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# Knowledge management and the power of communication: INDESGUA as a social technology enabling equitable access to scholarships in Guatemala

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This community case study examines the actors, conditions and context in which scholarships offered by international cooperation programs to access higher education are managed in Guatemala. It documents a communication-based social technology initiative led by organized local civil society: the Institute for the Development of Higher Education in Guatemala—INDESGUA, a nonprofit organization founded in 2007. Using a qualitative methodology that combines in-depth and semi-structured interviews with an analysis of organizational records, this article reflects on the mediating role INDESGUA plays between individuals (demand side) seeking scholarships and providers (offer side), with specific objectives of facilitating access to traditionally excluded groups of Guatemalan society, specifically rural youth, young women, and indigenous populations. The analysis covers 2007 to 2023. The findings show that knowledge management and communication are central elements of INDESGUA's operation and promote social inclusion. However, structural inequalities and contextual systematic biases may limit the effectiveness of these efforts.

## KEYWORDS

scholarships, communication, social technology, INDESGUA, Guatemala, higher education, international development cooperation, knowledge management

## 1 Introduction

Guatemala, classified as an upper-middle-income country (World Bank, 2023a), is located in Central America. Despite having the largest economy in the sub-region, it faces alarming levels of poverty and inequality. The nation is characterized by a small and ineffective state with chronic deficiencies in providing basic public services. Long-standing shortcomings in infrastructure and education, persistent social conflict, and poor governance (International Monetary Fund, 2023; Organization for Economic Co-operation and Development et al., 2023) exist at the expense of its population of nearly 18 million people. Over 50% of the population lives in poverty, with indigenous and rural communities disproportionately affected (Velásquez, 2022). Inequality and exclusion also partially explain low Human Development Indicators (HDI). The latest figure (United Nations Development Programme, 2024) ranked Guatemala 136th out of 190 nations, placing it among the lowest in Latin America. Guatemala has a fragile education system, which shows indicators of insufficient coverage, low quality, and

several geographical and social inclusion gaps at various levels, including primary, secondary, and higher education (World Bank, 2023b; Asociación de Investigación y Estudios Sociales, 2017). The average years of schooling in Guatemala is only 5.7, compared to 8.7 in the broader Latin American region. Although public coverage in primary education is relatively adequate, secondary, and higher education suffers from low coverage and quality (World Bank, 2023a,b; Asociación de Investigación y Estudios Sociales, 2017). Educational outcomes in Guatemala are significantly lower than those of neighboring countries. In 2022, public expenditure on education was only 3% of GDP, less than half the Latin American regional average (UNESCO Institute for Statistics, 2024). The situation is similarly worrisome in higher education. According to the Instituto Nacional de Estadística (2020), in 2023, there were 519,561 students enrolled at the tertiary level (including technical, undergraduate, and postgraduate), while 41,529 people obtained a tertiary-level degree. This figure is consistent with estimations that only 2.6% of the population has access to higher education in Guatemala (UNESCO-IESALC, 2018). In higher education, structural inequalities have created sustained and varied gaps between rural and urban settings, resulting in exclusionary practices that limit access to education for various population sectors, mainly young women, indigenous and afro-descendant youth, and rural communities (United Nations Educational, 2020). Guatemala lacks institutional structures, public policies, and instruments with a specific mandate to promote inclusion schemes in the Guatemalan higher education system. Consequently, a markedly higher degree of inequality can be observed in tertiary education (Bashir and Luque, 2012). With a weak local higher education system, comprised of only one public university and 16 private universities (Consejo de la Enseñanza Privada Superior, 2024), Guatemalans have sought for decades to obtain funding and support—mainly scholarships, but also loans, fee waivers, partial discounts—from international cooperation to access higher education (Bonilla and Kwak, 2014; Bonilla and Kwak, 2015). There is no centralized public system to coordinate, manage and implement the effective use of scholarships, since only the General Secretariat for Planning and Programming of the Presidency (SEGEPLAN) has the mandate to “create and manage a bank of scholarships provided by the international community (Congreso de la República, 1997: art 14, j). The coverage, actions, and performance of SEGEPLAN in this mandate have been assessed as limited and restricted by Woo and Reyes (2018) due to the insufficient infrastructure, personnel and basic intermediary role played by the institution (Morjan De La Vega, 2019). The concentration of SEGEPLAN’s activities in the capital city of Guatemala has also reduced access for scholarship seekers based in rural communities. The Institute for the Development of Higher Education in Guatemala (INDESGUA) was founded in 2007 as a communication-based social technology rooted in civil society. This community case study explores the actors, conditions, and context in which educational opportunities are managed in Guatemala. It also documents INDESGUA’s role in mediating between individuals seeking scholarships (demand side) and scholarship providers (offer side), with a focus on facilitating access for traditionally excluded groups in Guatemalan society.

## 2 A brief account of relevant literature on scholarship programs for access to higher education

According to Kent (2018), scholarship programs are typically structured based on geographic focus, levels, or fields of study, and can significantly impact access to education for specific population groups. In developing countries like Guatemala, these programs often serve as mechanisms to challenge the social and political structures that perpetuate educational inequalities. Consequently, access to higher education through scholarship programs can enable beneficiaries to become agents of social change within their communities and countries (Dassin and Navarrete, 2018). In this regard, Kent identifies key trends in international scholarship programs, including government-sponsored initiatives implemented by developed, developing, or middle-income countries through their educational entities (Ministries of Education or universities); multilateral agencies (World Bank, Asian Development Bank); private foundations (e.g., Open Society Foundations, Ford Foundation, and Mastercard Foundation); and other organizations dedicated to developing scholarship programs that aim to expand access to higher education for both national and international students (Kent, 2018).

