

Research Article

Cite this article: Parrales Poveda, M. L., Sornoza-Parrales, D., Sumba Bustamante, R. Y., & Santistevan Villacreses, K. L. (2025). Business Administration Students' Perceptions of Formative Assessment as an Instructional Tool. *Educational Process: International Journal*, 18, e2025521. <https://doi.org/10.22521/edupij.2025.18.521>

Received July 28, 2025

Accepted October 5, 2025

Keywords: Higher education, feedback (learning), evaluation methods, learning processes, formative assessment

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Business Administration Students' Perceptions of Formative Assessment as an Instructional Tool

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Abstract

Background/purpose. Formative assessment supports competency development and self-regulated learning in higher education, yet evidence on business administration students' perceptions (especially in Latin American contexts) remains limited. This study examined perceptions of formative assessment to identify improvement areas and inform pedagogy in business administration programs.

Materials/methods. A cross-sectional, descriptive–correlational survey was administered to 112 fourth-, sixth-, and seventh-semester business administration students at a university in Ecuador. An adapted Students' Perceptions of Formative Assessments (SPFA) instrument assessed five conceptual dimensions: congruence, authenticity, consultation, transparency, and accommodation. Operationally, Part A (discipline-specific knowledge) consisted of five subscales, while Part B (self-directed learning skills) combined transparency and accommodation, resulting in four subscales. Analyses included descriptive statistics, Spearman correlations among subscales, Pearson correlations with age, and independent-samples t-tests by gender.

Results. Students reported moderately positive perceptions across all dimensions ($M = 3.64\text{--}3.74$, 1–5 scale). For discipline-specific knowledge, congruence was highest; for self-directed learning, authenticity was highest, while consultation was lowest across parts. Intercorrelations among dimensions were strong and significant ($r_s = .709\text{--}.947$), indicating a holistic perception of formative assessment. Neither age nor gender was significantly associated with perceptions. Internal consistency was excellent across subscales ($\alpha = .973\text{--}.989$)

Conclusion. Students value formative assessment but identify opportunities to strengthen authenticity and consultation. Recommendations include embedding authentic, professionally relevant tasks, increasing student participation in co-constructing and clarifying evaluative criteria, and reinforcing alignment among outcomes, activities, feedback, and assessment practices.

1. Introduction

Formative assessment is a cyclical and continuous process through which information related to student learning is collected and analyzed to ensure timely feedback and facilitate the adaptation of both teaching processes and learning strategies (García Riveros et al., 2021; Hattie & Timperley, 2007; Hortigüela et al., 2019).

This approach, which contrasts with summative assessment focused on grading the final results, aims to continuously improve and regulate the educational process (García-Jiménez, 2015; Hinojosa-Torres et al., 2024). While summative assessment (Rosales, 2014) focuses on issuing an overall judgment of student performance at the end of a period, formative assessment integrates multiple moments in which feedback is used to adjust the teaching-learning process, allowing for greater personalization and student participation (Chacón Tapia et al., 2023; Palomino Gutiérrez, 2023).

In higher education, the function and purpose of formative assessment extend from identifying learning barriers to strengthening professional competencies (Cañadas et al., 2021). The feedback obtained not only helps students self-regulate their own learning strategies but also enables teachers to adjust their pedagogical methods to foster the acquisition of transversal skills and specific competencies (Flores Flores et al., 2022; Loo Mendoza et al., 2020).

However, the success of this strategy largely depends on teacher training (Pincay et al., 2021), as instructors often hold misconceptions, such as confusing active participation with purely quantitative results, which can limit the potential of formative assessment (Orellana, 2020; Oviedo, 2007). The literature emphasizes the importance of incorporating teacher training programs that clarify the concept and purpose of formative assessment, thereby reinforcing its role in developing professional skills and transforming the educational process (Cruzado Saldaña, 2022; Hinojosa-Torres et al., 2024; Sanchez-Peña et al., 2023).

The main objective of this study was to analyze the perceptions of 112 business administration students regarding formative assessment as an instructional tool. Specifically, the study aims to answer the following research questions:

RQ1: How do students perceive the five dimensions of formative assessment (congruence, authenticity, consultation, transparency, and accommodation) in relation to both specific management knowledge and self-directed learning skills?

RQ2: What relationships exist between these perceptual dimensions of formative assessment?

RQ3: Does age influence student perceptions of formative assessment?

2. Literature Review

2.1. Formative Assessment: Conceptual Framework and Previous Research

Formative assessment is increasingly recognized as a crucial component of effective education, promoting student autonomy and self-regulated learning. It entails ongoing feedback that helps learners identify their strengths and weaknesses, monitor progress, and adjust strategies in real-time, thereby supporting deeper engagement with the content (Roskos & Neuman, 2012; Wafubwa, 2020; Wang et al., 2024).

