Empowering Entrepreneurship: Evaluating the Impact of Post-Disaster Incubator and Accelerator Program

2021 - 2025

Área-E
INCUBACIÓN & ACELERACIÓN

PROGRAMA DE INCUBADORAS Y ACELERADORAS DE PEQUEÑAS EMPRESAS

UPRM E-SHIP NETWORK
Where Innovators Connect

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Incubator and Accelerator

Report

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Abstract

This report evaluates the impact of Área-E, a university affiliated incubator and accelerator program, developed and implemented by the Business and Economic Development Center (BEDC) at the University of Puerto Rico Mayagüez (UPRM) Campus to serve post-disaster small businesses in Puerto Rico under the Community Development Block Grant – Disaster Recovery (CDBG-DR) initiative. The programs aimed to support early-stage and growing businesses through tailored training, mentoring, technical assistance, and networking opportunities. Over the 3 to 6-month cohorts, participants engaged in workshops covering essential business topics, received individualized guidance, and accessed valuable resources. The outreach efforts successfully attracted a diverse group of entrepreneurs across the island, with a notable representation of women-owned businesses (59%) and low-to-moderate-income participants (74%). Results showed strong participant engagement, with completion rates of 77% and 81.5% for the incubator and accelerator programs, respectively. Participants reported improvements in business processes, client acquisition, and access to financial incentives, with overall satisfaction ratings averaging 4.8 out of 5. Despite several constraints, the programs effectively enhanced participants' business capabilities, aligned with CDBG-DR's national objectives, and fostered entrepreneurship across the island.

Keywords: incubation, acceleration, university-affiliated program, post-disaster program

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Introduction

Business incubators are critical in nurturing emergent enterprises by providing strategic resources, including access to capital, specialized mentorship, and robust professional networks. Within the dynamic entrepreneurial ecosystem of the United States, these entities act as cornerstones of innovation, fostering the resilience and sustainability of the long-term viability of early-stage ventures (Awonuga et al., 2024).

The Community Development Block Grant - Disaster Recovery (CDBG-DR) Small Business Incubators and Accelerators (SBIA) Program was established to strengthen Puerto Rico's economy following the impact caused by the 2017 Hurricanes Irma and Maria (U.S. Department of Housing and Urban Development, n.d.). This program aims to support the creation of new businesses through incubation and to strengthen existing ones through acceleration. By providing infrastructure, resources, and support, the SBIA program has funded over 30 incubators and accelerators across the island to benefit businesses, helping them establish viable and sustainable businesses.

The Business and Economic Development Center (BEDC), from the University of Puerto Rico Mayagüez Campus (RUM), is one of the subrecipients of CDBG-DR funds. Established in 1986, the BEDC is the only "University Center" in the Caribbean supported by the Federal Economic Development Administration (EDA) [4]. Its mission is to promote economic and business development throughout Puerto Rico and Virgin Islands. Through, Área-E, SBIA program, the BEDC seeks to support businesses by providing the necessary resources for business development.

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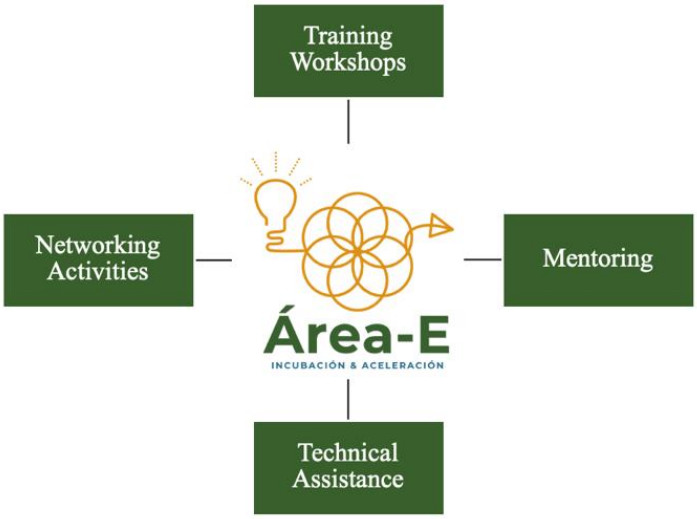
The Área-E is an incubator and accelerator (I&A) program offer training workshops, mentoring sessions, technical assistance, and networking activities. This program prioritizes businesses owned by individuals of low to moderate income, as well as women- and minority-owned businesses, aligning with the national objectives of the CDBG-DR program to foster economic growth. The primary participants of these programs include existing small to medium-sized businesses, particularly those owned by individuals of low to moderate income according to HUD guidelines. They also include businesses impacted by Hurricanes or those initiated in response to the challenges posed by disasters.



This report evaluates the outcomes and effects of the 4-year university-affiliated SBIA program on its participants through their business development support. While incubators and accelerators differ in structure and duration, both models share the same fundamental goal of supporting early-stage entrepreneurial ventures through strategic high-impact interventions. Research consistently highlights the importance of mentoring, training, and tailored business support as central components of both approaches (Pauwels et al., 2016; Cohen et al., 2019). However, most existing studies focus on ecosystems in North America and Western Europe, with limited analysis of their application and outcomes in post-disaster or resource-constrained settings—an area this study seeks to address.

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Literature Review

The concept of business incubation originated in 1959 with the establishment of the Batavia Industrial Center in New York, aimed at revitalizing the local economy by providing shared resources and support to emerging companies (Hackett & Dilts, 2004). Business incubator systems gained worldwide popularity during the 1980s because regional economic development strategies used entrepreneurial networks to stimulate revitalization (Galbraith, McAdam, & Cross, 2019). The early 2000s introduced startup accelerators as fixed-term cohort-based programs which accelerated the development of new businesses. In contrast to conventional incubators, accelerators deliver structured mentorship, seed capital, and curated educational resources within a condensed timeframe, often culminating in a public showcase event. This approach gained traction with the founding of Y Combinator in 2005 and Techstars in 2006, both of which have emerged as exemplary accelerators' efficacy in bolstering startup success (Cohen, Fehder, Hochberg, & Murray, 2019). The programs improve venture development through their creation of dynamic learning environments and their ability to connect ventures with vital investor and mentor networks (Pauwels et al., 2016).

According to Lange and Johnston (2020), entrepreneurs gain substantial benefits from accelerator and incubator initiatives due to the enhanced expert mentorship, critical market knowledge, and robust network cultivation that these programs provide, even when their businesses ultimately do not survive. Moreover, the support provided by these programs helps young businesses navigate early-stage challenges, reducing the likelihood of failure. Bone, Allen, and Haley (2017) highlight the potential of I&A programs to contribute to job creation, regional development, innovation, and broader economic growth. These programs not only enhance the survival rates of businesses but also have a positive effect on communities by fostering socio-economic development, resilience, and opportunities.