From the Latin American perspective, Brunner (2013) observes that access to higher education in Latin America is shaped by the dynamics of private financing, as well as mixed or state-subsidized higher education models. This is particularly evident in countries where institutional policies emphasize the role of education investment in driving economic growth and enhancing national human capital. However, significant disparities persist across Latin American countries in terms of higher education access and addressing systemic needs. Considering these challenges, Martel and Talha-Jebril (2021) highlight the critical role of foundations and other nonprofit organizations in ensuring access to higher education through scholarship programs for traditionally excluded groups. These groups include women (particularly rural and indigenous women), people with disabilities, and other ethnic and social minorities. They emphasize the importance of civil society organizations at the local level in establishing connections between communities, programs, foundations, and other key stakeholders to facilitate access to scholarships and uphold the right to education in contexts where exclusion is the norm. From this perspective, the consulted literature identifies examples of foundations that promote access to international scholarships for developing countries, such as the Ford Foundation International Fellowships Program (IFP) and the Mastercard Foundation Scholars Program, among others (Brogden, 2018; Cosentino et al., 2019; Martel and Talha-Jebril, 2021; Rana et al., 2021). The analysis of these initiatives underscores the transformative potential of scholarship programs in reducing educational disparities and fostering social equity. By leveraging the resources and networks of diverse stakeholders, including governments, private foundations, and civil society organizations, these programs can bridge the gap for underrepresented groups. This approach not only enhances individual opportunities but also strengthens communities by nurturing leaders who contribute to broader social and economic development. Expanding and replicating these practices in other regions could be pivotal in addressing global inequalities in higher education access. Therefore, scholarship programs are vital instruments for addressing unequal access to higher education in developing countries. Different

actors, through diverse initiatives, have contributed not only to counteracting these asymmetries, but also to fostering social development by implementing innovative strategies, such as social technologies: connecting students and young professionals from underrepresented populations to educational opportunities through communication, knowledge, and information management. These approaches not only enhance individual prospects but also empower communities by cultivating leaders capable of driving sustainable development and systemic change. It is important to mention that the general objective of international cooperation is to mitigate the major global challenges established in the Sustainable Development Goals (SDG). In the specific case of scholarships, the main purpose is to promote the development of developing countries through the formation of human capital, with the expectation that beneficiaries will return to their countries to contribute to the progress and well-being of their communities.

Finally, in the case of Guatemala, there is limited literature on the provision and administration of scholarships. [Bonilla and Kwak \(2015\)](#) examined the role of postgraduate scholarships as a mechanism through which donor countries have collaborated with Guatemala to develop national capacities. Their study provides evidence that donor support has indeed contributed to the development of capacity in Guatemala; however, the absence of public policies for human resource management, the dynamics of the international cooperation process, and particular features of the domestic context hinder the effectiveness of the international cooperation scheme, thereby limiting its outcomes and impact.

### 3 Detail to understand key programmatic elements of the community case

This community case study employed a qualitative methodology. Primary data were collected from three groups of participants with rich knowledge, involvement and understanding of the establishment and operation of INDESGUA (key respondents): (i) Members and former members of the Directive Board of INDESGUA; (ii) Group of collaborators with different levels of involvement in volunteer services provided in the operation of INDESGUA; ([Table 1](#)) and (iii) Representatives of selected organizations/institutions mediated by the actions/services provided by INDESGUA. In this group, individuals from universities, public institutions, organized civil society (both local and internationally) were included. [Figure 1](#) details the composition of this group. For selecting the first and second groups, criteria were designed to guarantee a diversity of views and perspectives including gender representation and knowledge/involvement during different stages of INDESGUA's trajectory. Additionally, the registry of 1,658 successful applications (formative opportunities obtained) was analyzed (see [Tables 2, 3](#)).

Participants from groups (i), (ii), and (iii) participated in semi-structured interviews. Additionally, INDESGUA provided an anonymized database of scholarships awarded between 2007 and 2023, based on self-reported information from scholarship seekers.

To achieve the general objective of this study, a literature review and desk research were carried out in addition to collection of primary data. All interviews were recorded using various digital platforms and software (e.g., Google Meets, Zoom, and WhatsApp). The

semi-structured interviews lasted 45 min on average. A total of 30 h of audiovisual material was recorded. All materials were codified and analyzed to determine patterns, trends, common content, and contrasting views.

The Ethics Committee of the University of Technology of El Salvador (UTEC) reviewed the research protocol, design, instruments, and methodological approach for this study. All participants were explicitly informed of their voluntary participation and the possibility of withdrawing from the process at any time, for which they provided an informed consent form prior to their participation. The identities of the participants are not identifiable nor traceable, except for INDESGUA General Director Mr. Luis Edgar Arenas, who provided written authorization to disclose his identity, given the public nature of his role. All interview transcripts were encoded, and the recorded material was accessible only to the research team.

## 4 Context in which INDESGUA was founded

Ethnic and racial inequalities are fundamental drivers of social inequality in Latin America and the Caribbean, with racism sustaining a self-perpetuating culture of privilege (UNESCO; 2022 and 2020). In Latin America, only a few countries report having an indigenous population of more than 10% of their inhabitants, such as the Plurinational State of Bolivia (48%), Guatemala (45%), Mexico (21.5%) and Peru (12.5%). Historically, indigenous groups have faced systemic exclusion, which has disproportionately disadvantaged indigenous students compared to their non-indigenous peers at all levels of education ([Velásquez, 2022](#)). The gaps that affect indigenous groups in terms of access to education are more severe than those affecting Afro-descendants, with the deepest inequalities affecting rural areas and indigenous women and men ([Corbeta et al., 2018](#)). In Guatemala, access to education is marked by inequality and exclusion at all levels. This is also evident in higher education ([Bashir and Luque, 2012](#)). The gender gap in education has somewhat closed in the last few years at lower levels of education, however, there remain disparities in terms of region and ethnicity. Mestizo (and white) students had the highest enrollment rates; boys generally had slightly higher enrollment than girls across all ethnicities. Geographical differences are also significant, with provinces such as Alta Verapaz lagging in coverage while others, like Huehuetenango, showed lower enrollment levels. The Maya population, especially in rural areas, face more significant challenges in accessing education ([OES Observatorio de Educación Superior, 2024](#)). In Latin America, the wealthiest 20% are five times as likely as the poorest 20% to do so. In Guatemala, 5% of the poorest complete secondary school, compared with 74% of the richest ([United Nations Educational, 2020](#)). Attendance was lower by 3 to 20 percentage points among 15- to 17-year-old indigenous language speakers in the Plurinational State of Bolivia, Guatemala, Mexico, and Peru than among all those identifying as indigenous. One major barrier to attendance is the dangerous journey to school; in Guatemala, many roads are unsafe for girls, and transportation, when available, is often prohibitively expensive.