At the same time, prior research highlights variability in how formative strategies are understood and implemented across different settings, which can impact their effectiveness (Johnson et al., 2019). While engagement with feedback is generally associated with beneficial learning outcomes (Bader et al., 2019), implementation challenges such as inconsistent practices and misaligned expectations persist (Sandal, 2021). These considerations underscore the importance of context-sensitive design and continuous refinement of formative assessment practices.

The following subsections examine the role of formative assessment in self-directed learning and the importance of students' perceptions for effective implementation.

2.2. Formative assessment in the context of self-directed learning

Formative assessment in the context of self-directed learning is a crucial component of business education that fosters students' ability to independently manage and evaluate their own learning. Self-directed learning is defined as a process in which students take responsibility for identifying their needs, setting goals, selecting strategies, and monitoring the outcomes of their educational process (Charokar & Dulloo, 2022). This is especially relevant in business environments where dynamics and complexity require agile and adaptive responses (Galarza-Salazar, 2021; Peinado Camacho & Valencia Maravilla, 2024). Formative assessment acts as a catalyst for the development of self-assessment skills by providing continuous and timely feedback (Pasek De Pinto & Mejía, 2017).

Furthermore, the relationship between formative assessment and self-directed learning is grounded in the promotion of a culture of critical reflection and personal responsibility (Karatas & Arpacı, 2021; Marcillo-Garcia et al., 2024). Students actively engage in analyzing and reviewing their own performance, integrating information derived from evaluative processes to adjust their study methods and strengthen their professional competencies (Panadero & Alonso-Tapia, 2017). This process not only enhances understanding of academic content but also strengthens self-regulation, a key factor in success in highly demanding contexts, such as the business field (Galarza-Salazar, 2021).

Therefore, within the framework of formative assessment, students assume an active and central role in making decisions about their own learning, which reinforces the integration of self-assessment into the educational process (Welson Valencia, 2023).

2.3. Importance of students' perception of assessment instruments

Student perceptions of assessment instruments are fundamental to the improvement of teaching and learning processes, as a relationship has been demonstrated between how students interpret and value these instruments and their academic performance (Morera-Castro et al., 2023). Students are not passive recipients of assessment; their perceptions influence motivation, self-regulation, and the assumption of responsibility in the learning process. Significant improvements in performance and academic satisfaction are observed when assessment instruments appropriately address students' formative needs (Morera-Castro et al., 2023).

Recent studies have highlighted the determinants of students' perceptions, including teacher efficacy and the enactment of formative strategies in practice (Johnson et al., 2019; Wafubwa & Ochieng, 2021). Positive perceptions are associated with greater learning autonomy and self-regulation (Wang et al., 2024), and with measurable performance gains when learners actively engage with feedback (Bader et al., 2019; Yan & Chiu, 2022). Student involvement in formative processes supports monitoring and understanding of progress (McCallum & Milner, 2020). At the same time, discrepancies between educators' and students' views can undermine consistency and effectiveness, underscoring the need for transparent criteria and structured consultation (Sandal, 2021).

However, an important gap has been identified between the perspectives of teachers and students. While teachers' approaches tend to focus on the traditional and quantifiable aspects of assessment, students demand a more comprehensive, flexible, and transformative assessment process that fosters their own learning (Loureiro et al., 2016; Silva Blanco, 2023).

In particular, student participation in formative assessments is based on five essential characteristics (Lim, 2019): congruence, authenticity, consultation, transparency, and accommodation. Congruence refers to the alignment between course objectives and assessment criteria, ensuring that assessment responds to what is intended to be taught and learned (Silva Blanco, 2023). Authenticity focuses on the validity of the assessment situations, ensuring that they are representative and relevant to the real world. Consultation involves ongoing dialogue between teachers and students, encouraging feedback and adjusting pedagogical strategies. Transparency relates to the clarity of assessment processes and criteria, which generates trust and commitment among students. Finally, accommodation highlights the flexibility needed to adapt instruments to the individual characteristics and needs of students (Morera-Castro et al., 2023). These five dimensions are fundamental for closing the perceptual gap and strengthening the effectiveness of formative assessments in higher education contexts.

2.4. Research gap and problem statement

Despite the central role of formative assessment in developing professional competencies and self-regulated learning, there is limited empirical evidence on how business administration undergraduates, particularly in Latin American contexts such as Ecuador, perceive formative assessment across the five widely referenced dimensions (congruence, authenticity, consultation, transparency, and accommodation), and across both discipline-specific knowledge and self-directed learning.

Moreover, prior studies have reported implementation challenges (e.g., authenticity; student consultation) and mixed findings regarding demographic influences, underscoring the need for context-specific evidence. Therefore, the problem guiding this study is the insufficient understanding of business administration students' perceptions of formative assessment in this setting, including the interrelationships among dimensions and potential associations with student characteristics. Addressing this gap can inform targeted pedagogical improvements that align assessment practices with professional preparation in business education.