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University-affiliated I&A in the U.S. has experienced substantial growth throughout the last twenty years. According to the International Business Innovation Association's 2016 IMPACT Index, the proportion of incubator programs associated with universities increased to 42% by 2016, up from approximately one-third in 2012 and one-fifth in 2006 (International Business Innovation Association, 2016). These programs leverage university resources, such as academic resources, faculty expertise, facilities, and networks to support businesses (Awonuga et al., 2024). Research indicates that university-affiliated models are particularly effective in enhancing the success of small businesses (Dworin, 2016). Key measures show that university incubator graduates perform better than non-university incubator graduates. A study by Lasrado et al. (2016) concluded that university-incubated ventures achieved significantly greater growth in both employment and sales compared to businesses that participated in non-university-affiliated incubators. Overall academic research demonstrates that embedding incubation and acceleration within a university context amplifies their impact by utilizing specialized expertise, combining the higher education community members, including faculty and students, institutional credibility, and expanding resource networks.

The strategic resources provided by incubators and accelerators—including dedicated workspaces, access to capital, expert mentorship, professional networks, and tailored educational programs—have empowered numerous entrepreneurs to achieve rapid scaling and substantial market penetration. According to Bone, Gonzalez-Uribe, Haley, and Lahr (2019), networking opportunities and mentoring are particularly influential in the success of entrepreneurs. Effective mentorship enables business owners to navigate challenges and accelerate their growth trajectory. The U.S. Small Business Administration (2019) highlights the importance of mentoring, noting that small businesses receiving mentorship achieve higher revenues and long-term survival rates.

Effective programs offer structured educational content, such as workshops on business planning, product development, marketing, and finance. This formal training supplements the experiential learning of building a startup. The combination of training programs with mentorships and networking activities significantly enhances entrepreneurial success rates and drives economic growth across diverse sectors. However, there are areas for opportunity – only about one-third of startups in a sample of U.S. incubators/accelerators rated the business education component of their program as effective (Initiative for a Competitive Inner City, 2016).

The success of I&A programs can be assessed through indicators such as business growth, job creation, and community impact. Research by Bone et al. (2019) demonstrates that incubators enhance business growth by increasing employee size, while accelerators drive rapid customer acquisition, revenue growth, and scaling. The evaluation of I&A program success requires special attention when businesses have been affected by a crisis including natural disasters and global pandemics, as they create unique challenges that need different assessment criteria.

The limited resources of small and medium enterprises become more fragile after crisis events because natural disasters disrupt supply chains and block access to financing. Business I&A serve as essential tools to strengthen these enterprises by using organized interventions which build resilience and enable recovery. Research demonstrates that incubators provide essential support to SMEs through expert mentorship and strategic business support and professional network access which helps them survive challenging conditions (De la Cruz & Morales, 2022). Accelerators, characterized by their intensive, cohort-driven approaches, prove particularly effective in post-crisis settings, empowering rapid adaptation and the scaling of innovative solutions (Cohen et al., 2019). These programs function as adaptable collaboration platforms in limited resource settings to establish partnerships between public institutions and private investors and local entrepreneurs (Ali & D'Eredita, 2021). The implementation of such support structures both strengthens SME viability and drives community revitalization and economic renewal.

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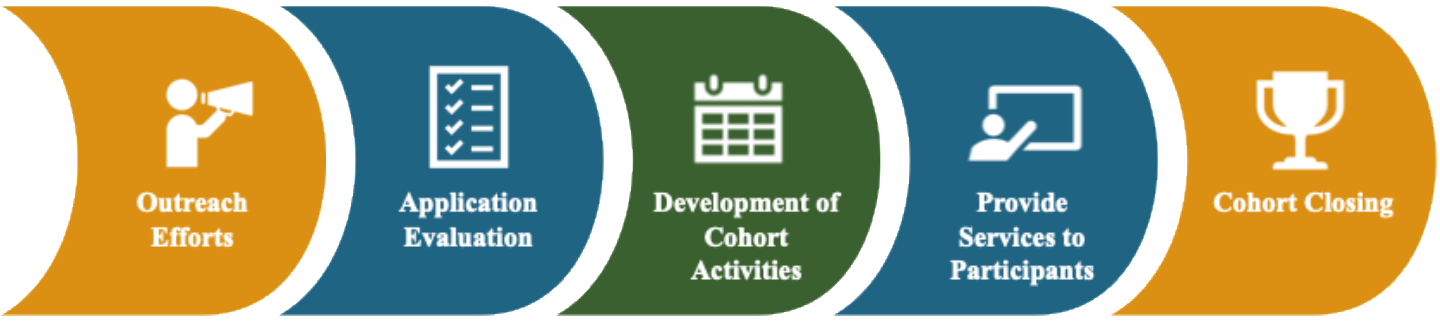
Methodology

The Área-E incubation and accelerator programs were designed to provide comprehensive support to local businesses through training workshops, mentoring, technical assistance, and networking activities. Despite the traditional structure of I&A programs, these were adapted to align with the unique local circumstances, after hurricane disasters and the challenges of the COVID-19 pandemic with the necessity to increase the adoption of technology. The program incorporated flexible learning modalities, including virtual and hybrid workshops, to accommodate participants' needs while maintaining accessibility and engagement. Additionally, online platforms were incorporated to provide continuous access to educational materials, ensuring that entrepreneurs could benefit from the program regardless of external disruptions.

In this context, the primary objective of the incubation program was to empower early-stage entrepreneurs (less than 3 years of creation) by helping them refine their business models while providing them with basic training in business administration areas, as well as practical tools to assess their company's current stage and identify key challenges and growth opportunities. In contrast, the acceleration program aimed to help businesses (3.5 years or more) overcome specific challenges and expand operations by offering advanced training, mentorship, and facilitating access to resources such as seed funding.