According to the Guatemalan population projections ([Instituto Nacional de Estadística, 2020](#)), the estimated school enrollment rates by

TABLE 1 Coded/participating key respondents through semi-structured interviews.

M/W	Code	Date of interview	Role—former role in INDESGUA
W	DBM-1	2024.06.03	President of the directive board
M	DBM-2	2024.01.15	Vice president and executive director
W	DBM-3	2024.16.14	Member of the directive board/graphic designer
M	DBM4	2024.06.03	Treasurer and member of the directive board
M	DBM5	2024.06.27	Member of the directive board
M	GVC1	2024.06.20	Collaborator—website communication adviser
W	GVC2	2024.06.19	Collaborator /communication material
M	GVC3	2024.06.19	Collaborator—website design and content
W	GVC4	2024.05.27	Collaborator—essay reviewing—structuring applications, coaching, counseling
M	GVC5	2024.08.17	Collaborator—advising early applicants, drafting study plans
W	GVC6	2024.06.15	Collaborator—referring applicants from rural communities in southern and western provinces of Guatemala
M	GVC7	2024.07.06	Collaborator—advising applicants in Taiwan, Australia
W	GVC8	2024.05.31	Collaborator—advising applicants to local programs in Guatemala
M	GVC9	2024.05.17	Collaborator—advising applicants to Fulbright and USA programs
W	GVC10	2024.07.04	Collaborator—design and communication materials
M	GVC11	2024.06.08	Collaborator—advising applicants in Korea, replying to emails
W	GVC12	2024.06.21	Collaborator—referring applicants from rural communities, advising applicants Chile
M	GVC13	2024.05.20	Collaborator—advising applicants in Korea, Fulbright, Asia, Europe, reviewing essays
W	GVC14	2024.08.07	Collaborator—advising applicants in Belgium—copy-editing communicational materials
W	GVC15	2024.08.14	Collaborator—referrals in rural communities in Sololá—advising young indigenous women applicants
M	GVC16	2024.07.08	Collaborator—advising applicants in Brazil, Spain, Chile—issuing reference letters
W	GVC17	2024.07.14	Collaborator—advising applicants in Mexico, counseling, and coaching

*n* = 22/5 MDB = member/former member of INDESGUA directive board—17 GVC = group of volunteer collaborators—women: 11 and men: 11.

ethnic group reveal significant disparities. Mestizos<sup>1</sup> show a high enrollment rate of 93%, followed by Mayas at 67%, Garifuna at 16%, and Xincas at less than 1%. These disparities become even more apparent when compared to the projected ethnic composition of the population in 2022: Mestizos (56.01%), Mayas (41.66%), Garifunas (0.13%), Xincas (1.77%), and Others (0.43%). This comparison underscores substantial inequalities in educational access across ethnic groups. There are also disparities in school enrollment regionally. For instance, Alta Verapaz, Chiquimula, and Petén were the leading departments, with coverage rates exceeding 85%. This means that at least 85% of the population aged 4 to 18 was enrolled in school in these regions. On the other hand, Chimaltenango and Huehuetenango had the lowest coverage rates, both at 71%, despite Huehuetenango being the third department in terms of total enrolled students at the national level.

## 5 Findings and discussion

Enhancing access to higher and technical education is essential for the development of Guatemala. National and international

universities, along with technical institutes, offer a broad range of educational opportunities. However, access to them is only possible for a small portion of the Guatemalan population. There are several factors that hinder this, including:

- The persistence of the social, political, economic, and cultural exclusion patterns of the national development model.
- Economic constraints affecting large sectors of the population.
- The deficiencies in coverage and quality of public and private education at the primary and secondary levels.
- Weak institutional guidance systems that provide limited information on career paths, entry requirements, retention, and opportunities for scholarships or other financial aid.

For these reasons, INDESGUA emerged as an initiative created by a group of professionals aimed at contributing to build human capacities in Guatemala (Arenas, 2024). These professionals recognize that access to educational processes is a citizen's right. This group has, in recent years, carried out systematic actions of support, advice, and accompaniment to facilitate students' access to higher and technical education processes both in Guatemala and abroad. Based on this experience, this group has strengthened its conviction that it is possible to contribute to the development of the country through an increasing participation of all people; men and women; young people and adults; Mayans, Afro-descendants, Xincas and Ladinos or mestizos, in higher and technical education processes.

<sup>1</sup> Mestizo is a term in Spanish that means "mixed race," used in Guatemala to describe people of mixed ancestry with a white European and an indigenous background.