3. Methodology

3.1. Research design

The study employed a quantitative approach (Hernandez-Sampieri & Mendoza, 2018) to analyze the perceptions of business administration students regarding formative assessment. A descriptive-correlational design (Carvajal Rivadeneira et al., 2023; Creswell & Creswell, 2017) was used to (a) describe perception levels across five dimensions of formative assessment (congruence, authenticity, consultation, transparency, and accommodation) for both domain knowledge and self-directed learning, and (b) examine relationships among these dimensions and associations with student characteristics.

This study employed a cross-sectional survey administered in a single public university setting. The unit of analysis was the individual student; no course- or instructor-level identifiers were collected. Reporting follows best practices for observational studies in education, with an emphasis on transparency and replicability of procedures and analyses.

3.2. Participants

Participants were undergraduate students enrolled in a Business Administration program. Eligibility criteria included current enrollment in the fourth, sixth, or seventh semester and being at least 18 years of age. Using non-probabilistic convenience sampling (Hernandez-Sampieri & Mendoza, 2018), all 228 eligible students were invited to participate. A total of 112 valid responses

were retained for analysis (sampling fraction $\approx 49\%$). Cases with duplicate submissions, missing consent, or $>10\%$ missing responses were excluded prior to analysis.

Regarding gender distribution, 65 participants self-identified as female (58%), 45 self-identified as male (40.2%), and two self-identified as LGBTQ+ (1.8%). The average age of the participants was 22.46 years ($SD = 2.19$), with an age range between 20 and 32 years.

In terms of academic level, 14 students (12.5%) were in their fourth semester, 67 (59.8%) in their sixth semester, and 31 (27.7%) in their seventh semester. This distribution enables the analysis of students' perceptions at various stages of their education, ranging from intermediate to advanced levels, within the academic program.

All the participants had experienced various types of formative assessments as part of their educational process, including weekly quizzes, case studies, self-assessment activities, peer evaluation, and reflective exercises. These formative assessments were implemented to assess specific business administration knowledge and to develop self-directed learning skills.

Student participation was voluntary, with prior informed consent (Emanuel, 2003), and anonymity and confidentiality of the data were ensured.

3.3. Data collection instrument

For data collection, an adapted version of the Students' Perceptions of Formative Assessments (SPFA) questionnaire was used, which is based on an instrument widely employed in the field of secondary education. The original questionnaire was developed by Lim (2019), based on the work of Dorman and Knightley (2006), to evaluate students' perceptions of formative assessment in medical education, taking into account the particularities of self-directed learning.

The adaptation of the questionnaire for the present study to the context of business administration maintained its original structure, which was divided into two main sections:

- Part A: This section evaluates the perceptions of formative assessment in relation to specific knowledge in business administration.
- Part B: This section evaluates students' perceptions of formative assessment in relation to their self-directed learning skills.

Each of these sections (Parts A and B) includes items designed to measure the five key dimensions of formative assessment, as proposed by Lim and explained in the introduction to this article. In addition to the items measuring these five dimensions, the questionnaire included complementary questions in each section (Parts A and B), designed to gather information about students' overall preferences regarding formative assessment.

The questionnaire items consisted of a 5-point Likert response scale, where 1 represents "Strongly disagree" and 5 represents "Strongly agree." This scale allowed students to express the extent of their agreement or disagreement with each statement regarding the formative assessment.

For contextual fit, item wording was reviewed by the research team to align with local terminology in business education, preserving the original content and dimensional structure proposed by Lim (2019). Items were organized into multi-item subscales for the five dimensions in both Parts A and B. Subscale scores were computed as the mean of their constituent items; higher values indicate more positive perceptions. Internal consistency was evaluated using Cronbach's alpha separately for each subscale and part, yielding excellent reliability in the present sample (see Results).

3.4. Data collection procedures

Using Google Forms (Vasantharaju & Harinarayana, 2016), the questionnaire link was sent via institutional email to all fourth-, sixth-, and seventh-semester Business Administration students, accompanied by a cover letter that explained the study's objectives, the voluntary nature of participation, and confidentiality guarantees. Students were required to provide informed consent on the first page of the questionnaire before accessing the questions; without which they could not proceed with the survey.

The study protocol was reviewed and approved by the Scientific Committee of the Nursing Program and the Research Directorate of Universidad Estatal del Sur de Manabí; institutional approval was granted by the university Board (Resolution No. ROCS-08-N°-2-2022)."

