

Integración de las TIC en el servicio al cliente en las PYMES de la provincia de Cotopaxi

Integration of ICT in Customer Service in SMEs in the province of Cotopaxi

- ¹ Pierina Mariu Quijije Choez  <https://orcid.org/0000-0001-5685-4628>
Bachelor's Degree in Management Information, Technical University of Cotopaxi, Latacunga, Ecuador.
pierina.quijije8375@utc.edu.ec
- ² Katherine Stephania Vaca Villa  <https://orcid.org/0009-0008-4219-6546>
Bachelor's Degree in Management Information, Technical University of Cotopaxi, Latacunga, Ecuador.
katherine.vaca4425@utc.edu.ec
- ³ Diego Fernando Jacome Segovia  <https://orcid.org/0000-0002-7741-0978>
Tutor teacher, Technical University of Cotopaxi, Latacunga, Ecuador.
diego.jacome@utc.edu.ec



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Palabras clave:

PYMES, TIC, experiencia del cliente, digitalización, desarrollo empresarial, servicio al cliente

Resumen

Introducción. La integración de Tecnologías de la Información y Comunicación (TIC) en el servicio al cliente en las PYMES es vital en el actual panorama empresarial. Investigaciones previas destacan su impacto positivo en la calidad del servicio y eficiencia operativa. Sin embargo, persisten desafíos como la brecha digital y limitaciones de recursos que deben superarse para maximizar los beneficios de las TIC en este sector. **Objetivo.** Medir la integración de las TIC en el servicio al cliente de PYMES en la provincia de Cotopaxi. **Metodología.** El estudio emplea un diseño de investigación mixta, combinando métodos cuantitativos y cualitativos para investigar la integración de TIC en el servicio al cliente de PYMES en Cotopaxi. Utiliza encuestas y entrevistas para recolectar datos, enfocándose en PYMES que emplean TIC, analizando estadísticamente los datos para identificar tendencias y correlaciones. **Resultados.** Los resultados se obtuvieron mediante encuestas estructuradas y entrevistas semi estructuradas a PYMES de Cotopaxi. Las encuestas proporcionaron datos cuantitativos sobre el uso de CRM, redes sociales y capacitación en TIC, mientras que las entrevistas brindaron un contexto cualitativo. El análisis estadístico identificó porcentajes y tendencias clave. **Conclusión.** Las PYMES en Cotopaxi enfrentan desafíos al adoptar tecnologías como CRM, ERP y redes sociales, debido a barreras culturales, financieras y de capacitación. Superar estos obstáculos mejoraría la eficiencia y competitividad. La integración efectiva de TIC mejora la gestión de datos y la satisfacción del cliente. La capacitación en TIC fortalece la adaptación y la innovación. Se recomienda políticas públicas inclusivas y apoyo gubernamental para una digitalización equitativa y sostenible. **Área de estudio general:** Ciencias Administrativas. **Área de estudio específica:** Gestión de Tecnologías de la Información en Servicio al Cliente en PYMES. **Tipo de estudio:** Artículos originales.

Keywords:

SMEs, ICT, customer experience, digitalization,

Abstract

Introduction. The integration of Information and Communication Technologies (ICT) in the customer service of SMEs is vital in the current business landscape. Previous research efficiency. However, challenges such as the digital

business
development,
Customer Service

divide and resource limitations must be overcome to maximize the benefits of ICT in this sector. objective. Measure the integration of ICT in customer service of SMEs in the province of Cotopaxi. Methodology. The study employs a mixed research design, combining quantitative and qualitative methods to investigate the integration of ICT in customer service of SMEs in Cotopaxi. It uses surveys and interviews to collect data, focusing on SMEs that employ ICT, and statistically analyzes the data to identify trends and correlations. Results. The results were obtained through structured surveys and semi-structured interviews with SMEs in Cotopaxi. The surveys provided quantitative data on the use of CRM, social networks, and ICT training, while the interviews provided qualitative context. Statistical analysis identified key percentages and trends. Conclusion. Small and medium-sized enterprises (SMEs) in Cotopaxi face significant challenges in adopting technologies such as CRM systems and social media due to cultural, financial, and training barriers. Overcoming these obstacles would enhance efficiency and competitiveness. Effective ICT integration improves data management and customer satisfaction. ICT training strengthens adaptability and innovation. Public policies promoting inclusive digitalization and governmental support are recommended for equitable and sustainable business development in the region.

