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Managerial Skills in Intercultural Higher Education: Evidence from Awajún and Wampis University Entrepreneurs in the Peruvian Amazon

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Abstract. Managerial skills are widely recognized as essential capabilities for fostering entrepreneurship, organizational sustainability, and community development. However, in intercultural higher education, quantitative evidence on how managerial skills manifest among Indigenous university students remains limited, particularly in Latin American contexts. This study examined managerial skills among Awajún and Wampis university students involved in productive community activities in the Peruvian Amazon, providing empirical evidence from an intercultural higher education context. A quantitative, cross-sectional, non-experimental design was employed, using a convenience sample of 300 Indigenous university students involved in traditional crafts, family farming, and cooperative enterprises. Data were collected via a structured questionnaire measuring four dimensions of managerial skills: leadership, decision-making, communication, and strategic planning. After confirming the non-normal distribution of the data, descriptive statistics, Spearman's rank correlation, chi-square tests, and binary logistic regression were carried out. The findings indicated that participants generally reported moderate-to-high levels of managerial skills, while sociodemographic characteristics showed limited explanatory power with regard to competency levels. The analyses suggest that managerial skills manifest themselves in culturally embedded business practices; however, the study does not imply causal educational effects, nor does it attribute these competencies exclusively to

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intercultural higher education. These findings contribute empirical evidence to the literature on Indigenous entrepreneurship and support the design of culturally sensitive educational strategies aimed at strengthening managerial skills in intercultural university contexts.

Keywords: intercultural higher education; management skills; Indigenous entrepreneurship; Awajún; Wampis

1. Introduction

Managerial skills have become a central concept in contemporary higher education, as they equip graduates with the necessary skills to respond effectively to increasingly complex organizational, business, and social challenges. Rather than referring solely to technical or administrative skills, managerial skills encompass an integrated combination of knowledge, skills, attitudes, and behaviors that enable individuals to exercise leadership, communicate effectively, make informed decisions, and engage in strategic planning in dynamic contexts (Boyatzis, 2008; Chiavenato, 2019).

Consequently, competence-based educational approaches emphasize the development of transferable skills that facilitate innovation, organizational adaptability, and sustainable development beyond disciplinary knowledge. Recent international research has also demonstrated that managerial skills contribute to business performance, organizational resilience, and long-term sustainability, particularly in environments characterized by rapid social, technological, and economic transformation (Barrichello et al., 2025; Feola et al., 2024; Vilochani et al., 2024). As a result, strengthening managerial skills has become a key objective for higher education institutions seeking to prepare graduates capable of generating sustainable solutions in increasingly diverse cultural and organizational environments.

Intercultural higher education has emerged as an educational model that seeks to reconcile academic knowledge with Indigenous systems of knowledge, promoting culturally relevant learning environments that recognize linguistic diversity, collective values, and community worldviews (Álvarez & Miranda, 2021). Unlike conventional models of higher education, intercultural universities aim to train professionals capable of responding effectively to the social, economic, and environmental realities of Indigenous territories while strengthening cultural identity and self-determination (Marcelín-Alvarado et al., 2021).

Within this educational framework, the development of competencies goes beyond technical training and includes socially contextualized learning processes that integrate collaborative problem-solving, intercultural communication, ethical leadership, and community participation (Croce, 2017). Consequently, managerial skills can be understood not only as professional skills but also as competencies shaped through the interactions between formal education, cultural practices, and territorial experiences. Recent studies have highlighted that culturally sensitive higher education can strengthen students' ability to address

the challenges of local development while fostering entrepreneurship and sustainable community initiatives in culturally diverse contexts (Connie et al., 2025; Feola et al., 2024; Gouvea et al., 2022; Leal et al., 2025).

Indigenous entrepreneurship differs substantially from conventional business models, as its objectives often go beyond economic performance to include collective well-being, cultural continuity, territorial governance, and environmental sustainability (Molina-Ramírez & Barba-Sánchez, 2021). Rather than being exclusively market-oriented, Indigenous business initiatives are often embedded in systems of reciprocity, community participation, and shared decision-making that reflect forms of governance specific to the local context (Marcelín-Alvarado et al., 2021). Consequently, managerial skills in these contexts may be expressed through culturally specific practices of leadership, communication, strategic planning, and decision-making, which differ from those typically described in conventional management literature (Scheyvens et al., 2017).

Previous studies have shown that Indigenous enterprises often combine ancestral knowledge with contemporary management practices, generating organizational models that simultaneously respond to economic opportunities and community priorities (Curry et al., 2016; Holmström et al., 2022; Lashitew & Rosca, 2025; Macpherson et al., 2021; Peredo & McLean, 2013). Therefore, understanding how managerial skills are expressed in these business contexts is essential for developing educational approaches that are both academically rigorous and culturally relevant.

Growing international interest in Indigenous entrepreneurship and intercultural higher education has led to significant advances in our understanding of entrepreneurial ecosystems, culturally sensitive education, and sustainable community development. Existing research has demonstrated positive associations between managerial skills and entrepreneurial performance, organizational resilience, and business sustainability across diverse educational and socioeconomic contexts (Barrichello et al., 2025; Ramírez-Arellano et al., 2024; Vargas-Merino et al., 2025). Furthermore, studies conducted in Indigenous communities have documented the importance of collective leadership, community participation, and traditional knowledge in supporting productive initiatives and territorial development (Langford & Martin, 2025; Li et al., 2025).

However, the available evidence remains fragmented. Most quantitative studies have been carried out in conventional entrepreneurial settings, while research involving Indigenous university students has predominantly adopted qualitative or case-study approaches (AlMehrizi et al., 2024). Consequently, robust quantitative evidence examining managerial skills among Indigenous university entrepreneurs in intercultural higher education institutions remains limited, particularly in Latin America. This gap hinders a deeper understanding of how managerial skills manifest in culturally diverse educational contexts and limits the development of evidence-based educational strategies tailored to Indigenous higher education.