3.5. Data analysis

Statistical analyses were conducted using IBM SPSS Statistics version 27. Once the data were collected and cleaned, a descriptive analysis was carried out by calculating frequencies and percentages for categorical variables (gender, academic semester), as well as means and standard deviations for continuous variables (age) and for each dimension of the SPFA questionnaire (Congruence, Authenticity, Consultation, Transparency, and Accommodation) in both parts of the instrument. These calculations allowed for the assessment of students' overall perception level regarding each dimension of the formative assessment.

To examine the relationships between the different dimensions of the questionnaire, a bivariate correlation analysis was performed using Spearman's rho coefficient, taking into account the ordinal nature of the data derived from Likert scales (Frey, 2015). To explore the possible influence of age on perceptions, Pearson's correlation coefficients were calculated (Wesolowski & Musselwhite, 2018). Correlations with a p value < .01 (two-tailed) were considered statistically significant. Additionally, independent samples t-tests were conducted to examine potential gender differences in formative assessment perceptions between male and female participants.

4. Results

4.1. Students' perceptions of formative assessment

The results (Table 1) show that Business Administration students hold moderately positive perceptions of formative assessments, with mean values ranging from 3.64 to 3.74 on a 5-point scale for all evaluated dimensions. The internal consistency reliability of the questionnaire dimensions in this study was assessed using Cronbach's alpha, with all dimensions demonstrating excellent reliability ($\alpha = .973-.989$), indicating high internal consistency among the items within each dimension.

Table 1. Descriptive statistics for the SPFA questionnaire dimensions

	Mean	Std. Dev.	α
Congruence_A	3.7446	1.23090	.983
Authenticity_A	3.6429	1.23367	.973
Consultation_A	3.6964	1.23090	.980
Transparency_A	3.7125	1.23136	.989
Accommodation_A	3.6830	1.20106	.974
Congruence_B	3.6741	1.20474	.982

Authenticity_B	3.6946	1.19788	.987
Consultation_B	3.6518	1.21396	.981
Transparency– Accommodation B	3.6875	1.21900	.988

Note: Scores range from 1 to 5; higher values indicate more positive perceptions. α = Cronbach's alpha

In relation to the formative assessment of specific administrative knowledge (Part A), the highest-rated dimension was Congruence ($M = 3.74$, $SD = 1.23$), followed by Transparency ($M = 3.71$, $SD = 1.23$). On the other hand, the lowest-scoring dimension in this category was Authenticity ($M = 3.64$, $SD = 1.23$).

Regarding the formative assessment of self-directed learning skills (Part B), Authenticity was the most highly rated dimension ($M = 3.69$, $SD = 1.20$). The lowest scoring dimension in this section was Consultation ($M = 3.65$, $SD = 1.21$).

There was consistency in the ratings across all dimensions in the sample, with very similar standard deviations (approximately 1.20–1.23), indicating a homogeneous pattern in students' perceptions.

4.2. Correlations between the dimensions of the SPFA questionnaire

Table 2 presents the Spearman correlations between the different dimensions of the questionnaire, for both the formative assessment of specific management knowledge (Part A) and self-directed learning skills (Part B).

Table 2. Spearman's rho correlations between the SPFA questionnaire dimensions

	1	2	3	4	5	6	7	8	9
1. Congruence_A	1.000	.912**	.923**	.916**	.892**	.796**	.771**	.719**	.730**
2. Authenticity_A	.912**	1.000	.931**	.919**	.898**	.777**	.759**	.709**	.734**
3. Consultation_A	.923**	.931**	1.000	.947**	.927**	.750**	.763**	.726**	.744**
4. Transparency_A	.916**	.919**	.947**	1.000	.933**	.758**	.773**	.722**	.732**
5. Accommodation_A	.892**	.898**	.927**	.933**	1.000	.766**	.761**	.720**	.732**
6. Congruence_B	.796**	.777**	.750**	.758**	.766**	1.000	.920**	.898**	.874**
7. Authenticity_B	.771**	.759**	.763**	.773**	.761**	.920**	1.000	.908**	.939**
8. Consultation_B	.719**	.709**	.726**	.722**	.720**	.898**	.908**	1.000	.921**
9. Transp_Acomod_B	.730**	.734**	.744**	.732**	.732**	.874**	.939**	.921**	1.000

Note: ** The correlation is significant at the 0.01 level (two-tailed)

Correlation analysis showed positive and statistically significant associations ($p < .01$) among all the dimensions assessed. These results indicate a strong interrelationship between different aspects of students' perceptions of formative assessment.

Within the dimensions of Part A (specific knowledge of management), particularly high correlations were observed between Consultation and Transparency ($r_s = .947$), Transparency and Accommodation ($r_s = .933$), and Consultation and Accommodation ($r_s = .927$). The lowest correlation, although still high, was found between Congruence and Accommodation ($r_s = .892$).