Introduction

In the modern business environment, Information and Communication Technologies (ICT) have profoundly transformed the dynamics of how organizations manage their operations and customer relationships. The rapid evolution of ICT has enabled businesses, including small and medium-sized enterprises (SMEs), to automate processes, optimize data management, and significantly improve both internal and external communication. This digital transformation has not only simplified administrative and operational tasks, but has also provided SMEs with powerful tools to compete in a highly competitive, globalized market. (Niebles et al., 2020).

However, SMEs face the challenge of adapting quickly to this digitalized environment. Effective adoption of ICT requires not only the implementation of appropriate hardware

and software, but also training and development of digital skills among employees. This transition can be particularly challenging due to limited resources and tight budgets that make it difficult to invest in advanced technology and the training necessary for its optimal use.(Linares et al., 2020).

SMEs also face constant pressure to innovate and adapt to changing consumer demands. In a market where agility and responsiveness are critical, ICT offers SMEs the opportunity not only to survive, but to thrive. The ability of these companies to properly integrate ICT into their operational and business strategies can make the difference between success and stagnation in an increasingly dynamic and competitive business environment.(Ramos-Vecino et al., 2020).

The integration of ICT in SMEs not only implies improvements in internal efficiency, but also in the way they relate to their customers. CRM (Customer Relationship Management) systems and social media platforms allow SMEs to more effectively manage customer interactions, personalize offers, and respond quickly and accurately to market needs and expectations. This not only improves the customer experience, but strengthens loyalty and retention, crucial factors for sustainable growth and long-term profitability.(Morales et al., 2022).

Successful SME adaptation to ICT also involves significant cultural and organisational change. It is critical that these companies not only adopt new technologies, but also foster a culture of continuous innovation and adaptation. This includes the ability to learn and adjust quickly as technologies and market expectations evolve, thereby ensuring that SMEs can maintain and improve their competitive position in a dynamic and ever-changing global business environment.(Morales et al., 2022).

In a recent study Pacari (2023), found that CRM adoption in small and medium-sized businesses not only improves operational efficiency but also has a positive impact on their overall economic performance. CRM continues to be critical for SMEs looking to effectively manage their customer relationships in an increasingly digitalized environment. Implementing CRM systems not only centralizes relevant customer information but also significantly improves the personalization of interactions and optimizes marketing and sales strategies (Pozo & Salazar, 2024). By having centralized access to detailed data on customer preferences, purchase history and behavior, companies can tailor their services and products more precisely, thereby strengthening customer relationships and loyalty.

In addition to improving data management, CRMs facilitate the integration of chatbots – automated tools designed to offer immediate responses to common customer queries via digital platforms. These chatbots not only provide fast and accurate responses 24/7, but even reduce the manual workload of staff by handling repetitive and simple queries

efficiently.(Leon & Perez, 2024).This automation frees up human resources for more strategic tasks focused on continuously improving the customer experience, such as personalizing offers, proactively managing complaints, and identifying cross-selling opportunities.

Integrating chatbots within CRM systems contributes to a more satisfying and consistent customer experience. By offering consistent and accurate responses in real time, chatbots help maintain customer satisfaction and strengthen the perception of the brand as approachable and service-oriented. This proactive approach not only improves retention of existing customers, but can also attract new customers by highlighting the company's ability to respond quickly to market needs and queries.

According toPacari (2023),The adoption of ERP (Enterprise Resource Planning) systems in small and medium-sized enterprises (SMEs) in developing countries has been shown to have a positive impact on economic performance. ERP systems represent a great value for SMEs in the efficient integration and management of their business processes. These systems cover various functional areas such as inventory, human resources and finance, allowing for a more coordinated and effective management of business resources. By centralizing and automating these processes, ERPs facilitate the generation of real-time analytical reports, providing accurate and up-to-date data that is crucial for strategic decision making.(Ortega, 2024).

In the specific context of Cotopaxi province, the adoption of ERP systems by SMEs can be challenging due to several factors. One of them is the need for trained personnel who can effectively implement and operate these complex technological systems. Proper training is critical to maximizing the benefits of ERPs, ensuring that employees can use all available functionalities effectively. Furthermore, limited technological infrastructure in some areas of Cotopaxi can pose a barrier to the full implementation of advanced ERP systems.(Catota & Cornejo, 2024).