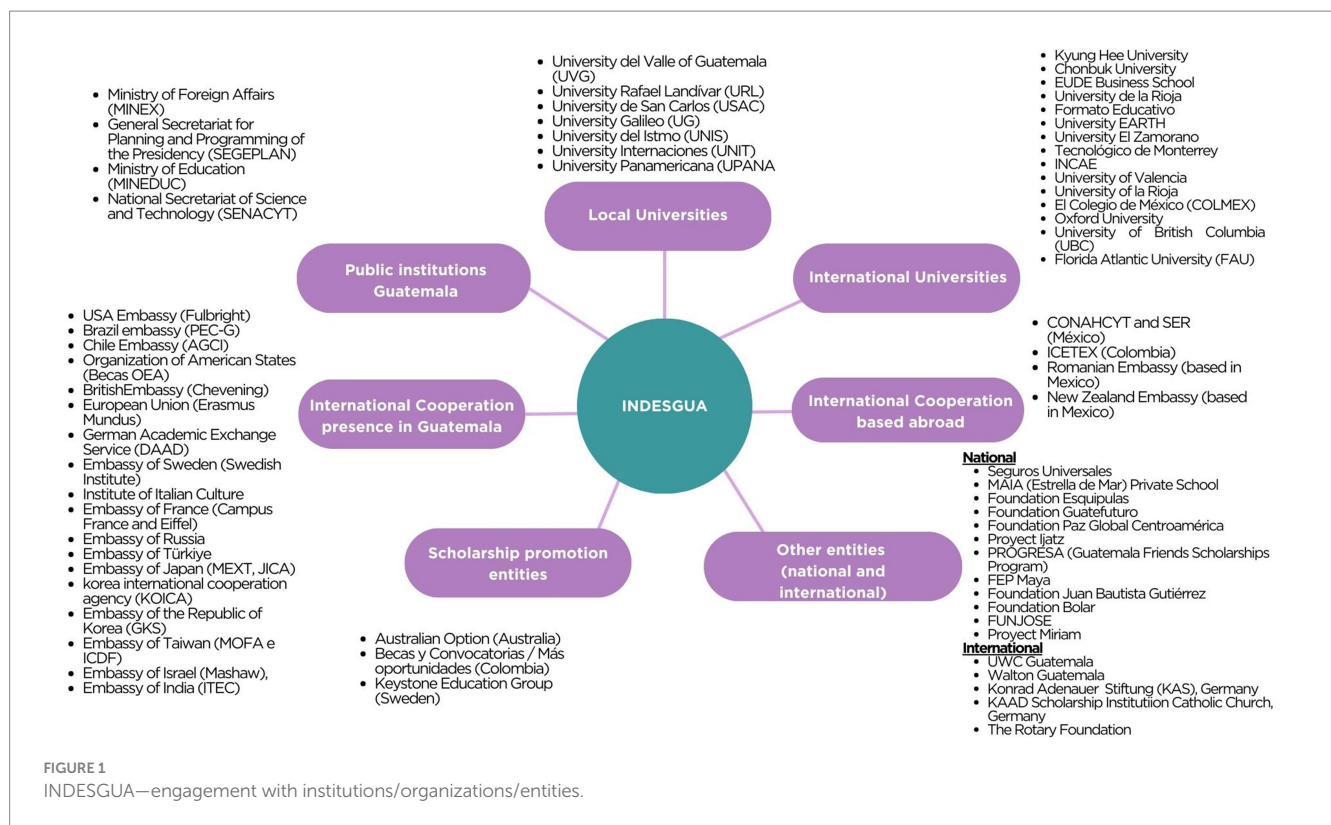


FIGURE 1 INDESGUA—engagement with institutions/organizations/entities.

### 5.1 Foundation and evolution of INDESGUA

INDESGUA is a Guatemalan Civil Association and not-for-profit organization, officially created and registered on June 26, 2007 (Calderon de Leon, 2007). Initially formed by a small group of research-oriented professionals, it has evolved to systematically incorporate volunteer efforts. INDESGUA has its own legal representation and assets. Its main purpose is to advise students and professionals of Guatemalan nationality on the management of scholarships, loans, and educational aid to continue higher degree studies and postgraduate studies in Guatemala or abroad. The mission adopted by INDESGUA is to contribute to the inclusive and sustainable development of Guatemala, through the academic and professional training of its inhabitants, in higher education supported by scholarships and other mechanisms. The Vision followed by INDESGUA, according to its constitutive documentation (Calderon de Leon, 2007) is to become a leader in scholarship promotion and calls for applications in Guatemala. INDESGUA defines its work as promoting equal opportunities and non-discrimination regardless of ethnic condition, religious or political affiliation, gender, age, sexual orientation, ability, nationality, place of residence, or economic possibilities. Its values are cited as: commitment; honesty; determination; gratitude; solidarity; simplicity and innovation.

### 5.2 INDESGUA governance and operations of INDESGUA

Since its creation in 2007, INDESGUA has consistently promoted admission processes and scholarship opportunities so that young

Guatemalans can have timely information to access scholarships and financial aid that facilitate higher education at different levels (technical, bachelor’s, master’s, postgraduate and specialized short courses).

Figure 2 illustrates the governance and operational scheme of INDESGUA. The Directive Board, represented in purple, serves as the organization’s main decision-making body, responsible for legal representation, calling meetings, and managing tasks such as registration with authorities and tax declarations. The General Director, illustrated in black and white, is placed in a central position. He is also a member of the Directive Board (purple) and plays a pivotal role in coordinating activities and delegating tasks to the group of volunteer contributors. The pivotal role of the General Director is exemplified by Mr. Luis Edgar Arenas, who has held this position since INDESGUA’s creation in 2007. He has served as the backbone of the organization, facilitating the functions and operations of the governance structure. However, his central role also presents a challenge for replicating the model in other contexts, given the time-consuming and demanding nature of the position. The group of volunteer contributors carry out different tasks including website design, social media management, video editing, and audiovisual content creation while replying to emails, sharing stories, counseling, and assisting applicants. The next element of the figure incorporates individual applicants or scholarship seekers, those actively involved in the application process, seeking help to secure opportunities. They are committed to their process, or rather processes; in most cases, each applicant engages in more than one scholarship application process. At the right end of the figure, the potential beneficiaries and broader sectors of society are represented in light blue. Most frequently,

TABLE 2 Trajectory—knowledge management and communication engagement over time INDESGUA 2007–2023.