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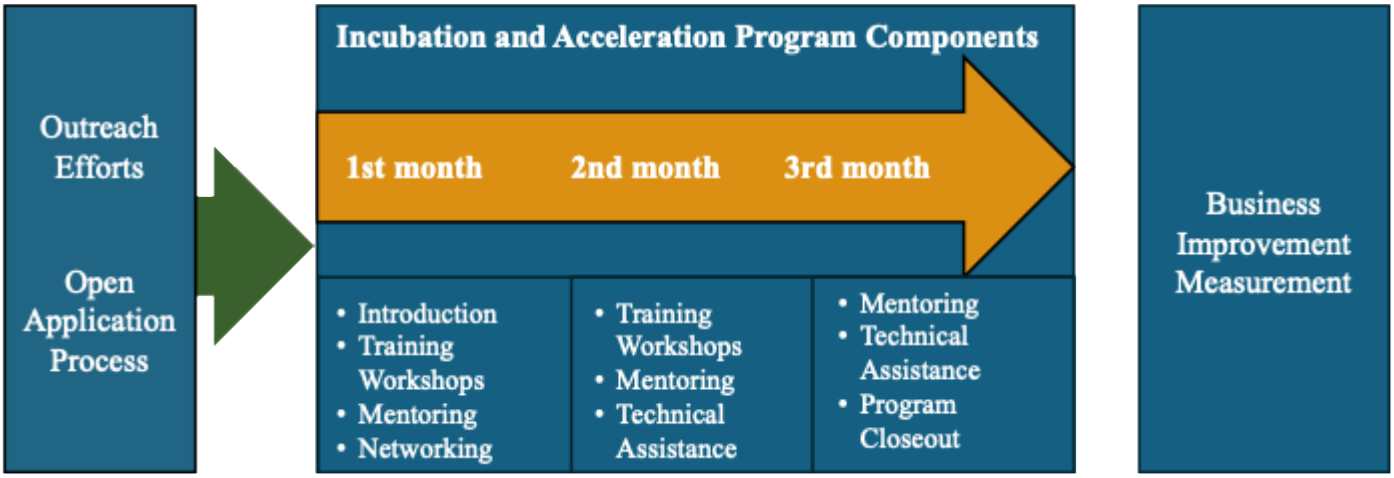
The I&A programs were structured as cohorts lasting 3 to 6 months, beginning with outreach efforts, where promotional activities were conducted to attract potential participants through marketing campaigns and informational sessions. Once the application period was closed, submitted applications were carefully reviewed based on predefined criteria to select the program participants. Simultaneously, cohort activities were planned and designed to ensure a comprehensive and engaging experience. Once the cohort began, entrepreneurs received tailored training, mentorship, and resources to strengthen their business development and operational capabilities. Finally, the program concluded with a cohort closing event, which marked the successful completion of the program, celebrating achievements, measuring impact, and offering future opportunities to program participants.



Program Components

Outreach Efforts

Outreach efforts were essential to socializing the I&A programs and attracting participants from different areas. These efforts included a variety of activities aimed at promoting the programs and engaging local entrepreneurs. Social media platforms such as Facebook, Instagram, and LinkedIn were used to reach a wide audience through targeted posts and announcements.

Additionally, informational sessions were held to provide potential participants with detailed insights into the programs, their benefits, and the application process. To support these outreach activities, promotional materials were designed. These included digital materials for online posts and printed materials such as banners and flyers that were distributed at personal events. These efforts ensured that the programs reached a diverse audience, fostering participation from entrepreneurs across all the impacted areas.

Educational Program

The educational program was designed to improve participants' business and administrative skills through a series of training workshops. These workshops, lasting two hours each, covered a series of topics tailored to address the needs of entrepreneurs based on an initial questionnaire. Topics included Human Resources, Marketing, Business Plan, Business Model Canvas, Accounting, Finance, Legal Structure, Trademark, -commerce, Metrics for Business Performance, and Entrepreneurial Mindset, among others. Workshops were typically led by UPRM professors and industry experts, ensuring participants received high-quality training relevant to their business needs.

The program followed a mixed modality, incorporating in-person and virtual sessions. Virtual workshops were conducted via Microsoft Teams, offering flexibility and accessibility, while in-person sessions allowed for direct interaction and networking. This approach ensured that all participants could engage with the educational content effectively. Additionally, for participants who were unable to attend workshops in person or synchronously, all sessions were recorded and uploaded to an educational platform, providing an asynchronous option.

To further support participants, each professor developed complementary educational materials, tools, and /or templates, such as Business Plan templates, Employee Manuals, and Marketing tool Plans, among others. All these resources were also made available through the Learning Management System (LMS) platform. Participants were granted unlimited access to the LMS platform, allowing them to review workshop content, access supplementary materials, and continue learning at their own pace beyond the duration of the program.

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Mentoring and Technical Assistance Program

Mentoring sessions paired participants with UPRM professors, experienced professionals, and university graduates and undergraduates- who provided personalized guidance tailored to each business's unique challenges. Students and professors came from diverse academic backgrounds, including engineering, business administration, social sciences, and agriculture. Students working in the program were paid 20 hours a week for their work, which was supervised by a professor specializing in their assigned field. They were also required to attend training in different areas of interest within the program and participate in continuous improvement workshops, a requirement established within the Center's organizational culture.

Mentoring sessions included one-on-one online meetings and strategic advice with expert mentors. These mentoring sessions were offered after the topic was introduced within the educational program. Among the most requested mentoring sessions were those in marketing, accounting, and human resources. Mentoring sessions typically lasted 30 to 45 minutes. Technical assistance complemented mentoring by providing additional counseling and consulting in specific business areas. These sessions, led by business experts, aimed to improve operations, enhance efficiency, and address specific needs. Technical assistance sessions usually lasted one hour. Participants could request both mentoring and technical assistance via an online form throughout the program's duration.

Networking Activities and Opportunities

Networking activities aimed to connect participants with fellow entrepreneurs, program staff, and industry experts, fostering collaboration, knowledge exchange, and the sharing of best practices. These events included interactive sessions with members of the entrepreneurial ecosystem and specialized workshops. Program participants had the opportunity to sell their products and promote their services to the community at an expo. Additionally, participants who successfully completed the acceleration program were referred to the Center seed funding program, where eligible businesses could secure up to $5,000 to enhance or expand their operations. This financial support was a key component in closing the cycle of support needed in times of crisis, serving as a booster to take the necessary actions.

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Participant Tracking and Engagement

Having real-time information is vital for acting and implementing changes in programs that serve businesses in times of crisis. That is why we developed a Customer Relationship Management (CRM) system that allowed us to document all interactions with participants. Through the CRM mentors and technical assistance providers submitted detailed reports documenting their interactions with participants. These reports outlined the challenges faced by the businesses and the specific support provided to address those challenges which served as a practical tool for thoroughly monitoring participant progress and evaluating the overall impact of the program. Participant attendance and engagement were tracked using a participation worksheet. This system was used to log participant attendance at workshops, mentoring sessions, technical assistance, and networking events. Participant attendance records were continuously updated to provide an accurate record of each participant's involvement and compliance with the requirements of the program.