However, despite these initial challenges, the effective use of ERP can offer numerous benefits for SMEs in the region. Improving operational efficiency is one of the most notable impacts, as ERP helps to simplify and automate processes that were previously tedious and error-prone. By more efficiently managing inventories, for example, companies can reduce costs associated with excessive storage or product shortages, thereby improving their ability to respond quickly to local market demand.

Similarly, ERP systems provide enhanced visibility into business performance by consolidating data in real time. This allows managers and decision makers to access critical information quickly and accurately, making it easier to identify trends, growth opportunities and areas for improvement. In a competitive environment like Cotopaxi, where companies must constantly adapt to changes in the market and economic

conditions, this ability to make informed decisions is invaluable for long-term sustainability and competitiveness.(Haro et al., 2023).

Although the implementation of ERP systems in SMEs may present initial challenges related to training and technological infrastructure, its potential benefits are significant. From improving operational efficiency to facilitating informed strategic decisions, ERPs represent a strategic investment that can strengthen the position of SMEs in the local and global market, thus contributing to their continued growth and development.

Staff training in Information and Communication Technologies (ICT) plays a fundamental role in the successful implementation of these technologies in SMEs. Continuous training allows employees to acquire the necessary skills to use digital tools effectively, which promotes an organizational culture of innovation and technological adaptation.(Heredia, 2020).In today's dynamic business environment, characterized by increasing digitalization, digital competence has become an indispensable asset to improve operational efficiency and maintain market competitiveness.

ICT training prepares employees for new platforms, software and methodologies that transform daily tasks within the company. From database management to process automation, these skills optimize resources and time, allowing SMEs to quickly adapt to changing market demands and customer expectations.(Heredia, 2020).This is especially relevant in contexts such as Cotopaxi, where limitations in technological infrastructure and access to specialized training can be significant barriers to the full adoption of ICTs.

Another key benefit of ICT training lies in its impact on staff satisfaction and retention. Employees who have the opportunity to develop digital skills feel more valued and empowered within the organisation. Not only does this increase morale and motivation at work, it also reduces staff turnover by improving opportunities for professional and personal development within the organisation.

On the other hand, social networks are also an important factor, as they not only allow companies to interact directly with their customers, but also facilitate the proactive management of brand reputation and the identification of new business opportunities.(Leon & Perez, 2024).In a digital environment where visibility and interaction are essential, social media offers SMEs the opportunity to establish direct and personalized connections with their audience, building stronger and more meaningful relationships.

Strategic use of social media, along with CRM systems and chatbots, can significantly transform the customer experience. By combining these tools, businesses can offer more agile and personalized customer service, quickly responding to customer queries and

needs at any time of day.(Olguín, 2024). This capability strengthens customer loyalty by providing immediate responses and effective solutions to their problems.

In addition to improving customer satisfaction, strategic use of social media can also positively influence overall customer perception of the brand. Constant availability and personalized attention through these channels allow SMEs to proactively manage crisis situations and negative comments, thereby protecting the company's reputation.(Leon & Perez, 2024).This proactive management and ability to respond quickly to customer feedback strengthens the brand's trust and credibility in the market.

Social media is not only a powerful tool for SME engagement and promotion, it also plays a key role in continuously improving customer service and managing online reputation by creating exceptional customer experiences that drive growth, loyalty and long-term profitability.

The strategic use of ICT, including CRM, ERP, social media and automation tools, directly contributes to customer satisfaction by offering a personalized and consistent experience across all points of contact with the organization. SMEs that effectively use these technologies can build stronger customer relationships, improve loyalty and increase word-of-mouth recommendations, key factors for long-term growth and success in a competitive market.(Garibay & Loaiza, 2020).

The relevance of the integration of Information and Communication Technologies (ICT) in the customer service of SMEs is based on its ability to transform the way in which companies interact with their customers and manage their operations. According toRodriguez (2022),ICT enables organisations to improve operational efficiency by automating processes, which not only reduces costs but also optimises the use of resources. This aspect is crucial in a business environment where competitiveness increasingly depends on the ability to offer fast and personalised services.

In addition to operational efficiency, ICT facilitates a better understanding of the customer through data analysis. According toZamora & Panchana (2024), CRM systems allow companies to collect and analyze detailed information about customer preferences and behaviors, which is essential for personalizing interactions and improving customer satisfaction. This customization capability increases the chances of repeat purchases and positive references, key factors for the company's reputation in the market (Pozo & Salazar, 2024).