Despite the growing body of literature on managerial skills, entrepreneurship, and intercultural higher education, significant knowledge gaps remain. Existing studies have focused primarily on managerial skills in conventional business or university settings, emphasizing organizational performance, entrepreneurial success, or business sustainability (Alzate et al., 2024). In contrast, quantitative evidence on managerial skills among Indigenous university students enrolled in intercultural higher education institutions remains scarce, particularly in Latin America (Mato, 2016; Mika et al., 2019).

Furthermore, most previous research has focused either on Indigenous entrepreneurship as a socioeconomic phenomenon or on intercultural education as a pedagogical approach, with limited integration of both fields within a single analytical framework (AlMehrizi et al., 2024; Baba et al., 2021; Borchardt et al., 2020). Consequently, little is known about how managerial skills manifest among Indigenous university students whose entrepreneurial activities are simultaneously influenced by academic learning, community engagement, and culturally rooted productive practices. Addressing this gap is important because it provides empirical evidence capable of underpinning culturally sensitive educational policies and competence-based training strategies that recognize the diversity of Indigenous entrepreneurial contexts, rather than assuming the universal applicability of conventional models of managerial skills.

To address these limitations, this study examines the managerial skills of Awajún and Wampis university students enrolled at an intercultural university in the Peruvian Amazon. Unlike previous research, which has generally analyzed Indigenous entrepreneurship or managerial skills separately, this study integrates both perspectives in the context of intercultural higher education to provide quantitative evidence from one of the most culturally diverse regions in Latin America. By focusing on the four core dimensions of managerial skills—leadership, decision-making, communication, and strategic planning—the study contributes to a better understanding of how these competencies are expressed among Indigenous university entrepreneurs engaged in productive community activities.

Rather than seeking to establish causal educational effects, the research provides context-specific empirical evidence that contributes to the international literature on Indigenous entrepreneurship, competence-based education, and intercultural higher education. It is hoped that the findings will support the design of culturally sensitive educational strategies and strengthen competence-based training initiatives for Indigenous university students.

2. Literature Review

2.1 Intercultural Higher Education and Indigenous Epistemologies

Intercultural higher education is increasingly conceptualized as a transformative educational project that goes beyond folkloric or assimilationist approaches to diversity. Within this framework, Indigenous peoples are recognized as legitimate producers of knowledge and as collective subjects with rights, histories, and languages that shape what is considered learning and educational success (Lopez

& Singh, 2024; Minoia & Tapia, 2024). Learning processes take place in territories marked by specific governance practices, ecological relationships, and intergenerational transmission of knowledge. Consequently, the educational outcomes of Indigenous university students must be interpreted through epistemic plurality and not through the supposed universality of Western management categories, given that knowledge is constructed in a situated manner in communities of practice (Lave & Wenger, 1991) and that cognitive justice requires the recognition of diverse epistemologies beyond the monoculture of dominant knowledge (Santos, 2014). In many Indigenous contexts, knowledge is relational: people, land and community form interdependent networks where learning takes place through participation, reciprocity, and collective responsibility.

From this perspective, organizational effectiveness is not defined exclusively by economic efficiency but by relational well-being and community legitimacy. Likewise, effective management includes the sustainable administration of local resources, articulated through traditional ecological knowledge, community governance, and an ethic of care and reciprocity, which are central aspects of territorial ontologies in contemporary Indigenous business models (Banerjee & Tedmanson, 2010; Escobar, 2018; Spiller et al., 2010).

2.2 Managerial Skills as Educational Constructs

From the perspective of educational research, competencies are conceived as integrated configurations of knowledge, skills, attitudes, and values that enable individuals and groups to act effectively in complex situations (Mannonen et al., 2025). Their relevance lies not only in the mastery of knowledge but also in its transfer to diverse and unpredictable contexts (Kart & Şimşek, 2024). Approaching managerial skills as educational constructs shifts the focus from business performance to learning trajectories, which are shaped by formal training, experiential learning, and sociocultural mediation in professional practice contexts (Billett, 2011). In this study, managerial skills are framed as educational outcomes that arise from the interaction between university education and community-based productive practices. In this vein, the approach of Peterson and Van Fleet (2004) offers a classic reference point for identifying the skills necessary for managerial performance, which can be developed throughout the learning process.

From this perspective, technical, human, and conceptual skills are not conceived as innate attributes but as the results of progressive and contextualized training processes. This perspective requires interpretative caution, as standardized competency frameworks may incorporate assumptions typical of Western organizational models that have excluded Indigenous knowledge systems. In contrast, planning in Indigenous contexts is based on ecological calendars, collective agreements, and negotiable responsibilities, which highlights epistemological and methodological mismatches with formal approaches to strategic planning (Milanese & Sibilla, 2025). Similarly, communication may involve bilingual practices and culturally codified forms of authority and deliberation, characteristic of dynamic processes of cultural competence. From the

perspective of intercultural communicative competence, these skills are understood as situated and contextual learning. Therefore, measurement results should be interpreted as expressions of culturally modeled action and not as universal indicators of managerial performance (Davis, 2020; Xu et al., 2025).

2.3 Indigenous Entrepreneurship as a Situated Learning Practice

Indigenous entrepreneurship can be understood as a hybrid and territorially rooted practice in which economic activities are intertwined with cultural continuity, community well-being, and collective responsibilities. In this sense, entrepreneurship functions as a situated learning environment in which university students develop and refine their managerial skills through their progressive participation in communities of practice (Lave & Wenger, 1991).