Analytical categories	2007–2011 First period, producing early knowledge products, setting bases for systematic unidirectional communication	2012–2019 Second period, enhancing knowledge products, introducing comprehensive bidirectional communication systems	2020–2023 Third period, producing sophisticated knowledge products, applying multidirectional communication systems
Knowledge management	<ul style="list-style-type: none"> <li>- Gathering and collecting scattered information about scholarships</li> <li>- Mapping, introducing schematic approaches to information</li> <li>- Applying first filters, organizing relevant data (by destination, by level of education, by target group)</li> <li>- First scholarship guides with general advice on applying to different scholarship programs.</li> </ul>	<ul style="list-style-type: none"> <li>- Direct collaboration with scholarship providers was intensified, resulting in wider and more systematic access to calls for applications that, without the role of INDESGUA, would be not accessible to Guatemalan society.</li> <li>- Production of an informational monthly scholarship newsletter</li> <li>- Personalized counseling, tailoring information to smaller groups of applicants or individual scholarship seekers</li> </ul>	<ul style="list-style-type: none"> <li>- Shift from informational guides to specialized scholarship catalogs</li> <li>- Enhancing coverage to information for online trainings and remote education, i.e., E4CC training for English language skills, Formato Educativo and online MBA, University of la Rioja</li> <li>- Categorization of scholarship opportunities by level of education, by source of funding, by geographic destination</li> </ul>
Communication engagement	<ul style="list-style-type: none"> <li>- Used Yahoo email account with limited reach to share information</li> <li>- Publication of Scholarship Newsletter, 10,000 subscribers</li> <li>- National tours with high school students in rural territories</li> <li>- Enabling Subscription to periodically receive newsletters</li> <li>- Informational website (only organizational information)</li> <li>- Social media incursion: creation of a Facebook page.</li> <li>- Producing and sharing material: “Fulfilling goals and making dreams come true,” in which scholarship awardees share their experiences</li> </ul>	<ul style="list-style-type: none"> <li>- Specialized workshops and personalized assistance to prospective scholarships beneficiaries</li> <li>- New design of INDESGUA’s web portal and Scholarships-Newsletter enhancement, 50,000 subscribers</li> <li>- Expansion of other social media platforms: Twitter, Instagram, YouTube</li> <li>- Systematic participation in scholarship fairs, conferences, and other activities, mainly in universities, but also public institutions (SEGEPLAN, SENACYT), and civil society organizations (Seguros Universales)</li> </ul>	<ul style="list-style-type: none"> <li>- The pandemic impacted communication engagement, resulting in a predominance of online workshops with scholarship seekers.</li> <li>- Broadening the reach beyond Guatemalan applicants towards other nationalities, mostly in Latin America</li> <li>- Intensifying engagement with media and press</li> </ul>
Offer side scholarship programs setting trends	<ul style="list-style-type: none"> <li>- Predominance of the Classic Model: international scholarship programs were mostly managed by SEGEPLAN, therefore, in the offer side, emphasis was placed on international cooperation towards national development, i.e., Scholarships for Bachelor in Medicine (ELAM-Cuba; Walton foundation), Master (Ford Foundation) and Technical Level (Semilla—Seed Scholarships), INDESGUA’s actions reflected this offer-National scholarships targeted undergraduate and postgraduate programs with clear priority on rural youth: e.g., Ijaz Project, FEP Maya, PROGRESA</li> </ul>	<ul style="list-style-type: none"> <li>- Expansion to the Modified Classic Model in which a letter of admission from a program included in the academic offer of the scholarship program is required. AGCID-Chile, ICDF-Taiwan; SRE-Mexico, DAAD Regional, Scholarship programs from Colombia, Argentina, Brazil</li> <li>- Due to the evolution of the models, several embassies/cooperation agencies reduced staff in Guatemala</li> <li>- that were specifically assigned to managing scholarship programs.</li> </ul>	<ul style="list-style-type: none"> <li>- Evolution to the Modern Model: in which scholarships are managed in direct contact with universities—several European Union funded-programs like</li> <li>- CONACYT Mexico and Eiffel Scholarships from France</li> <li>- MBA programs with Formato Educativo</li> <li>- Calls for scholarship are mostly shared by partner countries/ organizations on their websites, with no direct contact with scholarship seekers</li> </ul>
Demand side common features of scholarship seekers	<ul style="list-style-type: none"> <li>- A greater number of applicants for undergraduate university scholarships (university technical and bachelor’s degrees) were supported compared to postgraduate scholarships (master’s and doctorate degrees)</li> <li>- Among the Guatemalans who obtained scholarships, there were more people from the provinces and rural areas than from the capital: Guatemala City.</li> <li>- The highest percentages of indigenous/Afro-descendant scholarship recipients were achieved (compared to the other periods),</li> <li>- Although there was a slightly higher percentage of women, gender equity was observed among the scholarship recipients.</li> </ul>	<ul style="list-style-type: none"> <li>- More students and professionals from urban areas applying to programs: undergraduate and graduate studies.</li> <li>- Outreach expansion: students and professionals from other countries in Latin America access information to scholarship opportunities through INDESGUA.</li> <li>- Applicants from other nationalities in Latin America, especially Central America, require services and support from INDESGUA.</li> </ul>	<ul style="list-style-type: none"> <li>- Due to the continuous expansion of the scholarship offer, the demand also expanded.</li> <li>- Several programs targeting a particular group, i.e., public officers, organized civil society, became more flexible to include other sectors.</li> <li>- In this period more individuals applied to scholarship programs with less specifications. In other words, academic excellence became more prevalent than potential impact in the country’s development.</li> </ul>

TABLE 3 INDESGUA—results overview-accessed formative opportunities 2007–2023.

	No. scholarship awardees	%
<b>Training/education destination</b>		
Training/education overseas	901	54.34
Training/education in Guatemala	538	32.45
Online—remote training/education	219	13.21
<b>Total</b>	<b>1,658</b>	<b>100.00</b>
<b>Nationality</b>		
Guatemala	1,557	93.91
Other nationalities	101	6.09
<b>Total</b>	<b>1,658</b>	<b>100.00</b>
<b>Gender</b>		
Men	674	40.65
Women	984	59.35
<b>Total</b>	<b>1,658</b>	<b>100.00</b>
<b>Ethnic group</b>		
Mestizo	1,375	82.93
Maya	265	15.98
Afro descendant	10	0.60
Asian descendant	8	0.48
<b>Total</b>	<b>1,658</b>	<b>100.00</b>
<b>Level of education/training</b>		
Secondary education	26	1.57
Technical degree	24	1.45
Languages	292	17.61
Short courses/specializations	251	15.14
Undergraduate studies	257	15.50
Master degree	780	47.04
Doctoral degree	28	1.69
<b>Total</b>	<b>1,658</b>	<b>100.00</b>