For the dimensions of Part B (self-directed learning skills), very high correlations are observed between Authenticity and Transparency/Accommodation ($r_s = .939$), followed by Consultation and Transparency/Accommodation ($r_s = .921$), and Congruence and Authenticity ($r_s = .920$). The lowest correlation, although significant, was found between Consultation and Congruence ($r_s = .898$).

The correlations between the dimensions of both parts (Figure 1) were generally lower than those found within each part. However, they remained substantial and significant, with values ranging from $r_s = .709$ (between Authenticity A and Consultation B) to $r_s = .796$ (between Congruence A and Congruence B).

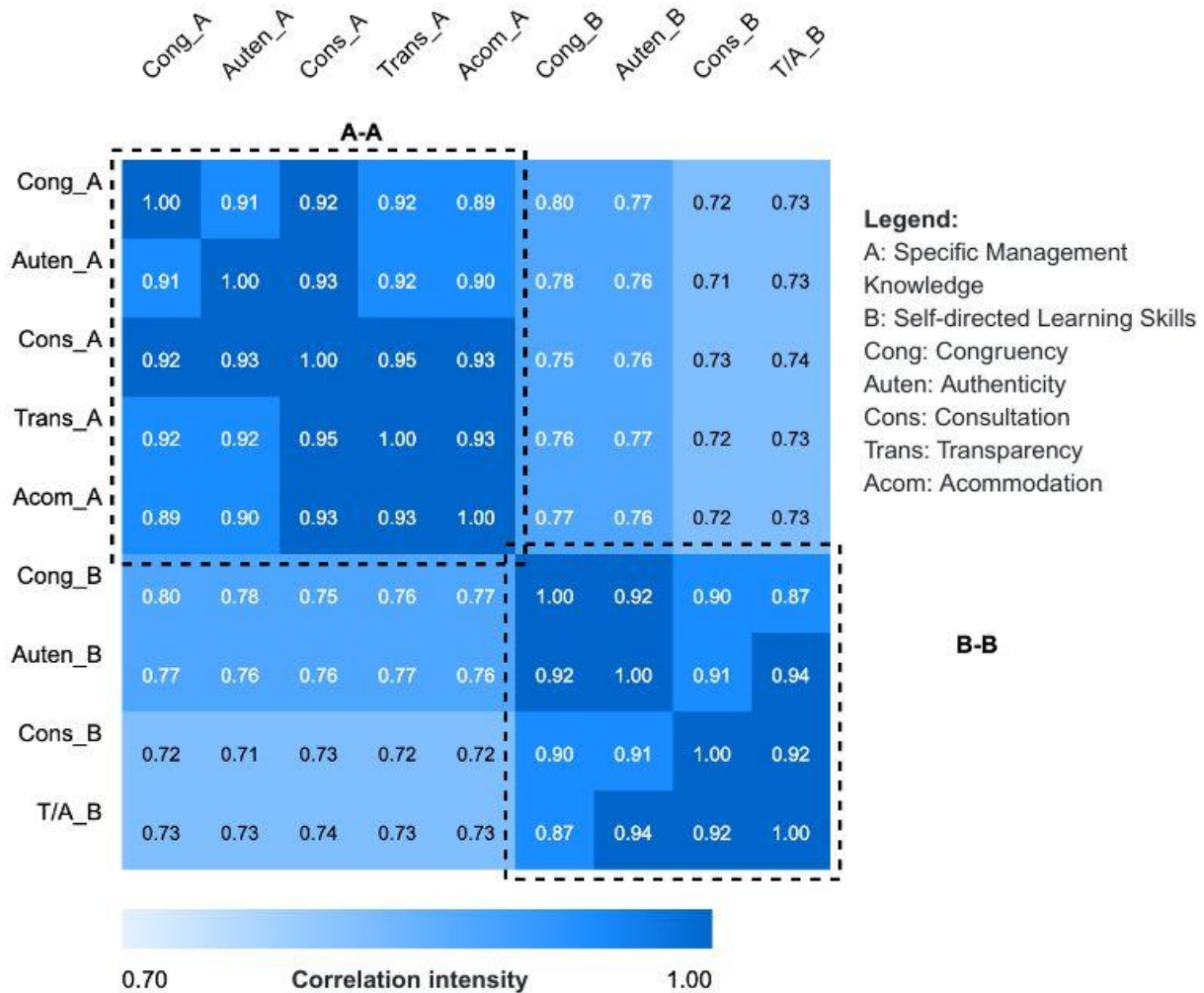


Figure 1. Correlation heatmap of the SPFA questionnaire dimensions

4.3. Relationship between age and perceptions of formative assessment

Table 3 presents the Pearson correlations between the participants' ages and the different dimensions of the SPFA questionnaire, both for the formative assessment of specific management knowledge (Part A) and self-directed learning skills (Part B).