In contexts where collective action and community governance of common goods allow the management of resources, negotiation of roles, communication with different audiences, and productive decision-making beyond the exclusive logic of the market or the state, learning is integrated into practice and supported by participation in community networks and governance agreements. Learning in these communities involves a process of alignment between competence and personal experience, shaped by power dynamics, allowing direct participation in competence regimes through sustainable commitments (Wenger-Trayner & Wenger-Trayner, 2014).

For Indigenous university entrepreneurs, competencies are formed at the intersection between academic knowledge (e.g., administrative tools, financial concepts, and market logic) and the ancestral knowledge of the community (e.g., reciprocity, legitimacy, ecological management, and social responsibility), as proposed by culture-based approaches to Indigenous business development, which question the suitability of standardized business models for Indigenous contexts (Maclean et al., 2024). Consequently, the central analytical thesis of this article is that the managerial skills of Awajún and Wampis university entrepreneurs are best interpreted as educational outcomes produced by intercultural higher education and by territory-based organizational rationalities.

From an educational and intercultural perspective, the development of managerial skills takes the form of a situated process that articulates social learning, practical experience, and differentiated cultural frameworks, which requires interpreting leadership and communication practices in terms of the territories and communities where they emerge. Recent studies show that intercultural competence and cultural intelligence strengthen managerial performance and leadership in multicultural environments, indicating that the development of these competencies in cultural environments is key for entrepreneurs in specific territorial contexts (Croce, 2017; Garamvölgyi & Rudnák, 2023).

In this context, the present study is conceptually grounded in the premise that managerial skills are context-dependent capabilities, the expression of which is determined by the interaction between educational experiences and the

sociocultural environments in which business activities take place. In intercultural higher education, Indigenous university students acquire and apply managerial skills through ongoing participation in academic learning, productive community practices, and forms of social organization rooted in their culture. From this perspective, leadership, decision-making, communication, and strategic planning are understood as complementary dimensions of a broader construct of managerial competence that may be expressed differently depending on the cultural characteristics of Indigenous business contexts. Consequently, this study adopts an intercultural perspective to examine managerial skills among Awajún and Wampis university students who are entrepreneurs, providing empirical evidence that contributes to a more context-sensitive understanding of competency development in Indigenous higher education, without assuming universal managerial models or inferring causal educational effects.

Building on this conceptual perspective, the analytical model guiding the study comprises a single, multidimensional construct—managerial skills—operationalized through four complementary dimensions: leadership, decision-making, communication, and strategic planning. Intercultural higher education, situated learning, and Indigenous entrepreneurship constitute the theoretical framework underpinning the interpretation of these competencies without being treated as independent explanatory variables.

3. Methodology

3.1 Research Design

The study adopted a quantitative approach using a non-experimental cross-sectional design to examine the managerial skills of Indigenous university students enrolled at an intercultural higher education institution in the Peruvian Amazon. Given that the aim was to describe managerial skills and analyze their relationship with selected sociodemographic characteristics, without manipulating variables or establishing causal relationships, an observational design was deemed appropriate (Creswell & Creswell, 2022). Data were collected at a single point in time using a structured questionnaire administered to participants involved in community-based productive activities. Consequently, the study provides empirical evidence on the manifestation of managerial skills in an intercultural educational context while acknowledging the methodological limitations inherent in cross-sectional research designs.

3.2 Research Context

The research was carried out at the Fabiola Salazar Leguía National Intercultural University in Bagua, Peru, an institution established to provide culturally relevant higher education to the Indigenous peoples of the Peruvian Amazon. The university serves students from various Indigenous communities, including the Awajún and Wampis peoples, whose livelihoods often combine university education with productive community activities such as family farming, traditional crafts, and cooperative enterprises. This educational context offers a unique opportunity to examine the managerial skills of Indigenous university students whose entrepreneurial experiences unfold simultaneously in both academic and community settings.

3.3 Participants

The study population consisted of young Indigenous university students from northeastern Peru, aged between 18 and 35, belonging mainly to the Awajún and Wampis peoples. The participants were engaged in productive activities, either individually or in groups, linked to the community economy, such as traditional handicrafts, family farming, the processing of agricultural and livestock products, and local trade, practices consistent with the predominant productive and cultural structure in Amazonian Indigenous territories.

A convenience sampling strategy was employed, as participation depended on the students' availability during the data-collection period and their willingness to take part in the study. The final sample consisted of 300 Indigenous university students who met the established inclusion criteria. The participants represented different academic programs and were involved in productive activities, such as family farming, traditional crafts, and cooperative enterprises. As non-probability sampling was used, the results should be interpreted as representative of the participating students and not of the wider Indigenous population of the Peruvian Amazon.

3.4 Instruments and Measures

Managerial skills were measured using a structured questionnaire specifically designed to assess the managerial skills of Indigenous university entrepreneurs. The instrument consisted of 20 items organized into four theoretically derived dimensions: leadership (items 1–5), decision-making (items 6–10), communication (items 11–15), and strategic planning (items 16–20). Responses were recorded using a five-point Likert scale, where higher scores indicated higher perceived levels of managerial skills.

Before data collection, the questionnaire underwent a process of cultural adaptation to ensure its relevance to the Indigenous context in which the study was conducted. Although the instrument was developed specifically for this research, it was linguistically adapted into the Awajún language to facilitate its understanding among bilingual and multilingual Indigenous university students. The adaptation process took into account the communicative practices, cultural expressions, and organizational characteristics of the Awajún and Wampis communities, ensuring conceptual clarity, sociocultural relevance, and linguistic appropriateness while preserving the theoretical meaning of each item.