Data Collection

Data collection for the program was conducted systematically throughout its duration, utilizing surveys and interviews with participants to gather both qualitative and quantitative data. The process began before the program's start, with the collection of baseline data, including participant demographics, industry type, business stage, financial status, challenges faced, and employment data. This initial data provided insights into the participants' starting points.

During the program, data collection focused on identifying business needs and obtaining feedback on training workshops to facilitate continuous improvement. Participants were asked to complete anonymous feedback forms and surveys after each workshop, capturing their satisfaction levels and the perceived value of the activities. Participants were also surveyed on the helpfulness of mentoring and technical assistance sessions. These tools offered insights into specific program components, ensuring the program addressed participants' needs effectively.

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Post-program data collection emphasized measuring program effectiveness and short-term business outcomes. Three months after the program's conclusion, participants were asked to provide updates on their business performance through online forms. This self-reported data tracked progress over time and assessed the program's impact on key outcomes, such as revenue growth, client growth, job creation, and secured funding. Additional indicators of business improvement included website development, the opening of new business locations, process improvements, implementation of standard operating procedures (SOPs), development of marketing or business plans, social media creation, and new product or service launches. All of this information provided a better understanding of the program's effectiveness and its contribution to participant success.

Results

The impact of Área-E – after crisis events provide valuable insights into the demographics of participants, the nature of their businesses, their primary challenges, and the overall impact of the programs. The data highlights the programs' effectiveness in reaching a broad audience, delivering valuable resources, and fostering business growth. Below is a breakdown of the key findings.

Participant Demographics

The following metrics offer insight into the demographic, geographic, and operational characteristics of the businesses and entrepreneurs who participated in the program, highlighting the program's reach, inclusivity, and areas of impact. All metrics presented below are based on the participants who began the program, except Low-to-Moderate Income (LMI) data, which is based solely on businesses that completed the program.

Age

The age distribution of participants (**Figure 1**) reflects a strong interest in entrepreneurial development, mostly among individuals aged 26-45, who make up 61% of the total participants. The 36-45 age group represents the largest share at 32%, followed closely by the 26-35 age group at 29%. Younger entrepreneurs (15-25) account for 17%, while older age groups, such as 46-55 (15%) and 56+ (8%), have lower participation. Considering that our I&A program is within a university setting, it is expected that many participants will be between the ages of 18 and 30. The ages of our participants are aligned with what the literature establishes regarding the probability of being an entrepreneur, which follows an inverted U-shaped curve, reaching its peak around age 45 (Weiss & Weiss, 2022).

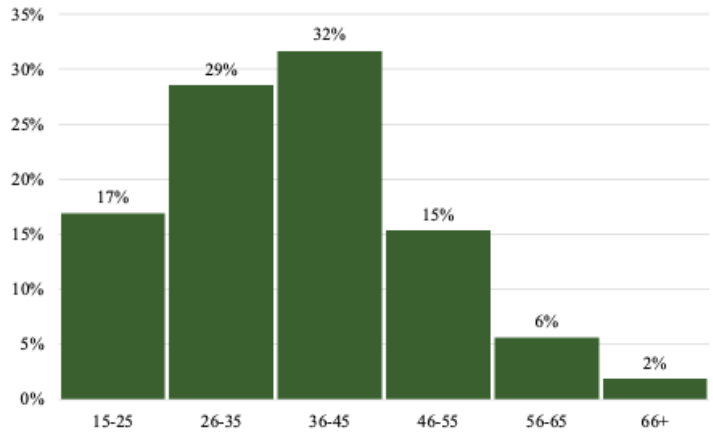

Figure 1: Business Owner's Age

Low-to-Moderate Income (LMI)

In terms of economic background, the program demonstrated significant success in reaching low-to-moderate income (LMI) businesses. To be considered as LMI the program used the summary data of the American Community Survey for 2016-2020 as the CDBG program requested. Of the 262 businesses that completed the program, 204 (78%) were classified as LMI. This result might be expected considering that small businesses in disadvantaged areas lack the capital to pay specialists to help them recover after a crisis. This high participation rate demonstrates the program's success in reaching and supporting underserved businesses, aligning with the CDBG-DR and SBIA objectives to support economic growth among low-income entrepreneurs.

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Business Profile

Woman Owned

The program had strong success with the participation of women entrepreneurs. Of the 333 businesses that started the program, 198 (59%) were women-owned. This high percentage suggests that the program provided an inclusive environment that encouraged female entrepreneurship, aligning with broader efforts of the Center to promote gender equity in business development.

This issue becomes particularly relevant given that, although the literature reports a sustained increase in female entrepreneurship over the past two decades (Brush et al., 2019), women remain underrepresented in support programs such as incubators and accelerators—participating at rates below 20% (González-Uribe & Leatherbee, 2018; Cohen et al., 2019). This underrepresentation has been attributed to perceived hostile or non-inclusive environments, a lack of role models or mentors within these programs, and limited awareness or trust in the value such initiatives can offer. Nevertheless, empirical evidence suggests that when women entrepreneurs have access to incubators and accelerators designed with their specific needs in mind, outcomes in terms of business survival, scalability, and access to capital improve significantly (Cohen et al., 2019; Brush et al., 2018).

Business Location

The geographic distribution of participating businesses covered nearly all municipalities in Puerto Rico, as illustrated by the map (**Figure 2**) where participating regions are shaded in green, demonstrating its extensive impact. Participants originate from diverse urban and rural areas, ensuring accessibility to entrepreneurs regardless of location. The few municipalities without representation highlight potential areas for future outreach.

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Figure 2: Business Location Map

Business Stage

Regarding business development stages (**Figure 3**), 40% of participating businesses were in the Initial Stage, where businesses are being launched and established. The Early Growth Stage followed, representing 29% of participants, indicating a significant proportion of businesses focused on scaling their operations and generating consistent revenues. The Expansion Stage accounted for 18%, reflecting businesses looking to increase market presence and capacity. Meanwhile, only 8% of businesses were in the Idea Stage, and even fewer were in the Maturity (4%) and Decline (1%) stages. These results can suggest that businesses in their formative and growth phases, where external support, knowledge, and resources are required, are more interested in these types of programs, as aimed by incubation and acceleration programs that focus on nurturing early-stage and scaling businesses. The low representation of businesses in the Maturity and Decline stages may indicate that such businesses are less likely to seek external support or perceive less value in these programs, as they may already be established or facing challenges beyond the program's scope. Although incubation and acceleration programs are not usually designed for businesses in the Maturity and Decline stages, our program, due to its strong mentoring and technical assistance components, provided valuable support to these businesses, helping them optimize operations, refine strategies, and explore new growth opportunities.