Table 3. Pearson correlations between age and SPFA questionnaire dimensions

		1	2	3	4	5	6	7	8	9
Age (in Years)	Pearson's correlation	-.110	-.072	-.106	-.068	-.063	-.020	-.004	.007	-.004
	Sig. (bilateral)	.249	.449	.264	.476	.510	.833	.970	.944	.970

Note: ** The correlation is significant at the 0.01 level (two-tailed)

Correlation analysis showed that there was no statistically significant relationship between students' age and their perceptions of formative assessment in any of the dimensions evaluated. The correlation coefficients were very low in magnitude, ranging from $r = -.110$ to $r = .007$, and none reached statistical significance (all p -values $> .05$).

This absence of age-related differences may be attributed to the relatively narrow age range within the sample ($M = 22.46$, $SD = 2.19$) and the limited sample size, which may have reduced the statistical power to detect age-related variations. The homogeneous age distribution suggests that chronological maturity may not be a determining factor in perceptions of formative assessment within this student population.

4.4. Gender differences in perceptions of formative assessment

Independent samples t -tests were conducted to examine potential differences in formative assessment perceptions between male and female students (LGBTQ+ participants were excluded due to small sample size, $n=2$). Results showed no statistically significant differences between groups across any of the assessed dimensions (all $p > .05$).

While female students demonstrated slightly higher mean scores across all dimensions ($M = 3.60$ - 3.81) compared to male students ($M = 3.56$ - 3.69), these differences were not statistically significant, suggesting that gender does not significantly influence students' perceptions of formative assessment in this sample.

5. Discussion

The results obtained in this study provide a detailed overview of Business Administration students' perceptions of formative assessment, both in relation to discipline-specific knowledge and the development of self-directed learning skills. The main findings and their implications are discussed below.

5.1. General perceptions about formative assessment

The moderately positive ratings (tending toward the 'agree' level) observed across all dimensions of the SPFA questionnaire suggest that Business Administration students recognize the value of formative assessment in their educational process. This trend is consistent with previous research that has shown favorable attitudes towards formative assessment in higher education contexts (Loor Mendoza et al., 2020; Souto Suárez et al., 2020). For example, Loor Mendoza et al. (2020) emphasize that the implementation of formative assessments allows students to identify and improve their weaknesses throughout the learning process, which results in generally positive perceptions of these practices. Similarly, Souto Suárez (2020) found that students value the feedback and clarity these assessments bring to the learning process, although they acknowledge that there are dysfunctions and drawbacks associated with formative assessments.

A comparison with Lim's (2019) study on medical students indicates that, in that discipline, average ratings were slightly higher, falling in the upper range of above-average to very positive levels for both medical knowledge and self-directed learning skills. This difference may be related to the assessment traditions inherent to each field. In the field of medicine, characterized by a more structured focus on the acquisition of clinical competencies, the relationship between formative activities and observable outcomes may be more direct, making it easier to implement formative assessments linked to measurable results. By contrast, Business Administration, with its interdisciplinary nature and focus on dynamic organizational contexts, presents additional challenges when designing formative assessments that students perceive as relevant to their professional future (Martínez Rizo, 2013).

The consistency in the ratings across all dimensions suggests that Business Administration students perceive formative assessment as a unitary construct. This contrasts with the greater variability observed in Lim's study, especially in dimensions such as Consultation and Transparency, and may indicate that, in formative contexts like Business Administration, students integrate the different assessment components holistically. Flores et al. (2015) asserted that integrating multiple elements in formative assessment can consolidate homogeneous perceptions, which is in line with the findings of this study.

Relative to competency centric fields such as medicine (e.g., Lim, 2019), students' views in business education appear slightly less favorable overall, likely reflecting disciplinary differences in the visibility of performance criteria and feedback cycles. This pattern aligns with literature noting that when links between formative activities and observable outcomes are less direct, students may value formative work yet remain cautious in their judgments (Martínez Rizo, 2013; Souto Suárez et al., 2020). Emphasizing the purposes, criteria, and payoffs of formative tasks may therefore be especially important in business contexts.

5.2. Analysis of the specific dimensions

Empirical evidence supports that the Congruence dimension emerged as the highest-rated in Part A, indicating that students clearly identify the alignment between formative assessment tasks and learning objectives within the context of Business Administration. This coherence among teaching, assessment, and formative goals has been highlighted in the literature, where Biggs et al. (2022) argued that when there is a clear connection between what is taught and what is assessed, it fosters the development of deep learning strategies. Similarly, Orellana Orellana (2020) showed that the perception of congruence helps students adopt more meaningful approaches, avoiding superficial strategies focused solely on passing.