Content validity was established through expert judgment, carried out by three specialists in intercultural bilingual education with experience in intercultural education, educational management, and research methodology. Each expert independently assessed the questionnaire in terms of relevance, clarity, coherence, and cultural appropriateness. Their recommendations were incorporated into the final version of the instrument, improving the wording of several items and ensuring their suitability for the intercultural context in which the study was conducted.

The internal consistency of the questionnaire was assessed using Cronbach's alpha. The overall instrument achieved a Cronbach's alpha of 0.892, indicating high internal consistency (Riezler & Hagmann, 2024). The reliability coefficients for the four dimensions were also satisfactory: leadership ($\alpha = 0.812$), decision-making ($\alpha = 0.805$), communication ($\alpha = 0.798$), and strategic planning ($\alpha = 0.809$). According to internationally accepted psychometric criteria, Cronbach's alpha coefficients close to or above 0.80 indicate good internal consistency for research instruments used in educational and social science research. These results support the reliability of the questionnaire in measuring managerial skills among Indigenous university entrepreneurs.

3.5 Procedure

The instrument was administered in person, in coordination with community authorities and local educational actors, respecting the times, spaces, and dynamics of each community. Participants received clear instructions on the objectives of the study and the response procedure, and completed the questionnaire individually, with support from the research team when necessary to clarify linguistic or procedural questions. The data-collection process was carried out in an atmosphere of cultural respect and intercultural dialogue, recognizing linguistic diversity and local forms of interaction, in line with the principles of intercultural higher education.

3.6 Data Analysis

Data processing and analysis were performed using IBM SPSS Statistics and the Python programming language, employing descriptive and inferential statistical procedures (Castañeda et al., 2010; McKinney, 2022). Initially, descriptive statistics were applied to characterize the population, using frequencies, percentages, means and standard deviations for the overall score and its dimensions. Subsequently, the Kolmogorov-Smirnov test revealed a non-normal distribution ($p < 0.05$), so non-parametric analyses were used, especially Spearman's correlation coefficient. Finally, regression models were estimated for explanatory purposes to identify the dimensions with the greatest predictive capacity, considering a significance level of $\alpha = 0.05$. The results were interpreted from an educational and contextualized perspective, avoiding universalist inferences outside the intercultural framework of the study.

3.7 Ethical Considerations

This research was conducted in accordance with the fundamental ethical principles of scientific research, such as informed consent, confidentiality of information, and respect for human dignity, ensuring at all times the free and informed voluntary participation of young Indigenous university entrepreneurs from northeastern Peru. Participants were clearly informed about the objectives of the study, the procedures, the use of information, and their right to withdraw at any time without consequences. Likewise, an intercultural ethical approach was adopted, recognizing and respecting the norms, values, knowledge, and practices of the Indigenous communities involved, in accordance with the principle of respect for cultural diversity. This approach ensured ethical and culturally relevant interaction during the data-collection and analysis process (Resnik, 2018).

4. Results and Findings

Table 1 presents the sociodemographic profile of the 300 young Indigenous university entrepreneurs participating in the study. In terms of gender, the distribution was balanced, with 50.7% men and 49.3% women. Regarding age, 55.0% were in the 18–26 age range, while 45.0% were in the 27–35 age group. In relation to the academic cycle, the largest proportion of participants was in cycle 5 (23.7%), followed by cycle 2 (15.0%) and cycle 8 (11.3%), reflecting a heterogeneous distribution in terms of progress in higher education.

Table 1: Sociodemographic characteristics of the sample of young Indigenous university entrepreneurs

Variable	Category	Frequency (n)	Percent (%)
Gender	Male	152	50.7
	Female	148	49.3
Age	18–26	165	55.0
	27–35	135	45.0
Cycle	5	71	23.7
	2	45	15.0
	8	34	11.3
	4	32	10.7
	1	27	9.0
	6	22	7.3
	3	20	6.7
	9	18	6.0
	7	17	5.7
	10	14	4.7
Language	Awajún	144	48.0
	Wampis	119	39.7
	Spanish	37	12.3
Native Community	Tutumberos	104	34.7
	Imacita	86	28.7
	Nieva	57	19.0
	Río Santiago	53	17.7

Note. Percentages were calculated based on the total sample (n = 300). The variable “Cycle” refers to the academic cycle of higher education in which participants were enrolled at the time of the survey. The variable “Language” indicates the reported mother tongue. “Native Community” corresponds to the community of belonging or primary residence.

Regarding mother tongue, Awajún predominated (48.0%), followed by Wampis (39.7%) and Spanish (12.3%). In terms of community of origin or residence, Tutumberos accounted for the largest proportion (34.7%), followed by Imacita (28.7%), Nieva (19.0%), and Río Santiago (17.7%). These data reflect the linguistic and territorial diversity of the sample, contextualizing the sociocultural environment of the Indigenous university student entrepreneurs evaluated.

Table 2: Self-perceived levels of managerial skills among young Indigenous university entrepreneurs

Variable	Category	Frequency (n)	Percent (%)
Leadership	Low	0	0.0
	Medium	234	78.0
	High	66	22.0
Decision-making	Low	0	0.0
	Medium	152	50.7
	High	148	49.3
Communication	Low	0	0.0
	Medium	235	78.3
	High	65	21.7
Strategic planning	Low	0	0.0
	Medium	169	56.3
	High	131	43.7

Note. Competencies were assessed using an adapted Likert scale and categorized into low, medium, and high levels according to the total scores obtained. Percentages were calculated based on the total sample for each competency.

Table 2 describes the distribution of self-perceived levels of managerial skills among young Indigenous university entrepreneurs. None of the four competencies assessed received scores at the “low” level. In leadership and communication, the medium level predominated (78.0% and 78.3%, respectively), with 22.0% and 21.7% at the high level. Decision-making showed a balanced distribution between medium (50.7%) and high (49.3%). In strategic planning, 56.3% were at the medium level and 43.7% at the high level.

