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APPLICATION OF INFORMATION SYSTEMS IN THE MANAGEMENT OF MICRO AND SMALL ENTERPRISES

APLICAÇÃO DE SISTEMAS DE INFORMAÇÃO NA GESTÃO DE MICRO E PEQUENAS EMPRESAS

APLICACIÓN DE SISTEMAS DE INFORMACIÓN EN LA GESTIÓN DE MICRO Y PEQUEÑAS EMPRESAS

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ABSTRACT

The contribution of MEI – Individual Microentrepreneur, ME – Microenterprise, and EPP – Small Business to economic growth and development is justified by the number of activities, employment, income, revenue, tax receipts, and proximity to the customer. These companies totaled just over 21 million in Brazil in 2025, generating products and services for society and the government. As their characteristic is small-scale, management is predominantly individual and family-based, so decisions are made based on the intuition or experience of their managers. This article explores the need for the use of Information System tools to obtain better operational and financial results in their activities between 2016 and 2026. To assist in understanding this proposal, an exploratory study will be conducted based on a literature survey and observation of operational results with the application of resources within reach of micro and small business owners, such as WhatsApp, for example. Data analyzed by this research indicate that management can achieve greater efficiency in results by up to thirty-five percent with the application of at least one Information System resource. This study contributes in proposing the increase of efficiency in SMEs with the implementation of Information Systems and also support decision making by stakehold at large.

Keywords: Information System. Micro and Small Enterprise. SMEs. Management System. Efficiency.

RESUMO

A contribuição do MEI (Microempreendedor Individual), ME (Microempresa) e EPP (Pequena Empresa) para o crescimento e desenvolvimento econômico é justificada pelo número de atividades, empregos, renda, receita, arrecadação de impostos e proximidade com o cliente. Essas empresas totalizaram pouco mais de 21 milhões no Brasil em 2025, gerando produtos e serviços para a sociedade e o governo. Como sua característica principal é a pequena

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escala, a gestão é predominantemente individual e familiar, de modo que as decisões são tomadas com base na intuição ou experiência de seus gestores. Este artigo explora a necessidade da utilização de ferramentas de Sistemas de Informação para obter melhores resultados operacionais e financeiros nas suas atividades entre 2016 e 2026. Para auxiliar na compreensão desta proposta, será realizado um estudo exploratório baseado em uma revisão da literatura e na observação dos resultados operacionais com a aplicação de recursos ao alcance de proprietários de micro e pequenas empresas, como o WhatsApp, por exemplo. Os dados analisados por esta pesquisa indicam que a gestão pode alcançar uma maior eficiência nos resultados em até 35% com a aplicação de pelo menos um recurso de Sistema de Informação. Este estudo contribui ao propor o aumento da eficiência em PMEs com a implementação de Sistemas de Informação e também ao apoiar a tomada de decisões por parte das partes interessadas em geral.

Palavras-chave: Sistema de Informação. Micro e Pequenas Empresas. PMEs. Sistema de Gestão. Eficiência.

RESUMEN
La contribución de los microempresarios individuales (MEI), las microempresas (ME) y las pequeñas empresas (EPP) al crecimiento y desarrollo económico se justifica por el número de actividades, empleos, ingresos, facturación, recaudación de impuestos y proximidad al cliente. En 2025, estas empresas sumaban algo más de 21 millones en Brasil, generando productos y servicios para la sociedad y el gobierno. Debido a su carácter de pequeña escala, la gestión es predominantemente individual y familiar, por lo que las decisiones se toman en función de la intuición o la experiencia de sus gerentes. Este artículo explora la necesidad de utilizar herramientas de sistemas de información para obtener mejores resultados operativos y financieros en sus actividades entre 2016 y 2026. Para facilitar la comprensión de esta propuesta, se llevará a cabo un estudio exploratorio basado en una revisión bibliográfica y en la observación de los resultados operativos obtenidos con la aplicación de recursos al alcance de los propietarios de microempresas y pequeñas empresas, como WhatsApp, por ejemplo. Los datos analizados en esta investigación indican que la gerencia puede lograr una mayor eficiencia en los resultados, hasta en un treinta y cinco por ciento, con la aplicación de al menos un recurso del Sistema de Información. Este estudio contribuye a proponer un aumento de la eficiencia en las PYMES mediante la implementación de sistemas de información y también a apoyar la toma de decisiones por parte de todos los interesados. PALABRA CLAVE: Sistema de información; Micro y pequeña empresa; PYMES; Sistema de gestión; Eficiencia

Palabras clave: Sistema de Información. Micro y Pequeña Empresa. PYMES. Sistema de Gestión. Eficiencia.

1 INTRODUCTION

Every society needs small businesses (microenterprises, small enterprises, and MEI – Individual Microentrepreneurs) that are essential for producing goods and services to meet existing demand. Products range from food to clothing, and services from restaurant meals to pet grooming, including residential cleaning or laundry services. The participation of these small producers drives up to one third of GDP – Gross Domestic Product – 72% of employment, and is responsible for generating income, tax revenue, purchases of raw materials or finished products that will be incorporated into the final product (SEBRAE/RR, 2025).