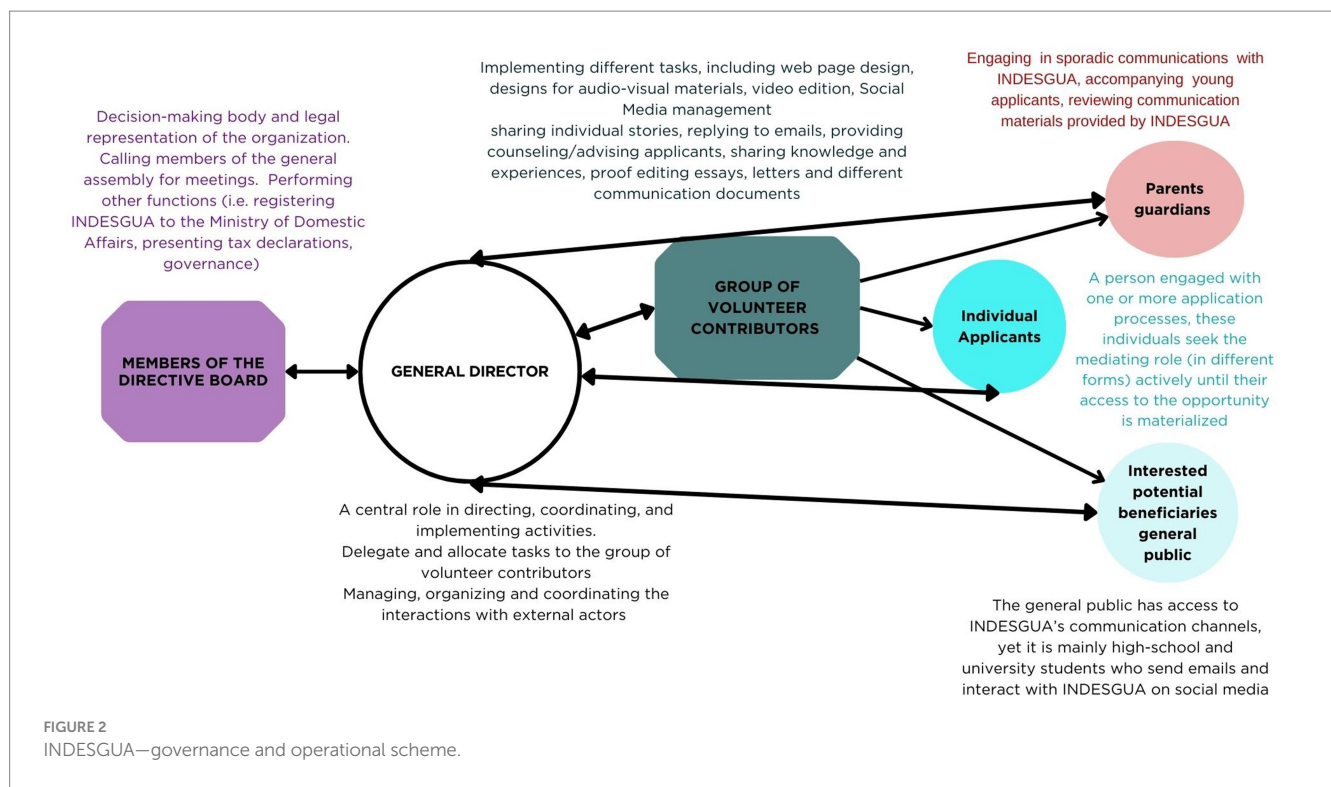
potential beneficiaries are high-school and university students who engage with the organization through email or social media. As the communication products created by INDESGUA to promote access to scholarships are open to the public and free of charge, anyone interested can participate in the scheme. Finally, parents or guardians of applicants who are minors occasionally communicate with the organization, supporting young applicants and reviewing the provided material. INDESGUA has, since its foundation, grown in its direct interactions with different stakeholders at the institutional and organizational level. Figure 1 illustrates the relationship that INDESGUA has developed over the years with different local and international universities. A critical part of INDESGUA's operation is also determined by trends on the cooperation side, including interactions with representation in Guatemala, as well as regional and international operations. In addition, frequent interactions and exchanges take place between INDESGUA and four public institutions: The General Secretariat of Programming and Planning of the Presidency (SEGEPLAN), the

Ministry of Foreign Affairs (MINEX), The Ministry of Education (MINEDUC) and the National Secretariat of Science and Technology (SENACYT).

### 5.3 INDESGUA trajectory and function as a social communication technology enabling inclusive access to scholarships

INDESGUA was certified as a social technology through a competitive process implemented by the Banco do Brasil Foundation (2019). This acknowledged INDESGUA as a “replicable” initiative, involving techniques and methodologies, developed in interaction with the community and which represents effective solutions for social transformation” (Banco do Brasil Foundation, 2017:3). To be certified, the initiative must meet the following criteria: It must have been implemented, be active and have proven results of social transformation; it must be systematized in a way that allows the reapplication of the technology by other communities. The local community must have taken part in the development, implementation, or reapplication of the Social Technology. The initiative must also include the following dimensions: Social protagonism, cultural respect, environmental care, and economic solidarity. Through knowledge management and communicational engagement, the criteria listed above are salient features of INDESGUA's engagement in its community. As suggested by Morjan de la Vega (2019), while other organizations implement information sharing as a one-way process, INDESGUA's approach is documented as bilateral and multilateral, communicating with individuals, entering dialogues — whether face-to-face, by email or other means. Communication is about asking questions and listening to answers. It is about receiving information, analyzing responses, reassessing positions, and moving the discussion forward. Morjan de la Vega (2019) identifies INDESGUA's as a validated model for coaching students into higher education scholarships. Alvarado Fajardo (2018) agrees and calls attention to the importance of INDESGUA's digital graphic material to promote educational opportunities and professional advisory services that it offers to Guatemalan youth on social networks. She said that the design of the digital graphic material on social networks has enhanced the promotion of educational opportunities and professional advisory services that the Institute for the Development of Higher Education in Guatemala-INDESGUA-offers to Guatemalan youth.

Among all the interviewees, there is a consensus on the unique role that INDESGUA plays in Guatemala. INDESGUA's trajectory has allowed it to emerge as a key player facilitating opportunities for higher education and advanced training by providing unique and detailed access to scholarship opportunities. The interviewees stressed that, without the information provided by INDESGUA, several opportunities would have remained out of reach. INDESGUA's role is pivotal in democratizing access to educational opportunities, particularly in a context where information is often scarce due to the intricate nature of the application processes that vary between calls, academic, technical and cooperation areas. Despite financial limitations, INDESGUA has successfully mobilized a dedicated team of volunteers who have contributed to reviewing applications, searching for opportunities, and supporting applicants throughout the process. This support network has been essential for the organization's



continued operation, enabling its standout feature—personalized assistance. Volunteers help identify suitable programs, review essays, and guide applicants through the processes. This support has been identified as a critical factor in the success of applications, and the voluntary work has helped mitigate the lack of financial resources.