The results indicate that the managerial skills of the participating Indigenous university entrepreneurs were concentrated in the mid-to-high range, with decision-making and strategic planning being the areas in which participants most frequently reported higher levels of competence. Conversely, leadership and communication showed the greatest scope for improvement, as most participants rated themselves at a medium level. These descriptive findings suggest differences in the distribution of competence levels across the various dimensions, providing an empirical basis for subsequent inferential analyses.

Table 3 presents the association between sociodemographic factors and the overall level of managerial skills. Chi-squared tests of independence were carried out, and Cramer’s V coefficient was calculated to estimate the magnitude of each association. Statistically significant associations were identified for age group and native community. Gender, academic year and mother tongue were not significantly associated with the categorized level of managerial skills. Although age group and native community reached statistical significance, the corresponding effect sizes were small and should therefore be interpreted with caution.

Table 3: Association between demographic factors and managerial skills

Factor	Variables	Variable	Chi-square	p value	df	Cramer's V	Conclusion (alpha = 0.05)
Demographic	Gender	Management skills	2.035	0.1537	1	0.082	No statistically significant association
	Age	Management skills	4.002	0.0454	1	0.116	Statistically significant association
	Cycle	Management skills	11.847	0.2221	9	0.199	No statistically significant association
	Language	Management skills	3.662	0.1603	2	0.110	No statistically significant association
	Native community	Management skills	10.119	0.0176	3	0.184	Statistically significant association

Note. Chi-square values, p values, degrees of freedom (df), and effect sizes were reported using Cramer's V coefficient. An association was considered statistically significant when $p < 0.05$.

In this context, Figure 1 shows the Spearman correlation matrix between the four dimensions of managerial skills. All the coefficients shown represent associations between different dimensions of the construct. The strongest positive association was observed between leadership and communication ($\rho = 0.87$, $p < 0.001$), while communication and strategic planning showed a moderate positive association ($\rho = 0.46$, $p < 0.001$).

Leadership exhibited weak positive correlations with decision-making ($\rho = 0.22$, $p < 0.001$) and strategic planning ($\rho = 0.12$, $p = 0.033$). Decision-making showed weak negative correlations with communication ($\rho = -0.19$, $p = 0.001$) and strategic planning ($\rho = -0.12$, $p = 0.042$). These coefficients indicate that the dimensions of managerial competence are statistically associated while representing distinct aspects of the overall construct (Holmström et al., 2022).

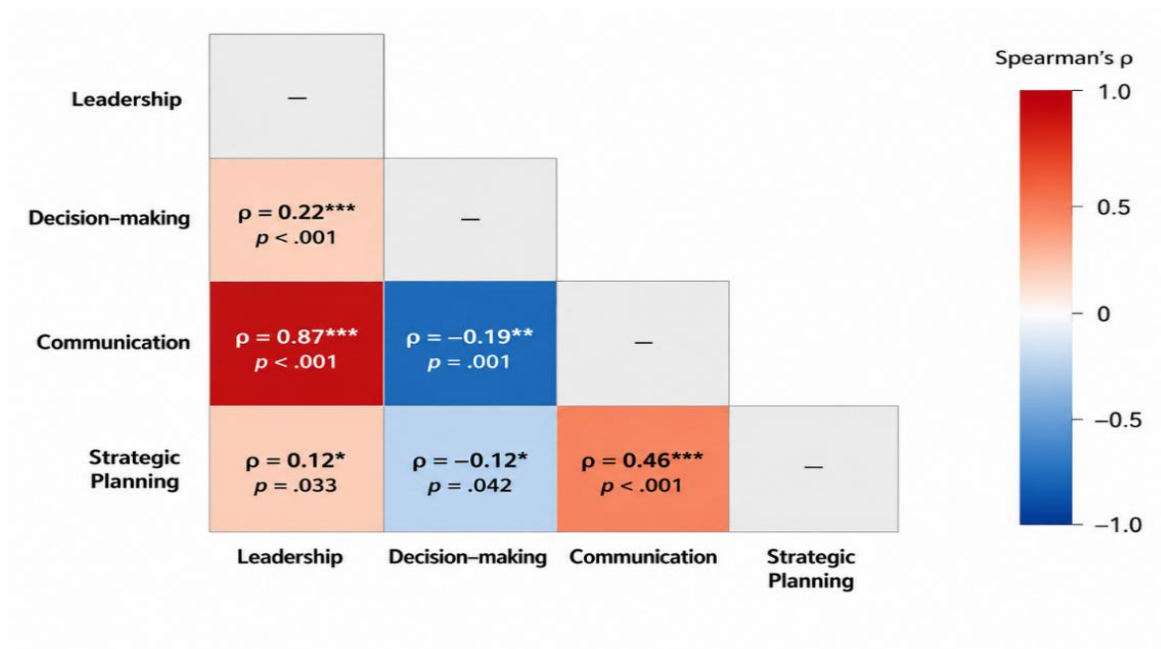


Figure 1: Spearman's correlation matrix between the dimensions of managerial skills

Note. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$. Values represent Spearman correlation coefficients (ρ). Positive values indicate positive associations, and negative values indicate negative associations.