Another relevant aspect is the impact on the global competitiveness of SMEs. In a recent study,Hinojosa et al. (2022),They found that SMEs that adopt advanced ICT strategies tend to be more innovative and adaptable to market changes. This allows them to compete not only locally, but in international markets where technology plays an increasingly important role in differentiation and creating value for the customer.

South America faces significant challenges in terms of the adoption and effective use of Information and Communication Technologies (ICT) in small and medium-sized enterprises (SMEs). Despite economic growth and digital expansion in the region, many SMEs face obstacles in fully integrating ICT into their operations and business strategies.(Heredia, 2020).

The digital divide remains a major concern, with significant disparities in access to high-speed internet, adequate technological infrastructure, and digital skills training. These factors limit the ability of SMEs to adopt advanced technologies such as CRM and social media platforms, which are critical to improving competitiveness and sustainability in a globalized marketplace.(Furniet, 2023).

The lack of effective public policies and specific support programs also contribute to this problem. Digitalization initiatives are often fragmented and lack coordination between the public and private sectors, which makes it difficult to create an enabling environment for innovation and technological integration in SMEs.(Heredia, 2020).

In the specific context of Ecuador, SMEs face additional challenges related to limited technological infrastructure, lack of access to financing for ICT investments and the digital skills gap among employees.(Niebles et al., 2020). Although the Ecuadorian government has implemented programs to promote digitalization and improve telecommunications infrastructure, these efforts have not yet reached all regions of the country equitably.(Ortega, 2024).

The lack of clear and continuous policies to support the digital transformation of SMEs also limits their ability to compete nationally and internationally. The need for closer coordination between different levels of government, the private sector and educational institutions is critical to overcome these challenges and promote a more dynamic and technologically advanced business environment.(Niebles et al., 2020).

In Cotopaxi province, SMEs face specific challenges due to their geographic location, limited infrastructure, and irregular access to high-speed internet. These factors hinder the adoption and effective use of ICTs, directly affecting their ability to improve operational efficiency, manage customer relationships, and access new markets.(Garibay & Loaiza, 2020).

The lack of digital skills training among entrepreneurs and employees of SMEs in Cotopaxi represents a significant obstacle. Resistance to change and the perception of ICTs as a costly and complex investment also influence the low adoption of these technologies in the local business sector.(Garibay & Loaiza, 2020). The digital disparity in Cotopaxi not only affects the competitiveness of SMEs in the local market, but also limits their ability to innovate, improve customer service, and adapt to changing consumer

demands. Overcoming these challenges requires integrated strategies that address both technological and cultural and educational barriers within the local business community.(Garibay & Loaiza, 2020).

This article focuses on the need to address the specific challenges faced by small and medium-sized enterprises (SMEs) in the province of Cotopaxi by integrating Information and Communication Technologies (ICT) into their customer service strategies. In a globalized and digitalized environment, ICTs offer fundamental tools to improve operational efficiency, strengthen customer relationships and explore new markets.(Garibay & Loaiza, 2020).However, limited infrastructure and intermittent access to high-speed internet in Cotopaxi present significant barriers to the effective adoption of these technologies.(Olguín, 2024).

In addition, the lack of training in digital skills among SME entrepreneurs and employees is an additional challenge. Resistance to change and the perception of ICT as a costly and complex investment also influence the reluctance to adopt these technologies.(Hinojosa et al., 2022).In this context, understanding the specific needs and obstacles faced by SMEs in Cotopaxi is essential to design effective interventions and policies that promote greater ICT integration, thus fostering business innovation and regional economic growth.

The importance of closing the digital divide within the Cotopaxi province is also critical. This disparity not only affects local business competitiveness, but also limits opportunities for economic and social development in the region. By overcoming these barriers, SMEs can improve their ability to compete in local and international markets, thereby driving job creation, increased income, and overall improved well-being in the local business community.(Garibay & Loaiza, 2020).

The objective of this study is to quantify the degree of integration of Information and Communication Technologies (ICT) in customer service strategies implemented by small and medium-sized enterprises (SMEs) located in the province of Cotopaxi, Ecuador. This involves analyzing how SMEs use technological tools such as CRM systems, social networks, chatbots and ERP to improve operational efficiency and customer satisfaction. The study seeks to provide a clear and detailed view on the level of ICT adoption in this specific context, identifying barriers and opportunities to optimize the use of these technologies for the benefit of local business development.