One of INDESGUA's strengths is its ability to facilitate equitable access to scholarship information. Over the years, INDESGUA has established itself as a reliable and accessible source to be consulted. As its trajectory has advanced, it has adapted to key technological changes in communication, such as the rise of social media and the widespread use of online platforms like Zoom and WhatsApp, enabling better access to scholarship information. The systematic process of organizing, filtering, and structuring the information has produced knowledge products (starting with scholarship guides, evolving into more sophisticated and complex documents such as scholarship catalogs categorized by level of education, destination, type of funding sources) which are readily disseminated and kept up to date. This has provided for access to accurate and detailed data on both national and international scholarships, allowing scholarship seekers from different socio-economic and geographic backgrounds to apply.

Over time, INDESGUA's 16 years of operation have gained the organization legitimacy, recognition, and validation at the national and regional levels. INDESGUA has established itself as a leader in promoting scholarships through personalized advice and support. This service includes essay reviews, guidance in finding suitable academic programs and the scholarship programs that cover them, making it key for many applicants to improve the probability of enrollment. INDESGUA's work and reputation have evolved and even expanded beyond Guatemalan borders, with 102 successful scholarship applications for non-Guatemalan applicants.

However, difficulties in reaching the most vulnerable communities are persistent. Although it is recognized that INDESGUA has made

significant efforts to reach Mayan, Garifuna, Afro-descendant, Xinca and rural communities, there is still a significant demographic gap in access to information on scholarships available to these populations (the database shows that 65% of the applicants were born in the province of Guatemala). In addition, the people who need scholarships the most are those who tend to have the most difficulty accessing information or meeting the requirements to apply. For instance, the challenges of starting, continuing, and finishing the application process are recurring problems for several applicants. Even though INDESGUA has promoted scholarship opportunities in different ways and spaces, most beneficiaries still have difficulties in applying for scholarships. INDESGUA's database showed that factors such as lengthy administrative procedures, meeting language requirements, associated costs, and the duration of the process make access difficult, especially for people from rural or indigenous communities.

The interviewees mentioned that the application processes are lengthy and costly. Yet, INDESGUA's work in disseminating and sharing self-systematized knowledge products is available free of charge. It must be noted that many people who apply for scholarships face difficulties due to the complexity and cost of the procedures necessary to apply for the scholarships. This includes expenses related to exams such as the TOEFL or IELTS (English), DELF (French), TestDaf (German), among others, and preparatory courses that require time and financial resources to reach the minimum scores required by universities. In addition, there are other mandatory requirements, such as certified translations of diplomas, grades, and letters of recommendation, which further hinder the application process for some. The estimation of minimum preparatory cost is in between 300 to 500 US Dollars, which represents three times the minimum wage in Guatemala.

INDESGUA devotes efforts to the collection and dissemination of information (not managing funding and consequently not granting



scholarships directly) and systematizes information about scholarship opportunities through different knowledge products (guides, catalogues, organized indexes). However, the scope it has reached remains limited because access to information by the communities most in need remains low, as the INDESGUA's database shows. Despite their efforts to reach indigenous and rural communities, a significant gap exists in who can access the scholarships. According to INDESGUA's database, 82.12% of the applicants recognize themselves as *Mestizo* compared to 15.89% who identify themselves as Mayan, and 0.69 and 0.46% of Chinese descendants and Afro-descendants, respectively. The most vulnerable people, who need these opportunities the most, often do not have the resources or information required to apply, perpetuating structural inequalities.

One interviewee mentioned that the lack of strategic alliances, such as with Municipal Development Committees (COMUDES—acronym in Spanish) and Departmental Development Committees (CODEDES—acronym in Spanish), means that INDESGUA has not been able to establish partnerships that could expand its reach at the rural level. These partnerships would be critical to disseminating scholarship information in more remote territories and facilitating access to people who most need it. However, the way these committees work does not allow us to assert that they provide viable and effective options in disseminating information due to their systematic corruption. Additionally, interviewees mentioned that INDESGUA's weakness is its dependence on the work carried out by Luis Arenas. This has meant that responsibilities have not been sufficiently delegated, thus creating a more sustainable structure over time. The future of INDESGUA could be compromised when Arenas ceases to lead the organization. INDESGUA needs to address this issue in order to ensure its long-term sustainability. This dependence has also caused a lack of financing. The organization lacks the necessary funds to expand its coverage, improve its services, and ensure long-term sustainability. Although it has tried to raise funds through donations, this strategy has not been enough to cover its operational needs in the short term. These same financial constraints restrict the capacity for growth and long-term sustainability.

## 5.4 Results and outcomes from INDESGUA's operations 2007–2023

INDESGUA's lifespan can be divided into three phases, influenced by scholarship design, and shifting global geopolitical structures. Regardless of their funding source, international scholarships are being shaped and altered by myriad factors, including budget constraints, commodity prices, regulatory and policy changes, political imperatives, conflict and changing power structures including gender norms. The design and infrastructure that support and maintain international scholarships, such as geographic focus areas or levels of study, can significantly impact access and equity in application processes and will affect the outcomes the programs can achieve (Kent, 2018). These changes have led to the discontinuation of some scholarships with programs, specific targeted populations – i. g. indigenous women and rural youth, that were prioritized by some programs and after a period of time discontinued. With changes to the requirements for the scholarships to be awarded (demanding an advanced command of a foreign language, raising the threshold of grades/GPA), sometimes even without prior notice, the general Guatemalan population is often unlikely to be able to meet.

Table two depicts the trajectory of INDESGUA in three time periods with descriptions of four dimensions of its salient features.

The methodology applied by INDESGUA to engage in knowledge management and communication includes:

- a Research: systematic searches for information on admission procedures and scholarship management; and structured engagement with universities and cooperating partners to update information on calls for applications.
- b Dissemination of information: preparation of guidelines to access scholarships at different educational levels, countries and regions and their publication on the INDESGUA website. Preparation of weekly and special scholarship newsletters to transmit information on open calls, requirements, procedures, calendars, etc., and their dissemination through the INDESGUA Google Group; conducting conferences and participating in scholarship fairs; and systematic incorporation of new members in the INDESGUA Google Group.
- c Participation and management in information and knowledge networks.