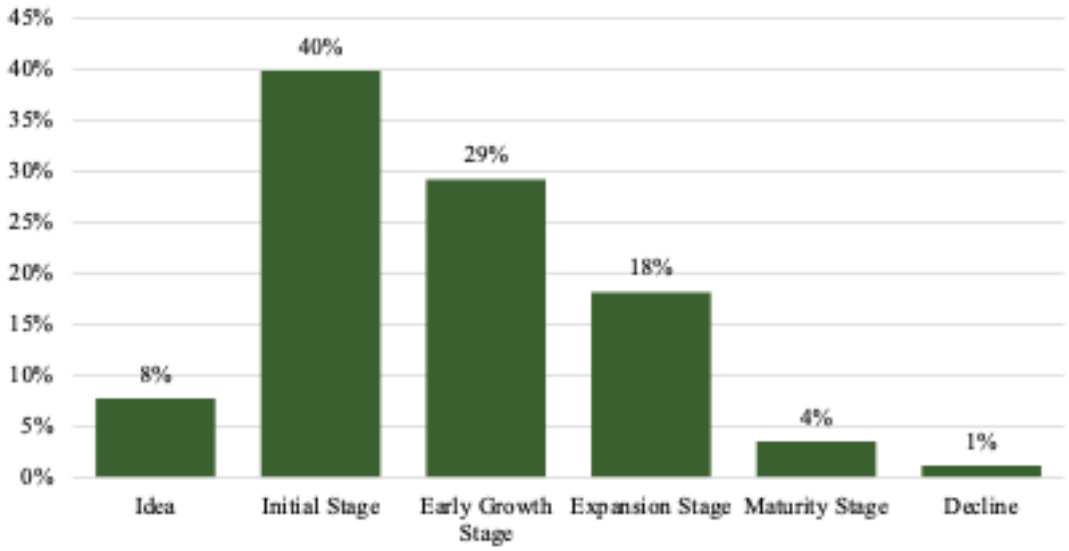

Figure 3: Participant Businesses' Stage

Industry Representation

The industry distribution of participating businesses (**Figure 4**) highlights a strong presence of service-oriented enterprises. The Service industry represented the largest share at 27%, followed by Food & Beverages (19%) and Sales (16%). Other notable industries included Technology (12%) and Health (6%). Smaller industry representations were seen in Agriculture (5%), Tourism (3%), and Manufacturing (4%). Creative Industries accounted for 5%, while Real Estate, Education, Entertainment, and Construction each contributed minimally (1-2%).

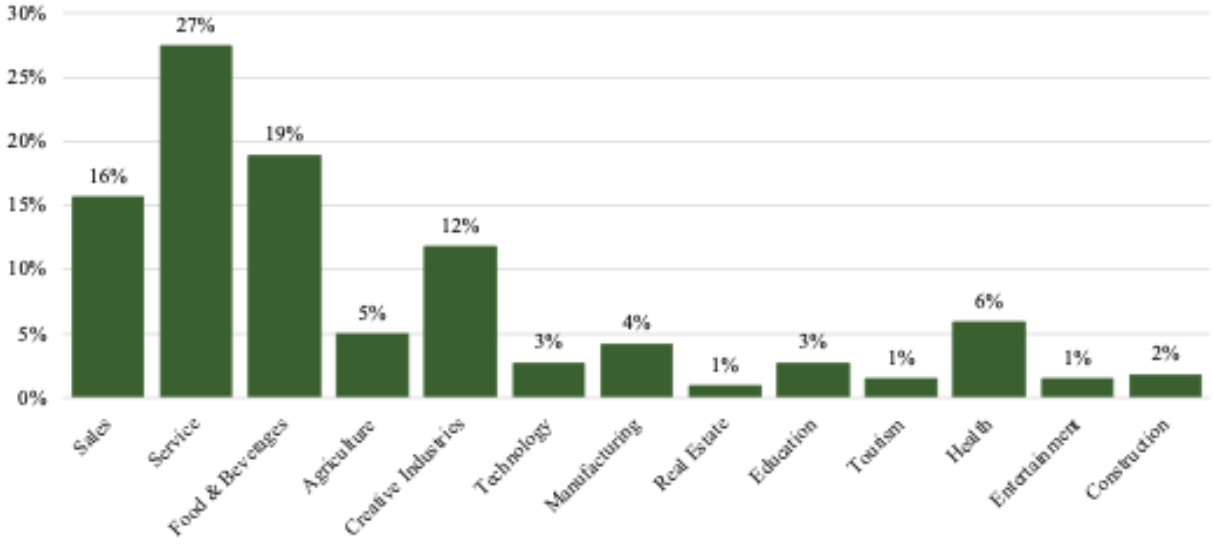

Figure 4: Participant Businesses' Type of Industry

It is therefore expected that most participants will come from the service industry because of the economic trends. According to the World Bank (2020), the service sector accounts for over 60% of total employment in many Latin American economies, a figure that has steadily increased over the past three decades. Similarly, projections from the McKinsey Global Institute (2023) indicate that the fastest-growing sectors in the post-COVID-19 economy are concentrated in services, particularly those linked to digital technologies and healthcare. These dynamics help explain the predominance of service-oriented ventures in entrepreneurial ecosystems and support the observed participant composition.

Employment Data

The employment distribution (**Figure 5**) among participating businesses highlights the early-stage nature of many ventures. The data reveals that a majority—59%—do not have employees, indicating that these businesses are still microbusiness or in their initial phases, stagnant or even reluctant to take the next step. Within this group, 43% are classified as self-employed, meaning that the business owners handle all operations independently and rely solely on their entrepreneurial activities for income. Additionally, 31% of businesses reported having between one to five employees, suggesting that while some participants have begun expanding their teams, they continue to operate on a small scale. In contrast, only 10% of businesses have more than five employees, indicating that a smaller portion of participants have reached a level of growth and financial stability that allows them to support a growing workforce.