Methodology

This article is framed in a mixed research design, combining quantitative and qualitative data in the same study to provide a more complete and holistic understanding of the phenomenon, thus allowing the exploration of multiple dimensions and perspectives of the research problem.(Sanchez et al., 2022).The research is descriptive and exploratory,

descriptive because it seeks to characterize the current state of the integration of ICT in customer service of SMEs, and exploratory because it seeks to identify patterns and relationships that have not been previously studied in depth in this region.

This is at a correlational level of research, as it attempts to determine the relationship between the use of ICT and the quality of customer service in SMEs. A field approach is adopted, as data is collected directly from SMEs in their natural environment.

To achieve the stated objectives, the following methods are used:

Quantitative method: focuses on the measurement and numerical analysis of variables to establish statistical patterns and relationships within a specific context (Sanchez et al., 2022). Structured surveys are used to collect numerical data on the implementation and use of ICT in customer service. This allows the perception and impact of ICT on the operations of SMEs (Small and Medium Enterprises) to be quantified.

Qualitative method: understands complex social phenomena from the perspective of the participants, using descriptive and contextual data (Sanchez et al., 2022). Semi-structured interviews and focus groups were used to gain deeper insights into the experiences and opinions of SME owners and employees. This provides detailed context and understanding that complements the quantitative data.

Surveys and interview guides were developed to help us address key issues such as technology adoption, impact on service efficiency, and customer satisfaction. The study population is made up of companies that use some type of technology in their customer service processes. SMEs from various sectors such as commerce, services, and manufacturing are included. The sample was selected for convenience, focusing on various sectors in the province of Cotopaxi, specifically in Latacunga, Salcedo, Pujilí, and La Maná. In addition, electronic and paper surveys were distributed to representatives.

To establish the sample, the following inclusion, exclusion and elimination criteria were used:

Inclusion criteria: SMEs operating in the province of Cotopaxi, companies that use ICT in their customer service processes.

Exclusion criteria: companies outside the province of Cotopaxi.

Elimination criteria: incomplete surveys or those with inconsistent data.

The research is carried out in strict adherence to ethical principles, ensuring respect and protection of the rights of participants, obtaining the corresponding permission from the SMEs involved for the study. Data collection is carried out mainly through surveys

directed to SMEs in Cotopaxi. The quantitative data obtained are statistically analyzed to identify trends and correlations, while qualitative data are interpreted to provide a deeper and more detailed context on the integration of ICTs in customer service.

Results

This section details the results obtained from the analysis of data collected from SMEs in the province of Cotopaxi. The use of various technological tools and the perception of their impact on business management and customer service are examined. Quantitative data is presented first, providing a clear view of the adoption and use of customer relationship management (CRM) systems, social media, and ICT training. Qualitative results are then presented, revealing perceptions and challenges associated with the implementation of these technologies. Specific findings for each area studied are presented below.

CRM

Data shows that a significant percentage of SMEs in the province of Cotopaxi do not use customer relationship management (CRM) systems. Specifically, it is observed that 31% of the SMEs surveyed do not use any CRM system. This lack of adoption could indicate a lack of knowledge or resources to implement such technologies. However, SMEs that do use CRM, although a minority, highlight the importance of these systems in improving operational efficiency, personalizing services, and optimizing sales and marketing processes. Not using CRM can put companies at a competitive disadvantage, as these tools are essential to effectively manage customer information and develop loyalty strategies. Integrating CRM in SMEs could help these companies improve their interaction with customers, increase customer satisfaction, and ultimately drive business growth.

Table 1

Does your SME use any customer relationship management system?

Variables	Frequency	Percentage
YEAH	18	31%
NO	40	69%
Total	58	100%

Note:Table 1 represents the use of customer-related management systems in Cotopaxi SMEs. Surveys conducted on Cotopaxi SMEs 2024

Social networks

In terms of social media usage, data indicates that over 80% of SMEs in Cotopaxi use these platforms for customer service. This high percentage reflects a clear awareness of

the importance of having a presence on social media to increase visibility and reach a wider audience. Social media offers an effective platform for direct interaction with customers, which can improve customer loyalty and satisfaction. However, the small percentage of businesses that do not invest in social media could be missing out on a key tool for growth and competitiveness. To maximize their impact, it is critical that these SMEs develop strategies to establish and maintain an active presence on social media, taking advantage of the tools and resources available. Proper social media management can help SMEs obtain valuable feedback, respond quickly to customer concerns, and effectively promote their products and services.

