 0.033$, 95% CI [0.012, 0.108]). These findings highlight the importance of addressing the specific needs of stakeholders in each polytechnic to enhance their overall well-being.

Table 3. Kruskal-Wallis Test by Polytechnics

SEWB Dimensions	Statistic	*df*	*p*	95% CI for Rank ε^2		
				Rank ε^2	Lower	Upper
Sense of Belonging	7.617	4	0.107	0.029	0.008	0.112
Positive Relationships	12.374	4	0.015	0.048	0.017	0.133
Emotional Regulation	2.225	4	0.694	0.009	0.002	0.059
Self-Esteem	4.589	4	0.332	0.018	0.006	0.077
Resilience	8.456	4	0.076	0.033	0.012	0.108
Social Support	2.685	4	0.612	0.010	0.004	0.062

Dunn's Post Hoc Comparisons:

The Kruskal-Wallis test results by polytechnics revealed one significant and one borderline differences in stakeholders' perceptions of positive relationships and resilience, respectively, along with several moderate effect sizes. For this reason, we performed Dunn's post hoc analysis [along with Bonferroni's (p_{bonf}) and Holm's (p_{holm}) corrections of the relevant *p*-values] to identify which specific pairs of polytechnics differ significantly regarding the study's variates (Agbangba *et al.*, 2024; Staffa and Zurakowski, 2020). The results, displayed in Table 4, revealed significant differences between polytechnics on the dimensions of sense of belonging, positive relationships, and resilience. For sense of belonging, significant differences were found between Bauchi and Bali (z = 2.384, *p* = .017) and Bauchi and Kaltungo (z = 2.231, *p* = .026), with the rank-biserial correlation (*rrb*) [Bauchi and Bali (*rrb* = .254)

and Bauchi and Kaltungo (rrb = .261)] suggesting small to moderate effects (Wendt, 1972). However, these differences were not significant after p_{bonf} and p_{holm} corrections. For positive relationships, significant differences were observed between Mubi and Bauchi (z = 2.878, p = .004), as well as between Bauchi and Bali (z = -3.177, p = .001), both of which remained significant after corrections (p_{bonf} = .04, p_{holm} = .036 for Mubi-Bauchi; p_{bonf} = .015, p_{holm} = .015 for Bauchi-Bali). Furthermore, the correlation results for the Mubi–Bauchi (rrb = .313) and Bauchi–Bali (rrb = .369) pairs show moderate effect sizes, which remained significant even after p_{bonf} and p_{holm} corrections, indicating notable differences in perceptions. Also, Bauchi and Damaturu showed a significant difference (z = -2.014, p = .044) but with a smaller effect size (rrb = .237), though these were not significant after p_{bonf} and p_{holm} corrections. In the resilience dimension, significant differences were found between Mubi and Damaturu (z = 2.507, p = .012) and Mubi and Bali (z = 2.327, p = .020) along with moderate effects (Mubi–Damaturu: rrb = .250; Mubi–Bali: rrb = .263), but these were not significant after p_{bonf} and p_{holm} adjustments.

Table 4. Dunn's Post Hoc Comparisons by Polytechnics

Variates	Comparison	z	Wi	Wj	*rrb*	*p*	*p*bonf	*p*holm
Sense of Belonging	Mubi - Bauchi	-1.201	135.194	151.951	0.148	0.230	1.000	1.000
	Mubi - Damaturu	0.528	135.194	127.790	0.061	0.598	1.000	1.000
	Mubi - Bali	1.350	135.194	116.133	0.145	0.177	1.000	1.000
	Mubi - Kaltungo	1.222	135.194	117.267	0.159	0.222	1.000	1.000
	Bauchi - Damaturu	1.617	151.951	127.790	0.187	0.106	1.000	0.848
	Bauchi - Bali	2.384	151.951	116.133	0.254	0.017*	0.171	0.171
	Bauchi - Kaltungo	2.231	151.951	117.267	0.261	0.026*	0.257	0.231
	Damaturu - Bali	0.772	127.790	116.133	0.104	0.440	1.000	1.000
	Damaturu - Kaltungo	0.674	127.790	117.267	0.071	0.500	1.000	1.000
	Bali - Kaltungo	-0.072	116.133	117.267	0.021	0.942	1.000	1.000
Positive Relationships	Mubi - Bauchi	2.878	141.649	101.480	0.313	0.004**	0.04*	0.036*
	Mubi - Damaturu	0.717	141.649	131.590	0.075	0.474	1.000	1.000
	Mubi - Bali	-0.536	141.649	149.214	0.058	0.592	1.000	1.000
	Mubi - Kaltungo	1.137	141.649	124.953	0.126	0.255	1.000	1.000
	Bauchi - Damaturu	-2.014	101.480	131.590	0.237	0.044*	0.440	0.352
	Bauchi - Bali	-3.177	101.480	149.214	0.369	0.001**	0.015*	0.015*
	Bauchi - Kaltungo	-1.509	101.480	124.953	0.166	0.131	1.000	0.855
	Damaturu - Bali	-1.167	131.590	149.214	0.142	0.243	1.000	1.000
	Damaturu - Kaltungo	0.425	131.590	124.953	0.049	0.671	1.000	1.000
	Bali - Kaltungo	1.546	149.214	124.953	0.177	0.122	1.000	0.855
Resilience	Mubi - Bauchi	1.101	149.127	133.765	0.120	0.271	1.000	1.000
	Mubi - Damaturu	2.507	149.127	113.940	0.250	0.012*	0.122	0.122
	Mubi - Bali	2.327	149.127	116.276	0.263	0.02*	0.200	0.180
	Mubi - Kaltungo	1.094	149.127	133.070	0.134	0.274	1.000	1.000
	Bauchi - Damaturu	1.326	133.765	113.940	0.151	0.185	1.000	1.000
	Bauchi - Bali	1.164	133.765	116.276	0.137	0.244	1.000	1.000
	Bauchi - Kaltungo	0.045	133.765	133.070	0.006	0.964	1.000	1.000
	Damaturu - Bali	-0.155	113.940	116.276	0.039	0.877	1.000	1.000
	Damaturu - Kaltungo	-1.225	113.940	133.070	0.157	0.221	1.000	1.000
	Bali - Kaltungo	-1.070	116.276	133.070	0.135	0.285	1.000	1.000