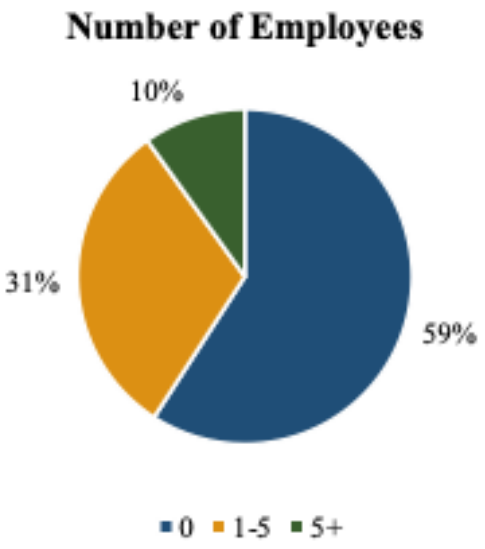

Figure 5: Participant Businesses' Employment Data

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Microbusinesses operated by sole owners without employees face a unique set of challenges that can hinder their long-term viability and growth. One of the primary issues is the overwhelming workload borne solely by the owner, which often leads to fatigue, burnout, and reduced decision-making capacity (Almahfadi, 2019). These entrepreneurs are solely responsible for all aspects of the business, including operations, finance, marketing, and customer service, which limits their ability to specialize or delegate tasks (Mhlongo & Daya, 2023). Moreover, the high dependence on the availability and health of the owner exposes the business to continuity risks. This structure also restricts innovation and scalability due to time and resource constraints. As noted by Bruwer, Smith, and Le Roux (2019), sole proprietors often lack access to or training in critical innovation and strategic management skills, which negatively affects perceived profitability and competitiveness. Together, these factors underscore the vulnerability and operational strain experienced by microbusinesses run by a single individual.

Business Needs and Challenges

At the beginning of the program, businesses identified key needs and challenges (**Figure 6**). Marketing (79%) and Financing (72%) emerged as the most requested areas of assistance, indicating that businesses prioritized increasing their visibility and securing financial resources to support growth. Other significant needs included Accounting (67%) and Business Planning (64%), highlighting the demand for financial management and strategic development guidance. Legal aspects (55%) and Human Resources (43%) were less frequently requested but remained relevant for a portion of participants.

Figure 6: Participant Businesses' Needs

Throughout the program, several other key challenges emerged that commonly affect micro-businesses and entrepreneurs. These challenges impact the ability of businesses to grow, sustain operations, and compete in the market. One of the most significant challenges identified was the lack of administrative structure in many small businesses. Entrepreneurs often start their ventures informally, without clear organizational frameworks, defined roles, or operational processes. This absence of structure can lead to inefficiencies, difficulty in delegating tasks, and challenges in scaling operations. Without proper internal systems, businesses may struggle to manage cash flow, track performance, or build a team capable of supporting long-term growth (Ajala et al., 2023). Establishing clear business processes and organizational structures is essential for improving efficiency and ensuring sustainable development.

A significant portion of participants also faced limited technological proficiency and business knowledge, particularly in areas such as financial management, strategic planning, and marketing. Many entrepreneurs enter the business world without formal education in business administration, as evidenced by the fact that only 44% of US small-business entrepreneurs hold a degree- implying that over 56% lack formal business education (Juang, 2017). Additionally, access to experienced mentorship is limited, with just 22% of small-business owners reporting that they had a mentor during their entrepreneurial journey (Harrison, 2018). This knowledge gap may result in ineffective decision-making, inefficient processes, poor financial planning, and difficulty in identifying market opportunities.

Additionally, many businesses operate with low operating budgets, restricting their ability to invest in essential areas such as marketing, branding, and technological improvements. Limited financial resources make it difficult for small businesses to launch advertising campaigns, develop strong brand identities (Adesoye, 2024), or invest in tools that could enhance efficiency and productivity. As a result, many businesses struggle to establish a strong market presence, leading to slower growth and reduced competitiveness.

Time management was another recurring issue for business owners, particularly for those managing multiple responsibilities simultaneously. Many entrepreneurs from the program operated with limited staff, requiring them to handle various roles, including marketing, sales, operations, and customer service. This often leads to burnout, decreased productivity, and an inability to focus on strategic growth activities. Additionally, many small business owners initially balance entrepreneurship with full-time employment, making it challenging to determine the right time to transition to full-time business ownership. Time management enables entrepreneurs to optimize task prioritization and productivity (Lévesque & Stephan, 2019); thus, without effective strategies, they may struggle to allocate time efficiently, ultimately hindering their ability to scale and sustain their businesses.

Overall Program Statistics

The program demonstrated strong participant engagement, with notable completion rates in both the I&A programs (**Table 1**). A total of 203 businesses started the Incubator program, with 156 completing it, resulting in a completion rate of approximately 77%. In contrast, the Accelerator program had 130 businesses enrolled, of which 106 completed the program, yielding a higher completion rate of 81.5%. The data suggests that businesses in the Accelerator program tend to have a slightly higher likelihood of completing the program compared to those in the Incubator. This could indicate that businesses in the Accelerator program are better established and equipped to meet program requirements, while those in the Incubator, which focuses on earlier-stage businesses, may face greater challenges in sustaining participation. The overall high completion rates in both programs demonstrate strong engagement and commitment from participants, reflecting the effectiveness and relevance of the programs in supporting their business growth.

Table 1: Businesses that began and completed the program

	Incubator	Accelerator
Businesses that begin the program	203	130
Businesses that complete the program	156	106

The level of mentoring and technical assistance (**Table 2**) also varied between the two programs. Participants in the Incubator program received 120 hours of mentoring and 105 hours of technical assistance, while those in the Accelerator program received a significantly higher amount, with 180.5 hours of mentoring and 143.25 hours of technical assistance. The additional support provided in the Accelerator stage likely reflects the increased complexity and demands of scaling businesses compared to those still in the early development phase.

Table 2: Total mentoring and technical assistance provided

	Incubator	Accelerator
Mentoring	120 hrs	180.5 hrs
Technical Assistance	105 hrs	143.25 hrs

Overall, participation in both programs indicated a strong demand for support among early-stage businesses, although the accelerator program (81.5%) reported a slightly higher completion rate compared to the incubator program (77%). Additionally, businesses in the accelerator program sought and received a greater amount of mentoring and technical assistance. This difference can be attributed to the distinct needs and maturity levels of the businesses in each program. Incubator participants, often in the initial or early growth stages, primarily focused on foundational business knowledge and establishing their operations. In contrast, accelerator participants, typically more developed businesses, required specialized guidance to refine strategies, scale operations, and address complex challenges.

Participant Perceived Value of Services Received

Participants expressed a high level of satisfaction with the program. On a scale of 1 to 5, with 5 being the highest rating, the overall program received an average score of 4.8. The educational component also received a rating of 4.8, while mentoring and technical assistance were rated slightly lower at 4.7. These results indicate that participants perceived substantial value in the services provided, particularly in the educational content and structured mentorship.

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Among the most appreciated aspects of the program were the one-on-one mentorship sessions, which allowed participants to receive personalized guidance on their business challenges. Participants also found the educational material clear, relevant, and well-structured, with a strong balance between theoretical knowledge and practical applications. Additionally, the availability of recorded sessions was highly valued, as it provided flexibility for those balancing business and personal commitments.