Similarly, Figure 2 shows the distribution of total management competency scores by community of origin and age group. In general, the scores were concentrated in the high range, between 67 and 75 points (maximum possible). Figure A shows that, when grouping participants by native community, the overall mean was 71.07 (SD = 3.43), with moderate dispersion and no extreme differences between communities. In Figure B, when comparing by age group, both ranges (18–26 and 27–35 years) had identical minimums (67) and identical maxima (75). The mean for the 18–26 age group was slightly higher (71.23, SD = 2.88). Although the distributions of continuous scores showed substantial visual overlap, the chi-squared analysis presented in Table 3 identified a statistically significant association between age group and the categorized level of managerial skills, $\chi^2(1) = 4.002$, $p = .045$, Cramer's $V = .116$. As the effect size was small and the p value was close to the threshold of .05, this association should be interpreted with caution.

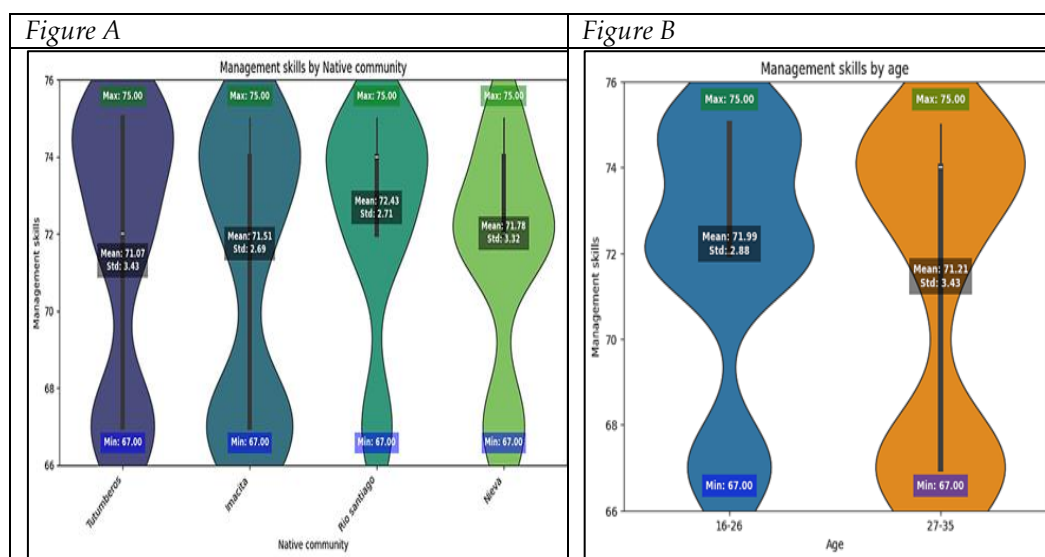


Figure 2: Total scores for managerial skills by native community and age group

Note. The maximum possible score was 75. Figure A: Distribution of aggregate total scores for the four native communities. Figure B: Comparison of total scores between the two age groups. Box plots show the median, quartiles, and range of the data.

In this context, the logistic regression model showed moderate predictive power when considering age and community as explanatory variables for managerial skills. Young people aged 18 to 26 and those belonging to the Nieva Community were less likely to be at a high level, while the 27 to 35 age group and the Río Santiago community were more likely to be at a high level. The overall accuracy was 0.55, with good performance at the medium level (recall = 0.12). The area under the curve (AUC) was 0.678, with low detection at the high level (recall = 0.12). The AUC of 0.678 confirmed moderate discrimination, indicating that these variables do not fully explain the variability in managerial competencies, as shown in Tables a and b and Figure 3. Overall, age group and community of origin alone were insufficient to reliably classify participants with high managerial skills.

Table 4: Regression model coefficients and classification metrics for predicting the level of managerial skills

Model coefficients and intercept:				
Feature	Coefficient			
Age 18-26	-0.2799			
Age 27-35	0.2814			
Imacita Community	-0.0682			
Nieva Community	-0.5431			
Río Santiago Community	0.4760			
Tutumberos Community	0.1369			
Intercept	-0.2281			

Management skills classification report:				
Level	Precision	Recall	F1-score	Support
Medium	0.59	0.83	0.69	36

High	0.33	0.12	0.18	24
Accuracy on the test set			0.55	60
macro avg	0.46	0.48	0.44	60
weighted avg	0.49	0.55	0.49	60
Confusion matrix:				
Array ([[30, 6], [21, 3]])				

Note. The regression model used age and native community as predictor variables. The dependent variable was the level of managerial skills (medium/high). The test set consisted of 60 observations.

The results of the regression model (Table 4) showed that belonging to a specific native community was more strongly associated with predicting the level of managerial skills than the age variable. The coefficients indicated that belonging to the Nieva Community was associated with a decrease in the probability of being classified at the high level (coefficient: -0.5431), while belonging to Río Santiago was associated with an increase (coefficient: 0.4760). The differences by age were marginal.

The classification report revealed that the model performed moderately well, with an overall accuracy of 55% on the test set. Predictive ability was considerably better for the “medium” class (F1-score: 0.69, Recall: 0.83) than for the “high” class (F1-score: 0.18, Recall: 0.12), suggesting that the model successfully identifies individuals at a medium level but has difficulty correctly predicting who will achieve a high level. The confusion matrix confirmed this pattern, showing 30 correct classifications for “medium” but only 3 for “high.” These findings indicate that the sociodemographic variables used (age and community) have limited predictive power, especially for distinguishing high levels of managerial skills, suggesting the influence of other factors not included in the model.