Some of the knowledge management and communication products elaborated by INDESGUA over the years include:

- Guide to scholarships and financial aid for continuing undergraduate university studies in the United States
- Guide to university scholarships—undergraduate and graduate—in Guatemala
- United States postgraduate scholarship guide
- Guide to university scholarships—undergraduate and graduate—in Asia (focused on Korea, Japan, and Taiwan, although other countries such as China, Singapore, India) are included
- Guide to university scholarships—undergraduate and graduate—in Latin America
- Guide to university scholarships—undergraduate and postgraduate—in Europe
- University scholarship guide—undergraduate and postgraduate—in Oceania (Australia and New Zealand)
- University scholarship guide—undergraduate and graduate—Canada

INDESGUA has changed how it disseminates scholarship information, reaches the targeted population, and gives guidance and application support, which has led to changes in the population benefiting from the services offered by INDESGUA. For example, from 2007 to 2011, a total of 275 scholarship processes were successfully completed, with 98.6% of the beneficiaries being Guatemalan nationals from all twenty-two provinces and 1.4% being foreign nationals from five different countries. Of the Guatemalan recipients, 44.2% were from the province of Guatemala, while the remaining 55.8% were from other regions across the country. The gender distribution showed a slight majority of female recipients (51.1%) compared to males (48.9%). Regarding ethnic composition, 75.5% of recipients identified as mestizo, whereas 24.5% identified as Maya or Afro descendants. Geographically, 33.1% of the scholarships were awarded for studies within Guatemala, 62.6% for studies abroad, and 4.3% for online courses. The types of academic programs varied, with 21.2% in specialized short courses, 1.4% in language courses,

0.4% in secondary-level education, 2.9% in technical university programs, 39.9% at the undergraduate level, 32.7% at the master's level, and 1.4% in doctoral studies.

From 2012 to 2019, 443 scholarship processes were successfully completed, with 95.5% of the recipients being Guatemalan nationals from all 22 provinces, while 4.5% were foreign nationals representing ten different countries. Among the Guatemalan recipients, 56.7% were from the province of Guatemala, with the remaining 43.3% from other regions across the country. The gender distribution indicated a higher proportion of female recipients (61.2%) than males (38.8%). Regarding ethnicity, 82.8% of recipients identified as mestizo, while 17.2% identified as Maya or Afro descendants. Geographically, 19.6% of the scholarships were awarded for studies within Guatemala, 73.1% for study abroad, and 7.2% for online studies. The programs of study were diverse, including 29.1% in specialized short courses, 1.4% in language courses, 2.0% at the secondary level, 2.0% in technical university programs, 17.6% at the undergraduate level, 44.9% in master's degree programs, and 2.9% in doctoral studies.

The period between 2020 and 2023 proved to be the most successful in INDESGUA's history, despite half of this period coinciding with the COVID-19 pandemic. During this time, a total of 940 scholarship processes were successfully completed, with 91.8% of recipients being Guatemalan nationals from all 22 provinces and 8.2% being foreign nationals from 10 different countries. Among Guatemalan recipients, 58.4% were from Guatemala province, while the remaining 41.6% were from other regions. The gender distribution revealed that 60.9% of the recipients were female and 39.1% were male. Regarding ethnicity, 84.9% of recipients identified as mestizo, while 10.1% identified as Maya or Afro descendants. In terms of the geographic location of scholarships, 39.3% were awarded for studies within Guatemala, 43.4% for study abroad, and 18.2% for online studies. The types of studies included 6.9% in specialized short courses, 30.0% in language courses, 1.6% at the secondary level, 0.4% in technical university programs, 7.1% at the undergraduate level, 52.8% in master's degree programs, and 1.2% in doctoral studies.

INDESGUA has made a significant impact on the democratization of access to scholarships, providing crucial information and support to many individuals. However, it faces substantial challenges related to its reliance on a single leader and lack of funding. To improve, INDESGUA must diversify its sources of income, establish strategic alliances with key stakeholders, and create a more sustainable structure that allows for the delegation of responsibilities and ensures continuity. The knowledge produced through the systematization and dissemination of information on scholarships and the accompaniment and advice to almost 1700 successful cases, means that INDESGUA contributes with access to information and to the improvement of application processes both by helping those interested in applying and providing national and international cooperation agents with data to understand the circumstances of the applicants. Contextualizing INDESGUA's work makes it clear that the barriers faced by the most vulnerable populations to accessing scholarships cannot be overcome only by disseminating information. Solutions must also address structural inequalities by prioritizing specific groups that need additional support in the application process. While this is outside the scope

of INDESGUA's mandate—whose primary focus is on disseminating scholarship information and supporting applications rather than granting scholarships, it remains an important consideration for future development.

## 6 Scope and limitations

This community case study examines the impact of INDESGUA's efforts in promoting and helping applicants obtain scholarships. The scope of the research is limited to the data provided by INDESGUA and the interviews conducted with participants who were or are directly involved with the work carried out by the institution. Therefore, the analysis is limited to the specifics of the work carried out by INDESGUA and cannot be extrapolated to other local or regional experiences. Additionally, the data reported by INDESGUA is self-reported by individuals who received scholarships during the study period (2007–2023), which may result in underreporting of successful scholarship processes. Further research is necessary to explore other civil society organizations that promote and provide scholarships, to better understand the populations accessing these opportunities and whether there are notable differences among beneficiary groups.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by UTEC University of Technology of El Salvador. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

KB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. NOB: Conceptualization, Investigation, Writing – original draft. MASC: Conceptualization, Data curation, Formal analysis, Visualization, Writing – original draft.

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## Conflict of interest

Kleinsy Bonilla and Natalia Ortiz have been members of the Directive Board of INDESGUA for different periods. Besides, the three research team members have been users of INDESGUA's services and participated as collaborators in various volunteering activities. Nevertheless, neither has received salaries, been employed, or had contractual relations with the organization. There is no financial, commercial or any source of funding that may involve a conflict of interest that might lead to questions of bias in the research work or the conclusions/implications of this scholarly work. However, the connections with INDESGUA are disclosed as part of the best ethical practice.

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