Despite the positive feedback, participants suggested several areas for improvement. Many requested more in-person workshops, as they believed face-to-face interaction would enhance learning and networking opportunities. They also expressed a desire for increased individualized coaching and extended workshop durations to allow for more in-depth discussions. The program was particularly impactful in helping participants improve their business knowledge, develop structured strategies, and gain confidence in making strategic decisions.

Overall Outcome of Participating Businesses

The impact of the program was evident in the business outcomes reported by participants. Out of 177 respondents who completed exit interviews, 169 (95%) indicated that their businesses had improved as a result of their participation in the program.

For businesses in the Incubator program (**Figure 7**), the most common outcomes reported include process improvement (24%), client acquisition (23%), and hiring professional services (19%). Other significant achievements include the development of business proposals (18%), obtaining necessary permits (16%), and creating new products or services (16%). These results align well with the incubation program's objective, as they demonstrate that participants are refining their business models and addressing critical business challenges. The outcomes related to developing marketing plans (15%), financial plans (13%), and business plans (13%) suggest that entrepreneurs are actively leveraging the comprehensive training provided in business administration areas, equipping them with essential management skills.

The lower percentages for hiring employees (5%), exporting products (2%), and establishing relationships with investors (2%) indicate that while participants have made progress in foundational aspects of their businesses, they may still require further support in scaling and accessing new markets. Overall, the observed outcomes reflect the incubator program's success in providing entrepreneurs with the practical tools and personal assistance needed to identify growth opportunities and strengthen their business operations.

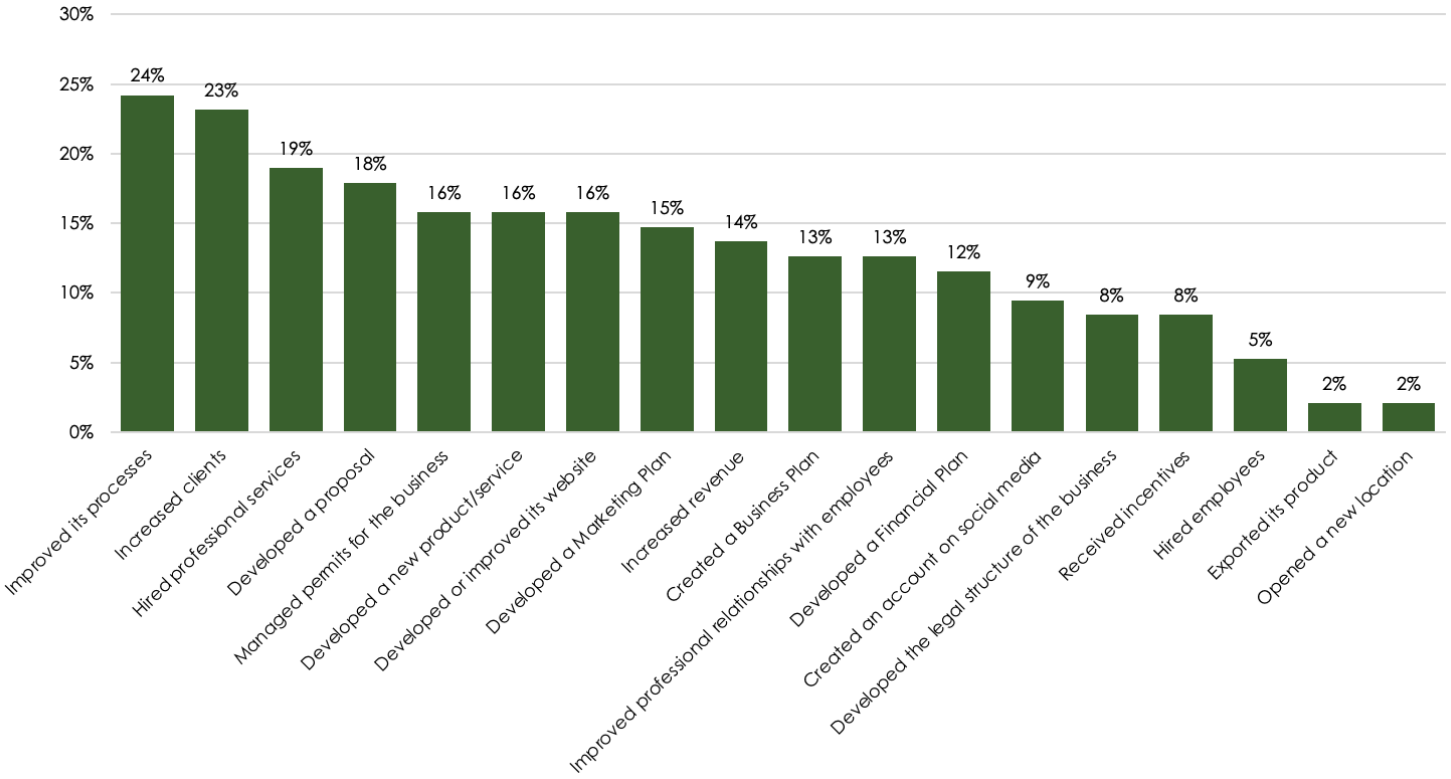

Figure 7: Incubation Program Participants Business Outcomes

In the Accelerator program (**Figure 8**), 51% reported an increase in clients, 42% developed marketing plans, and 39% of participants received financial incentives. Additionally, 38% developed a proposal, 36% created a business plan, 32% improved their business processes, and 31% hired professional services and increased their revenues. However, fewer businesses hired employees (8%) or established relationships with investors (7%), suggesting that while businesses made significant progress in foundational areas, additional support may be needed for long-term scaling and expansion into new markets.

Overall, the observed outcomes reflect the accelerator program's success in equipping entrepreneurs with essential business management skills, access to financial resources, and tailored support to overcome challenges.