In contrast, the Authenticity dimension was lower relative to the other dimensions in Part A, suggesting that students perceived some disconnection between the assessment tasks and the real-world problems they will face in their future professional lives. This finding is consistent with the results of Chacón Tapia et al. (2023) and aligns with the observations of Palomino Gutiérrez (2023), who noted that implementing authenticity in formative assessments is one of the main challenges in higher education. In light of this gap, it is suggested that designing assessments based on real cases, authentic problems, and simulations could increase the relevance and contextual application of assessment activities in the business field, as proposed by Llor Mendoza et al. (2020).

Regarding Part B, which evaluates self-directed learning skills, Authenticity was slightly higher, indicating that students perceived a clearer connection between the assessment tasks and real situations where they needed to apply self-regulation skills. This finding is consistent with the argument made by Panadero & Alonso-Tapia (2017) regarding the importance of authenticity in promoting self-regulation and self-directed learning.

However, the Consultation dimension received the lowest ratings in both Part A and Part B, reflecting the perception of limited student involvement in defining assessment criteria. This situation, which has also been documented in Lim (2019), is reinforced by the results presented by Chacón Tapia et al. (2023), who provide evidence that low involvement in the development of assessment instruments hinders the development of self-regulation and active engagement with learning. In this sense, there is a clear need for interventions focused on shared formative assessment to promote greater student participation in designing and establishing assessment criteria, which is a key aspect in strengthening the effectiveness of these processes in Business Administration programs.

5.3. Correlations between dimensions: A holistic approach to formative assessment

The findings obtained, in which strong positive correlations were observed between all evaluated dimensions, demonstrate that Business Administration students tend to perceive formative assessment holistically as an integrated construct. This interdimensional stability differs from that in previous studies, in which greater differentiation among assessment components was detected (Dorman & Knightley, 2006; García Riveros et al., 2021; Lim, 2019; Palomino Gutiérrez, 2023). That is, in contexts such as that studied by Lim among medical students, more marked variations have been found than in our sample, which suggests that cultural and disciplinary particularities may influence how the various dimensions of formative assessment are integrated.

In the specific case of Part A, the particularly strong association observed between the dimensions of Consultation and Transparency indicates that for students, the clarity of assessment criteria is closely associated with their participation in defining those criteria. This finding is consistent with studies that highlight the importance of student involvement in enhancing transparency during the assessment process (Panadero & Alonso-Tapia, 2017). When students actively participate in the construction of assessment instruments, they become more understandable and accessible, which strengthens their trust in the assessment process.

Similarly, the high correlation between Authenticity and Transparency/Accommodation in Part B suggests that the perception of authentic assessments—those that reflect real and relevant problems in the professional field—is associated with clarity and fairness in assessment implementation. This result supports arguments from studies asserting that assessments considered authentic are also perceived as fairer and more understandable, which facilitates the recognition of their applicability and purpose (Llor Mendoza et al., 2020). Finally, the associations between the dimensions of Parts A and B were comparatively weaker but still substantial, indicating that, despite sharing a coherent assessment experience throughout the academic program, students distinguish, although only partially, between the objectives of evaluating specific knowledge and developing self-directed learning skills.

The integrated pattern observed here suggests that students experience formative assessment as an ecology rather than as isolated components. While such coherence is desirable, it can also mask specific weaknesses if improvements are not balanced across dimensions. Prior studies sometimes report clearer differentiation among assessment components, particularly where systems emphasize discrete functions or uneven implementation (Dorman & Knightley, 2006; Lim, 2019). A practical implication is to prioritize gains in Authenticity and Consultation while safeguarding Congruence and Transparency, thereby avoiding unintended trade-offs across the overall system.

5.4. Independence of age in perceptions of formative assessment

The results of this study show that the absence of significant correlations between students' age and their perceptions of formative assessment contrasts with previous studies that found differences based on maturity or academic level (García Riveros et al., 2021). This discrepancy can be explained, on the one hand, by the relatively narrow age range of the sample and, on the other hand, by the homogeneity of assessment practices within the Business Administration program. Additionally, it is possible that in this context, other factors such as institutional climate or consistency in assessment design have a greater influence on the development of these perceptions.

The independence of perceptions with respect to age can be interpreted as a positive sign of consistency in educational experience, suggesting that students, regardless of their chronological maturity, share a common framework of experience regarding formative assessment processes (Chacón Tapia et al., 2023). However, this finding also raises questions about the program's ability to progressively adapt assessment practices as students advance. This concern is supported by research

that argues that formative assessments should evolve and become more complex and authentic as students progress in their training (Loor Mendoza et al., 2020). In this regard, studies in related fields have demonstrated the need to adjust assessment strategies according to students' level of experience and development, which may not happen effectively in the observed context (Flores et al., 2015).