Table 2

Does your SME use social media for customer service?

Variables	Frequency	Percentage
YEAH	48	83%
NO	10	17%
Total	58	100%

Note:Table 2 represents the use of social networks in SMEs in Cotopaxi. Surveys conducted on SMEs in Cotopaxi 2024

ICT training

It was highlighted that 36% of collaborators have not received training in information and communication technologies (ICT). However, it is essential for SMEs to remain up to date and competitive, since it can increase efficiency and productivity, allowing them to do more with fewer resources, since by being trained they are better equipped to adopt new technologies and processes, promoting innovation and adaptation to market changes. And those SMEs that have not received training may face a technological lag, affecting their ability to compete in a digital environment, which is why training in the continuous training of their staff is crucial, taking advantage of programs and subsidies that may be available to support this training.

Table 3

Have employees received training in the use of ICT?

Variables	Frequency	Percentage
YEAH	37	64%
NO	21	36%
Total	58	100%

Note:Table 3 represents the training of employees in the use of ICT. Surveys conducted on SMEs in Cotopaxi 2024

Future prospects

It is noted that 5.17% of the people surveyed consider it indifferent whether ICTs are implemented in their SME in the coming years. They may be influenced by several factors, such as resistance to change, perception of high initial costs and lack of knowledge about the benefits of ICT. Moreover, in traditional sectors, where technology does not seem critical, or in cases of negative previous experiences with technology, entrepreneurs may underestimate its importance. Likewise, the priority on solving immediate problems instead of focusing on long-term investments may also contribute to this indifference. 20.69% of respondents agreed and 74.14% strongly agreed with the implementation of ICT in the future, knowing the importance and benefits of ICT integration to improve their SMEs.

Table 4

Do you think it is important to implement ICT in your SME in the coming years?

Variables	Frequency	Percentage
Totally agree	43	74.14%
OK	12	20.69%
Indifferent	3	5.17%
Disagree	0	0.00%
Totally disagree	0	0.00%
Total	58	100.00%

Note: Table 4 represents the importance of ICT implementation in the coming years. Surveys conducted on SMEs in Cotopaxi 2024

Future prospects reflect cautious optimism among SMEs regarding ICT adoption. The data suggests that there is recognition of the importance of technology for future business growth and sustainability. Many SMEs express the need to continue investing in ICT to improve efficiency and remain competitive. However, challenges are also identified, such as the need for financing and access to adequate technological resources. SMEs recognize that to thrive in an increasingly digital market, they must overcome these barriers through smart investment strategies and taking advantage of opportunities for collaboration with public and private entities. Adopting a long-term vision that integrates ICT as a central component of business strategy is essential to ensure sustainable growth and competitive advantage in the future.

Discussion

According to the results obtained and in accordance with the surveys carried out, it is interpreted that the sample includes SMEs from several cantons, such as Pujilí, Salcedo, La Maná and Latacunga, consequently, the geographic dispersion suggests that the results may reflect a variety of local contexts. This geographic diversity is crucial to understand how different socioeconomic and cultural factors can influence the adoption of

technologies in customer service. Each canton has unique characteristics that can affect business practices and the integration of technologies. For example, Latacunga, being the capital of the province, may have a more developed technological infrastructure and access to more resources, which could facilitate the adoption of new technologies compared to cantons such as La Maná.

Furthermore, variability in the size of SMEs and in their economic sectors also plays an important role. SMEs in retail and wholesale trade, and food and beverage services, which are predominant in these cantons, have a greater need to maintain close customer relationships, which may motivate greater adoption of customer relationship management (CRM) systems and other ICTs. However, resource and capacity constraints in smaller firms and in less developed regions may represent significant barriers.

It is crucial to recognize that the age of companies also influences their willingness to adopt new technologies. Younger SMEs, with less than five years of operation, may be more open to innovation and willing to adopt new technological tools to improve their competitiveness. In contrast, more established companies may show resistance to change due to organizational inertia and comfort with existing practices.