*p < .05, **p < .01; ***Note:*** Rank-biserial correlation based on individual Mann-Whitney tests (Wendt, 1972).

Discussions

The findings of the study indicate that there is no significant difference in stakeholder perceptions of emotional regulation across various groups (management staff, academic staff, non-academic staff, and students) in federal polytechnics located in Northeast Nigeria. Similarly, perceptions of emotional regulation did not significantly differ among the five polytechnics studied. These results support the null hypothesis (H_1) that posited no significant variation in stakeholder perceptions of emotional regulation. These findings align with previous research suggesting a shared understanding of emotional processes in educational settings (Aldao *et al.*, 2010; McRae and Gross, 2020). However, they contradict earlier studies indicating variability in perceptions among stakeholder groups, particularly highlighting the unique emotional experiences of students compared to academic staff (Baik *et al.*, 2019; Moylan *et al.*, 2022). The results challenge the stakeholder theory's assumption of distinct views shaped by unique experiences and roles in higher education, implying a collective understanding of the importance of emotional regulation. This suggests that interventions aimed at improving emotional regulation could be uniformly implemented across stakeholder groups, fostering a supportive environment conducive to emotional well-being.

Regarding the second null hypothesis (H_2), the results indicate no discernible variation in the perception of self-esteem among the quartet of stakeholders in federal polytechnics in Northeast Nigeria. Also, no significant differences were found in self-esteem perceptions across the five federal polytechnics studied. These findings support H_2. This lack of variation suggests that self-esteem is perceived relatively uniformly across diverse groups and polytechnics, reflecting a shared understanding of self-esteem within the academic community, which may be attributed to shared educational and professional environments. These findings are consistent with previous studies highlighting the importance of self-esteem in academic settings (Orth *et al.*, 2012; Yotsidi *et al.*, 2023). Unlike prior studies reporting variability in self-esteem based on factors like gender or social background (Makelele, 2024), this research found no significant differences in stakeholder perceptions of self-esteem, thereby supporting stakeholder theory's (Freeman, 1984) position that institutions successfully aligned the needs and values of various stakeholders, creating a balanced academic ecosystem. In terms of practical implications, the homogeneity in self-esteem perceptions could inform the design of broad-based initiatives aimed at enhancing SEWB without extensive tailoring for specific groups.

The study also confirms H_3, showing no discernible variation in how stakeholders perceive social support. Similarly, no significant differences were found across five federal polytechnics, although with a small positive effect size. These results challenge previous research, which often suggested that hierarchical roles in educational institutions lead to differences in social support perceptions (Block and Funder, 1986; Ross *et al.*, 1999). The uniformity of perceptions across stakeholder groups contrasts with assumptions in stakeholder theory (Freeman, 1984), which posits that stakeholder interests vary. However, these findings align with an extension of the theory that highlight shared experiences among stakeholders (Schubert and Willems, 2020). In practice, these results suggest that polytechnics could implement broad-based social support initiatives without tailoring them to specific groups, as uniform policies are likely to yield similar outcomes across various stakeholders.

The results of H_4 tests indicate no significant variation in the perception of *sense of belonging* among stakeholders in federal polytechnics in Northeast. Also, no statistically significant differences were observed across the five federal polytechnics studied, though the effect size here was moderate. This is consistent with Freeman's (1984) stakeholder theory, reinforcing that all stakeholder groups— regardless of rank—are integral to fostering a cohesive institutional culture. These results contrast with past research, such as Master *et al.*'s (2021) findings on gender-based disparities in engineering and

Schell's (2016) observations on perspectival divergence in engineering leadership, yet align with Carrigan *et al.*'s (2018) in affirming the importance of shared experiences across groups. This consistency suggests that polytechnic environments may not exhibit the deep divides seen in other higher education settings. These findings could inform policies that focus on inclusivity across all stakeholder groups in polytechnics, promoting institutional reforms for overall SEWB. Practically, the findings could trigger interventions geared towards cohesive stakeholder engagement for enhanced collective sense of belonging, thus contributing to the broader objectives of educational equity and mental well-being (Arslan *et al.*, 2020).