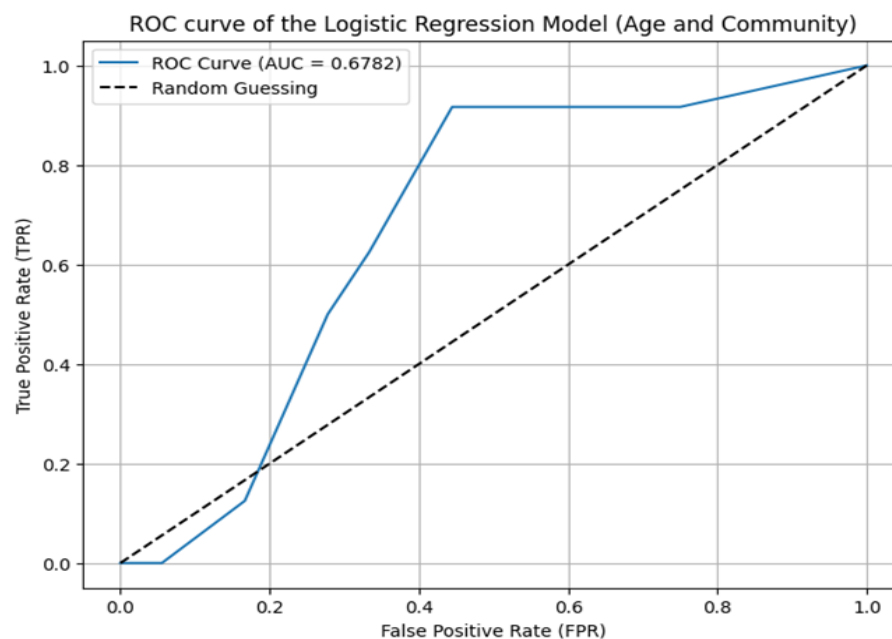


Figure 3: Receiver operating characteristic (ROC) curve of the logistic regression model for classifying the level of managerial skills

Note. The ROC curve evaluated the performance of the binary classification model (medium vs high level) using age and native community as predictors. The AUC of 0.6782 was compared to the random classification reference line (AUC = 0.5).

Figure 3 shows the ROC curve of the logistic regression model that predicts the level of managerial skills (high vs medium) based on age and native community. The AUC obtained was 0.6782, which indicates that the model's discriminatory power is better than chance (AUC = 0.5), but within the range considered low to moderate according to empirical conventions.

This result reinforces the findings reported in Table 4, confirming that, although the sociodemographic variables included (age and community) contribute some predictive power, this is limited. An AUC of this magnitude suggests that the model modestly distinguishes between individuals with high and medium levels of competence but leaves a substantial proportion of variance unexplained. Therefore, it is likely that other factors not measured in this study, such as formal educational level, previous entrepreneurial experience, access to support networks, or psychosocial characteristics, have a more decisive influence on the level of self-perceived managerial competence.

4. Discussion

This study examined the managerial skills of Awajún and Wampis university students enrolled at an intercultural higher education institution in the Peruvian Amazon. Overall, participants reported predominantly medium to high levels of managerial skills, with none scoring low across the four dimensions assessed. This finding suggests that the participating students generally perceived themselves as possessing managerial capabilities that could support the entrepreneurial activities carried out in their communities, although the competency profile varied across the dimensions.

These findings are consistent with recent evidence suggesting that managerial skills constitute a multidimensional set of knowledge, skills, and behaviors that enable entrepreneurs to adapt to changing environments, coordinate resources, and make effective organizational decisions (Mai & Thai, 2024; Pennetta et al., 2024). Recent systematic reviews also highlight that entrepreneurial competencies are not expressed uniformly but vary according to educational experiences, organizational contexts, and opportunities for practical engagement. Consequently, the predominance of medium to high levels of competency observed in the present study is consistent with the competency development perspective proposed in the contemporary literature on entrepreneurship.

In this sense, the absence of low levels in all the dimensions evaluated suggests that young Indigenous university students possess consolidated basic managerial capital, probably strengthened by their dual involvement in academic and community spaces. This finding coincides with that of Peredo and McLean (2013) and Macpherson et al. (2021), who argue that Indigenous entrepreneurship cannot be understood solely as an individual economic strategy but rather as a relational practice linked to collective well-being and territorial sustainability.

From a theoretical perspective, the results provide empirical evidence relevant to the debate on the multidimensional nature of managerial skills in intercultural contexts. The correlational analysis showed that leadership is central to overall managerial performance, with a highly significant association, which supports approaches that conceive of Indigenous leadership not as an individual hierarchical competence, but as a collective capacity based on consensus, trust, and social responsibility within the community (Curry et al., 2016; Macdonald et al., 2025). These findings coincide with studies that indicate that relational competencies are more explanatory than formal techniques in intercultural contexts (Yusof et al., 2019).

Decision-making showed a comparatively stronger association with the overall profile of managerial competence than the other dimensions, suggesting that participants who perceived themselves as more competent in managerial decision-making also reported higher levels of general managerial competence. This finding is consistent with recent systematic reviews indicating that decision-making constitutes one of the core entrepreneurial and managerial skills, as it integrates problem-solving, adaptability, opportunity recognition, and strategic judgment across various organizational contexts (Mai & Thai, 2024; Pennetta et al., 2024). Furthermore, contemporary evidence highlights that entrepreneurial competencies are multidimensional and context-dependent and that decision-making plays a central role in enabling entrepreneurs to respond effectively to uncertainty and changing environments.

By contrast, strategic planning showed a comparatively weaker association with the general construct of managerial competence. Far from suggesting that strategic planning is unimportant, this finding indicates that participants perceived other managerial skills—in particular decision-making and communication—as being more closely aligned with their overall competency profile. Recent reviews highlight that the relative contribution of strategic planning varies according to the organizational context, the characteristics of the enterprise, and the stage of development of entrepreneurial activities, particularly in small businesses and community-based enterprises where planning processes may be less formalized than in conventional organizations (Castro et al., 2024; Nag et al., 2024).