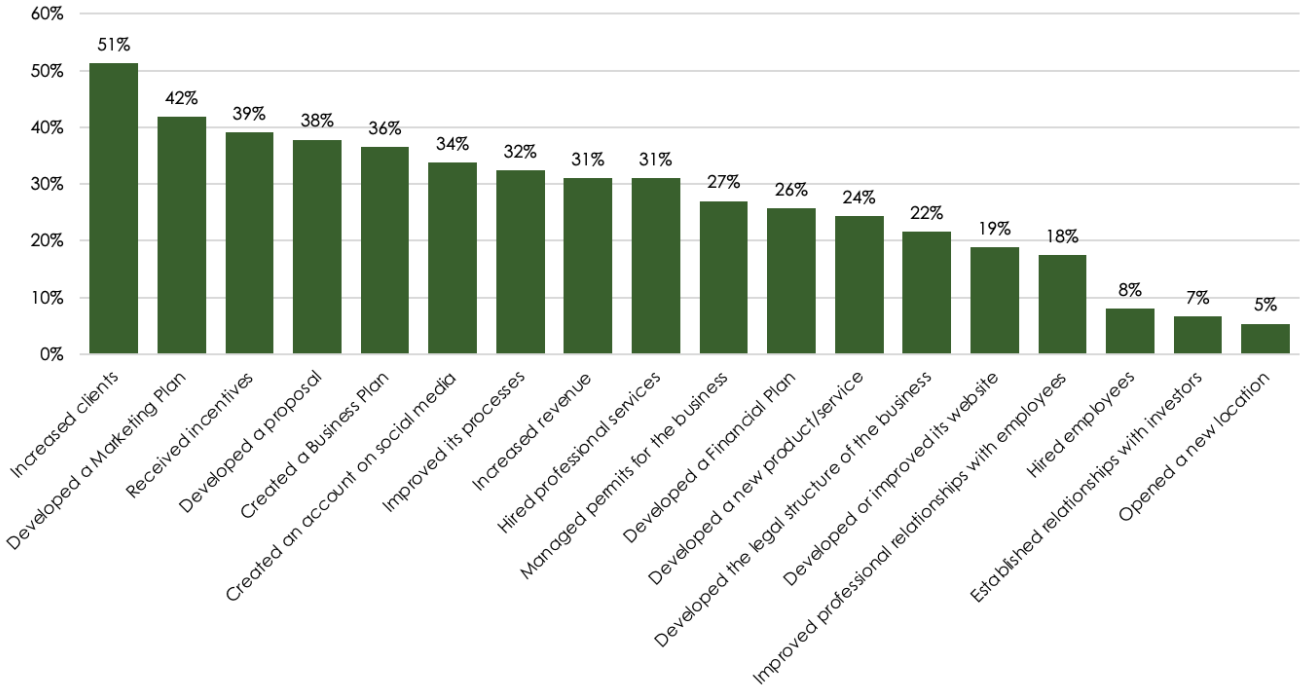

Figure 8: Acceleration Program Participants Business Outcomes

Conclusion

Discussion of Results

Área-E successfully supported business growth and development across Puerto Rico, particularly among low-to-moderate income (LMI) entrepreneurs, aligning with the national objectives of CDBG-DR. Participants reported significant improvements in areas such as client acquisition, process enhancement, and business planning, with high satisfaction reflected in an average program rating of 4.8 out of 5. The programs effectively addressed the needs of early-stage and growing businesses through comprehensive training, personalized mentorship, and valuable networking opportunities, while also fostering inclusive economic development by engaging women and minority-owned businesses.

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The success of Área-´ I&A programs – after crisis events- was largely driven by its flexibility and adaptability in meeting the evolving needs of participants. Recognizing the diverse challenges faced by entrepreneurs, the program adjusted its educational curriculum to ensure accessibility, simplified complex business concepts, and incorporated a hybrid learning model that allowed participants to engage synchronously and asynchronously. This adaptability enabled business owners, many of whom had limited availability, to access critical resources without disrupting their daily operations. Additionally, the program emphasized thorough documentation of its structure, methodologies, and outcomes, ensuring its replicability for future cohorts and other entrepreneurial support initiatives that can be adapted to different business ecosystems. This combination of flexibility and structured documentation ensures that the program can continue to evolve while maintaining its effectiveness in fostering entrepreneurial growth and economic development.

Furthermore, the staff composition of faculty members and students from different fields along with administrative personnel enabled the program to address multiple topics and challenges. The most requested technical support areas were marketing, accounting, and finance. Business owners often manage their social media platforms, limiting the effectiveness of these tools. In accounting and finance, many businesses lacked clear pricing and product costing knowledge, and their financial services extended only to basic collection systems. Ultimately, all these issues reflect a broader structural limitation: the business owner is typically responsible for every aspect of the enterprise, from administration to daily operations, not providing enough time to address all aspects deeply or develop strategic plans.

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Lessons Learned

The implementation of Área-É revealed key lessons that informed crucial adjustments to better meet participants' needs. Initially, the educational curriculum was overly complex compared to participant knowledge, which limited their comprehension despite their eligibility based on business experience. To address this, the curriculum was simplified to enhance understanding and practical application. Additionally, the program's delivery method was adapted to a hybrid model, offering both synchronous and asynchronous options to accommodate the limited availability of business owners, many of whom managed operations without additional staff. This flexibility ensured uninterrupted participation while respecting entrepreneurs' time constraints. Furthermore, it became evident that many participants lacked clarity regarding their business needs. In response, a dedicated session was integrated into the program to guide participants in identifying and prioritizing their operational challenges. These adjustments significantly improved the program's effectiveness, ensuring it was accessible, practical, and aligned with the realities of local entrepreneurs.

Limitations

The program evaluation faced several limitations that may have affected the accuracy and comprehensiveness of the results. One significant limitation was the short evaluation period, which restricted the ability to observe long-term business improvements such as revenue growth, customer acquisition, and operational efficiency. These indicators often require extended timeframes to show meaningful progress. Nevertheless, this study demonstrated that businesses achieved substantial improvement during the short-term evaluation period. Additionally, the accuracy of quantitative data provided by participants was limited. Many early-stage businesses lacked robust financial tracking systems, resulting in missing, estimated, or inconsistent figures for key metrics like revenue, profit margins, and client numbers. Some participants were also hesitant to share detailed financial information due to confidentiality concerns, further contributing to data gaps. Consequently, the evaluation relied more heavily on qualitative indicators to assess business outcomes, which, while insightful, may not fully capture the programs' long-term impact on participants' financial performance.

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Recommendations

Each incubator and accelerator (I&A) program must be tailored to the specific profile of the businesses it serves. This requires flexibility to adapt the programs to the entrepreneurs' actual needs, rather than assuming the existence of business knowledge skills and robust administrative systems based on business age or volume. Another critical consideration is the economic context in which these businesses operate. While general economic trends certainly impact competitiveness, catastrophic events—such as hurricanes, earthquakes, or a global pandemic—require a complete re-evaluation of business practices and the strategies needed for adaptation and growth. In this case, the most urgent and effective response was to help entrepreneurs strengthen their administrative structures so they could navigate the crisis and make informed decisions regarding necessary changes.

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