To encourage a broader and more effective adoption of ICTs in these SMEs, it is necessary to implement supportive policies that consider these contextual variations. Specific training programmes for different sectors and company sizes, as well as financial incentives for investment in technology, can be effective. Furthermore, collaboration between the public and private sector to develop more robust technological infrastructures in less developed cantons can help level the playing field and allow more SMEs to benefit from the advantages of digitalisation.

The prevalence of economic activities in the retail and food and beverage service sectors indicates an orientation towards services that are in direct contact with consumers. This may influence the adoption of technologies and the importance of customer relationships. On the other hand, the relatively small number of employees (12-14 employees) of SMEs might face specific challenges in terms of resources and capacity to adopt new technologies. Furthermore, the range of years of operation (2-12 years) shows a mix of new and established SMEs, which may affect their willingness and capacity to adopt new practices and technologies.

The integration of ICTs into customer service for SMEs in the province of Cotopaxi reveals a series of important insights that highlight both the opportunities and challenges inherent in this process. The results obtained and the surveys carried out demonstrate that the geographical dispersion of the SMEs studied, covering cantons such as Pujilí, Salcedo, La Maná and Latacunga, offers a rich and diverse perspective on the adoption of technologies in varied local contexts. This geographical factor is crucial since each

canton presents its own challenges and advantages, which affect the way in which companies adopt and use ICTs.

The prevalence of economic activities focused on retail and wholesale trade and food and beverage services underlines the importance of direct contact with consumers. This not only highlights the need to implement technologies that optimize customer relationship management, but also indicates fertile ground for the adoption of digital tools that improve customer experience and increase operational efficiency. However, the ability of these SMEs to adopt new technologies is conditioned by their size and resources. Companies with a small workforce of 12-14 employees face significant limitations in terms of investment and training in new technologies.

The age of SMEs also plays a determining role in their willingness and ability to adopt ICT. Younger companies may show greater flexibility and willingness to innovate, while more established ones might be more reluctant to change due to organizational inertia and investment in existing systems. However, the experience and financial stability of older companies could facilitate investment in advanced technologies in the long term.

To overcome these challenges and maximize the opportunities offered by ICTs, it is essential to develop strategies and policies that support technology adoption in an inclusive and contextualized manner. This includes the implementation of continuous training programs that equip employees with the necessary skills to handle new digital tools, as well as the creation of financial incentives and grants that alleviate the initial cost of investment in technology. In addition, fostering collaboration between SMEs and other entities, such as educational institutions and government agencies, can facilitate the sharing of knowledge and resources, thus enhancing the ability of these companies to adapt and thrive in an increasingly competitive digital environment.

Conclusions

- The research reveals that SMEs in Cotopaxi face significant challenges when adopting technologies such as CRM systems and social media. These challenges include cultural, financial and training barriers that limit their ability to implement these tools effectively. It highlights the urgent need for policies and programs specifically designed to address these barriers and promote more inclusive and accessible digitalization in the local business sector. Furthermore, it suggests that overcoming these obstacles would not only improve the operational efficiency of SMEs, but would strengthen their competitiveness in an increasingly digitalized and competitive market.
- SMEs that properly integrate ICT into their customer service strategies will experience significant improvements in terms of operational efficiency and customer satisfaction. This finding underlines the transformative potential of ICT

to strengthen the competitive position of local businesses. By improving data management, personalizing services, and optimizing sales and marketing processes, SMEs can not only retain existing customers more effectively, but also attract new market segments and expand their operations sustainably.

- The critical importance of ICT training for SME owners and employees is highlighted. Those companies that invest in digital skills development will be better positioned to quickly adapt to technological changes and take advantage of emerging opportunities in the market. It is stressed that training will not only improve the technical competence of staff, but will also foster a more motivating and innovation-receptive work environment. In addition, the need for ongoing professional development programmes that equip SMEs with the tools and knowledge necessary to compete effectively in a dynamic and competitive business environment is highlighted.
- It is important to develop public policies that include financial incentives and specific training programs to promote greater integration of ICTs in SMEs in Cotopaxi. These policies should be designed considering geographic and sectoral disparities, ensuring that all companies, regardless of their size or location, have equitable access to technological resources and institutional support. It is emphasized that government support and strategic collaborations between the public and private sectors are essential to mitigate the financial and educational challenges that limit the adoption of ICTs, thus facilitating more equitable and sustainable business development in the region.

Conflict of interest

There is no conflict of interest in relation to the submitted article.

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