In this regard, the present findings should not be interpreted as evidence that Indigenous entrepreneurship is organized primarily through community agreements or culturally specific governance mechanisms, as these aspects were not directly measured. Instead, they suggest that the relative importance of the dimensions of managerial competence may differ across business contexts, a proposition that future qualitative and mixed-methods studies should examine in greater depth. Consequently, the study contributes to rethinking the dominant theoretical frameworks on managerial skills, proposing their reinterpretation from diverse and culturally contextualized rationalities (Lashitew & Rosca, 2025; Ramboarisata & Gendron, 2019).

It is important to emphasize that these findings should not be interpreted as evidence that intercultural higher education, on its own, leads to the development of managerial skills. Given that this study employed a cross-sectional, non-experimental design, the results describe the skills profile of the participating students without establishing causal effects of education. Instead, the study provides empirical evidence on managerial skills among Indigenous university entrepreneurs, a population that remains underrepresented in the international literature on entrepreneurship and higher education.

5. Practical Implications

In practical terms, the findings have direct implications for intercultural higher education and public policies aimed at entrepreneurship in Indigenous territories. The centrality of leadership and decision-making indicates that university programs aimed at strengthening entrepreneurship should prioritize the development of relational, communicative and community skills, rather than limiting themselves to standardized technical approaches. Likewise, the significant differences observed according to age and community of belonging confirm that skills are not developed homogeneously but depend on specific territorial trajectories. This suggests that institutional strategies should be taught with cultural relevance, recognizing the sociolinguistic and organizational characteristics of each community. Therefore, there is a reinforced need for hybrid training models that integrate contemporary management tools with ancestral knowledge, strengthening culturally legitimate sustainable ventures that are aligned with collective well-being.

6. Limitations

However, it is important to acknowledge some limitations of the study. First, the sample was selected using non-probability convenience sampling, which limits the generalization of the results to other Indigenous populations in Peru or Latin America. Second, competencies were assessed through self-perception using Likert-type questionnaires, which might introduce social desirability bias or overestimation of skills. Third, the logistic regression model showed moderate predictive power, with variables such as age and community only partially explaining high levels of competencies. This suggests that other factors not considered, such as previous entrepreneurial experience, access to institutional support networks, community social capital, financial literacy, or sustainable technological resources, may be involved (Villaruz Opeña & Pontillas, 2024). Therefore, the results should be interpreted as context-dependent patterns rather than statistically generalizable findings. The objective of this study was analytical generalization based on the theory of intercultural education.

7. Future Directions for Research

Based on the findings of this study, several avenues for future research can be identified. First, subsequent studies should incorporate longitudinal designs to analyze the evolution of managerial skills over time and their causal relationship with business sustainability and community development outcomes. This would allow for a more robust understanding of how competencies are built, transformed, and transferred across generations in Indigenous contexts. Second,

future research should integrate mixed-methods approaches, combining quantitative measurement with qualitative techniques such as in-depth interviews, ethnographic observation, and participatory action research. Such designs would provide richer insights into the subjective meanings, cultural narratives, and symbolic dimensions underlying management practices in Indigenous entrepreneurship.

Third, it is recommended that the set of explanatory variables be expanded to include factors such as entrepreneurial experience, access to institutional networks, social capital, financial literacy, digital skills, and community governance structures. These variables may offer greater predictive power than purely sociodemographic indicators. Finally, comparative studies between different Indigenous territories in Latin America and other regions of the Global South would contribute to the development of a more generalizable and culturally grounded theory of managerial skills, moving beyond Western-centered models toward plural epistemologies of management and entrepreneurship.

8. Scientific Contributions of the Study

This study has made three main contributions to the field. First, it provides a theoretical contribution by reconceptualizing managerial skills from an intercultural and Indigenous educational perspective. Second, it offers a methodological contribution by applying quantitative measurement tools in real Indigenous university contexts, something that is still rare in Latin American research. Third, it offers an empirical contribution by generating one of the first large-scale datasets on Awajún and Wampis Indigenous university entrepreneurs, contributing original evidence to the international literature on intercultural higher education.

9. Conclusion

This study examined the managerial skills of Awajún and Wampis university students enrolled at an intercultural higher education institution in the Peruvian Amazon. Overall, participants reported predominantly medium to high levels of managerial skills, indicating that the participating students perceived themselves as possessing managerial skills relevant to their entrepreneurial activities. Among the four dimensions assessed, decision-making and strategic planning showed comparatively higher levels of self-perceived competence, while leadership and communication were most frequently rated at a medium level.

Furthermore, the correlation analysis showed that leadership and communication exhibited the strongest positive inter-dimensional association, while most other relationships were weak or moderate. This finding suggests a partial overlap between the relational and communicative components of managerial skills, although both dimensions retain conceptual differences and should not be interpreted as equivalent. These findings suggest that managerial skills are not evenly distributed across the dimensions of competence and may develop differently depending on individual and contextual characteristics.

Inferential analyses further indicated that age and community of origin were significantly associated with levels of managerial competence. However, the predictive performance of the logistic regression model was moderate (AUC = 0.678), suggesting that these sociodemographic variables explain only a limited proportion of the observed variability. Consequently, other educational, organizational, business, and contextual factors not examined in this study may also contribute to the development of managerial skills.

From an educational perspective, the findings provide empirical evidence on the managerial skills of Indigenous university entrepreneurs, a population that remains underrepresented in the international literature on intercultural higher education and entrepreneurship. Rather than establishing causal effects in education, the study offers a descriptive profile of managerial skills in an intercultural university context and provides baseline evidence for future comparative research. Future studies should employ longitudinal, mixed-methods or multi-institutional designs to examine how managerial skills evolve over time and to explore the educational, cultural and organizational factors associated with their development. These approaches would provide a more comprehensive understanding of the development of managerial skills in intercultural higher education settings.

Conflict of Interest

The authors declare that they have no conflict of interest.

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