Interestingly, the study's findings indicate no significant variation in the perceptions of stakeholders about positive relationships in polytechnics, thus supporting H_5 and aligning with the notion of a shared institutional culture or experience (Carrigan *et al.*, 2018). However, significant differences were observed across institutions with a moderate effect size (ε^2 = 0.048), suggesting that institutional context plays a crucial role in shaping stakeholders' perceptions of SEWB (Glückler and Bathelt, 2017). While previous studies (e.g., Langrafe *et al.*, 2020; Snijders *et al.*, 2021; Snijders *et al.*, 2020) generally support the idea that positive relationships in educational institutions lead to beneficial outcomes such as student engagement, loyalty, and academic success, they do not indicate significant variation in stakeholder perceptions, thus reflecting the initial result of no significant variation in how stakeholders from federal polytechnics in Northeast Nigeria perceive positive relationships in institutions. Nevertheless, these findings expand on works of Helliwell and his colleague (Helliwell, 2014; Helliwell and Putnam, 2004) highlighting the importance of context in understanding well-being. While they align with Stakeholder Theory (Freeman, 1984), emphasising diverse stakeholder interests, they also underscore the need for tailored institutional policies to foster SEWB, particularly in polytechnics.

Regarding H_6, no significant variation was found in resilience perceptions among management staff, academic staff, non-academic staff, and students, supporting the position of the Stakeholder Theory (Freeman, 1984) and suggesting consensus across these groups. However, a borderline variability with a negligible effect size was observed across the five polytechnics studied, indicating slight variations, perhaps due to institutional contexts. The findings align with empirical evidence (e.g., Brewer *et al.*, 2022; de los Reyes *et al.*, 2022; Eni, 2023b) highlighting that resilience in higher education is shaped by both shared practices and individual engagement. This underscores the need for interventions that balance universal strategies, such as promoting a cohesive organisational culture, with context-specific approaches tailored to institutional challenges. Thus, while broad resilience policies are essential, polytechnics must also adapt to their unique needs, ensuring resilience strategies are comprehensive and flexible.

Finally, results of the Dunn's post hoc tests further underscore the importance of context-specific variations in shaping perceptions of positive relationships, while affirming the consistency of resilience and belonging perceptions across stakeholder groups. This suggests the need for customised interventions to address specific relational challenges in each polytechnic (Adekola *et al.*, 2020; Caniels, 2022; Cui *et al.*, 2023; Kunzler *et al.*, 2020). Such interventions can enhance SEWB and foster a unified and resilient organisational culture (Ang *et al.*, 2021; Blessin *et al.*, 2022; Las Hayas *et al.*, 2019). These insights can inform policies and practices aimed at strengthening stakeholder collaboration and communication, promoting institutional cohesion and adaptability (Brewer *et al.*, 2019; Durso *et al.*, 2021). The findings refine Stakeholder Theory (Freeman, 1984) by highlighting the need for organisations to remain attentive to the specific needs and perceptions of different stakeholder groups, ensuring inclusive and adaptive policies that cater to diverse socioemotional needs.

Conclusions

This study investigated stakeholder perspectives on SEWB in engineering faculties of federal polytechnics in Northeast Nigeria. The findings provide insights into how various stakeholder groups perceived the six dimensions of SEWB: emotional regulation, self-esteem, social support, sense of belonging, positive relationships, and resilience. The findings suggest that while stakeholders share common understandings of SEWB dimensions, individual polytechnic context plays crucial roles in shaping perceptions of positive relationships among the stakeholders. Theoretically, the results modify some aspects of the Stakeholder Theory (Freeman, 1984), suggesting that stakeholders share a collective understanding of SEWB, particularly in dimensions like emotional regulation, self-esteem, and social support. However, institutional variability in perceptions of positive relationships and resilience underscores the need for context-specific analyses within the stakeholder framework, aligning with recent implicit extensions of Stakeholder Theory (Schubert and Willems, 2020).

Practically, findings of the study have significant implications for educational policymakers and administrators. Broad-based interventions can effectively promote emotional regulation, self-esteem, and social support across stakeholder groups. However, targeted interventions are necessary to address relational challenges and resilience-building in specific polytechnics, considering unique institutional contexts. Accordingly, future research should explore factors contributing to institutional differences in perceptions of positive relationships and resilience. Qualitative and longitudinal studies may also provide deeper insights into specific challenges and strengths of polytechnics and assess how SEWB perceptions evolve over time. Also, research could investigate intersectionality of stakeholder characteristics and explore strategies to enhance SEWB in engineering faculties, addressing unique challenges identified in this study.

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