Consistent with findings in comparable settings, the absence of systematic differences by age—and similarly by binary gender in our data—may reflect program level practices and institutional norms that shape perceptions more than demographic attributes (see Morera Castro et al., 2023)

5.5. Unique contributions and implications for the field

This study advances the literature in three ways. First, it provides context-specific evidence from business administration undergraduates in a Latin American setting, applying an adapted instrument that captures both discipline-specific knowledge and self-directed learning. Second, the findings support a holistic view of formative assessment—students perceive tightly interlinked components—while revealing consistent leverage points (particularly Consultation and Authenticity) that can guide targeted improvement. Third, the adaptation yielded excellent internal consistency, motivating future work to further validate dimensionality and subgroup equivalence in this context.

Theoretically, the results reinforce frameworks that conceptualize formative assessment as a coherent system of practices, adding nuance by showing how emphases can differ across knowledge-focused and self-directed learning contexts. Methodologically, they illustrate the feasibility of using a structured, multi dimensional instrument in business education and point to the value of confirmatory and invariance analyses in future studies. Practically, they identify concrete, high-yield areas for course and program design—co-creating or reviewing criteria with students, making purposes and exemplars transparent, and embedding authentic, professionally relevant tasks—while maintaining alignment between learning outcomes, activities, and feedback. Together, these contributions inform both local enhancement efforts and broader discussions about how to scale formative assessment in professional programs.

6. Conclusion

This study analyzed Business Administration students' perceptions regarding formative assessment, revealing moderately positive evaluations across all the assessed dimensions. The results suggest that although students recognize the value of formative assessment both for the development of specific knowledge and for promoting self-directed learning, there are significant areas for improvement, particularly in the dimensions of Authenticity and Consultation.

The strong correlations detected among all the assessed dimensions indicate that students perceive formative assessment as a holistic and integrated construct, implying that interventions aimed at improving any aspect of formative assessment are likely to have positive effects on the overall perception of the evaluation process.

This study has limitations that should be considered when interpreting the findings. First, the sample was drawn from a single Business Administration program at one Ecuadorian university using non-probabilistic convenience sampling, which limits generalizability. Second, the narrow age band in the sample and the small size of some subgroups (e.g., LGBTQ+) constrained our ability to detect demographic differences, and gender analyses were limited to binary comparisons.

7. Suggestion

The results of this study have important implications for teaching practices in higher education, especially Business Administration programs. It is advisable to implement strategies that increase the

authenticity of formative assessments by linking them more closely to real professional situations as well as to promote greater student participation in the definition of evaluation criteria.

Future research should use mixed methodologies to explore the underlying reasons for these perceptions, broaden the study to various institutional and cultural contexts, and examine the relationships between perceptions of formative assessment and variables, such as academic performance and the development of professional competencies.

Declarations

Author Contributions. Conceptualization, María Leonor Parrales Poveda and Diego Sornoza-Parrales; Data curation, María Leonor Parrales Poveda, Diego Sornoza-Parrales and Karina Lourdes Santistevan Villacreses; Formal analysis, Diego Sornoza-Parrales; Funding acquisition, María Leonor Parrales Poveda and Ruth Yadira Sumba Bustamante; Investigation, Karina Lourdes Santistevan Villacreses; Methodology, Diego Sornoza-Parrales; Project administration, María Leonor Parrales Poveda; Resources, Karina Lourdes Santistevan Villacreses; Software, Ruth Yadira Sumba Bustamante; Supervision, María Leonor Parrales Poveda and Diego Sornoza-Parrales; Validation, María Leonor Parrales Poveda, Diego Sornoza-Parrales, Ruth Yadira Sumba Bustamante and Karina Lourdes Santistevan Villacreses; Visualization, Ruth Yadira Sumba Bustamante; Writing – original draft, María Leonor Parrales Poveda and Ruth Yadira Sumba Bustamante; Writing – review & editing, Diego Sornoza-Parrales and Karina Lourdes Santistevan Villacreses. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest. The authors declare no conflict of interest.

Funding. This research received no external funding.

Ethical Approval. The study protocol was approved by the Scientific Committee of the Nursing Program and the Research Directorate of Universidad Estatal del Sur de Manabí, with institutional approval from the University Board (Resolution No. ROCS-08-N°-2-2022). Informed consent was obtained from all participants.

Data Availability Statement. Data supporting this study's findings are available from the corresponding author upon reasonable request.

Acknowledgments. The authors acknowledge the support of Universidad Estatal del Sur de Manabí. This paper is a result of the projects titled: "Bimodal Teaching for the Development of University Students' Competencies" and "Bimodal Teaching System for the Development of Learning and Knowledge Technologies" at Universidad Estatal del Sur de Manabí. During the preparation of this work, the authors used Claude Sonnet 4 and Grammarly for writing assistance and for grammar, spelling, and style review. The authors declare that they reviewed and edited the final output as needed and take full responsibility for the content of the published article.

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