The size of a country's economy is not important when it comes to offering goods and services to society; that is, a developed or developing economy needs small entrepreneurs to supply the regional market due to their proximity to the consumer market, low logistics distribution costs, reduced delivery time, and other factors that can affect production costs and the final price of the product (Vasconcellos, 2015).

Today's small business may be tomorrow's mega-business. This can be represented, for example, by the current vision of the Magalu brand (Magazine Luiza) and its origins as a small household goods, fabric, and bedding store in the city of Franca, as the starting brand of this mega family enterprise. The peddling activity as the origin of the retail brand Casas Bahia in the mid-1950s, the clothing brand CAEDU, Lojas Riachuelo, Pernambucanas, and many others that followed this trajectory from a small business to a mega-business (Troiano; Troiano, 2019).

World examples of small businesses that became giants are not lacking in this repertoire. The giant IBM began its activities as a time clock and cash register company in 1911, with entrepreneur Thomas J. Watson, Sr. KODAK with the creation of a camera by George Eastman in 1888, after more than a decade researching how to eliminate the more than twenty items required for a photograph. The REVLON brand was founded in 1932 by Charles Revson after having been a cosmetics salesman for another small company (Tedlow, 2002).

The reality is that micro and small enterprises have a structure that concentrates all decision-making in a single person who applies management tools based on intuition or trial and error to achieve the best result. This intuition is an amateurish way of acting and is confused with the manager's lack of knowledge or the limitation of financial resources to

acquire management tools or hire professionals who master the techniques of running a business (SEBRAE/RR, 2025).

The literature on the subject points out that the lack of financial resources, limited technical resources and knowledge, early mortality, and other factors inherent to micro and small enterprise management are some of the challenges that can limit the survival and growth of this type of organization. In general, these micro-businesses start from a strong desire to own one's own business; often the desire to survive financially as a substitute for income from a previous job is the main motivator (Diana; Conejero; Mangini, 2017) (Tedlow, 2002).

Solutions involve the manager's initiative to achieve better results through technical knowledge. Therefore, the application of Information System tools, even if they seem simple or common knowledge, is useful to speed up the administration process, make routines viable, contribute to information processing, and bring greater security throughout the management process (Santos; Estender, 2018).

Thus, the proposal of this empirical study is to review the literature on the application of Information Systems in the management of Micro and Small Enterprises with the objective of offering alternatives for managers to mitigate the scarcity of resources and their intuitive actions, so that the conclusions provide answers for their enterprise to succeed, generating increased productivity that translates into a higher business survival rate.

2 THEORETICAL FRAMEWORK

Two themes are fundamental to corroborate the contribution, analysis, and interpretation of the proposal in this article: 1 – Information System and 2 – Micro and Small Enterprise.

2.1 INFORMATION SYSTEM

The relationship between companies and customers is constantly changing, largely driven by technological advancements that provide greater agility and flexibility in an Information System. Large corporations are analyzing the information they can gather from a range of sources, hoping that it is reliable and can guide decision-making to achieve the best possible outcome. Within this universe, on a smaller scale, are micro, small and medium-sized enterprises, seeking to understand what is happening in the market where they operate regarding the unexpected increase in demand or the proportional drop in demand for a

product that moments before was the organization's main product (Devos; Van Landeghem; Deschoolmeester, 2014).

The Information Technology structure – composed of three groups: hardware, software, and network or infrastructure such as cables, Wi-Fi, satellite, and cloud; is integrated into the Information System – which involves the Information Technology groups plus the people, data, and processes of collection, analysis, and decision-making. The synergy between these two concepts increases the company's competitive capacity regardless of its size, whether it is a micro, small, medium or large company. A competitive advantage is greater when a company manages to organize its planning at two management levels: 1 – deciding whether planning is centralized or decentralized, or 2 – giving greater freedom to the team and supporting specific managerial and operational decisions, improving results. Both are occurring in a constantly changing environment due to the discovery of new information technology tools that will facilitate decision-making within an Information System environment, as is the case with the emergence of Artificial Intelligence (OECD, 2021); (Devos; Van Landeghem; Deschoolmeester, 2014).

Given these constant changes, it is natural that large companies achieve better results due to the volume of employees, their technical training in the field of information technology, and many with specific academic training to address the specific issues that arise in this area with these changes. When the problem falls within the area of Information Systems, these IT professionals are important, but then professionals with knowledge of the company's business come into play, those who master the company's product, the customer profile, possible market seasonality, the strategic planning for that period; in short, in addition to IT resources, there are people, collected data, processes and decision-making (Caldeira; Ward, 2022).

The problem of a lack of knowledge in information technology in the 1970s and 1980s was overcome by the practical adoption by employees with little or no experience in how an information technology area functioned and how it was applied within an organization. These employees had to adapt knowledge related to computer systems (most of which was limited to technical repairs when equipment failed) to the new needs of information technology, which included the integration of hardware and software capable of generating the data necessary for decision-making in Information Systems (Caldeira; Ward, 2022); (Devos; Van Landeghem; Deschoolmeester, 2014).

With the evolution of new hardware and software, the information technology environment has become more intuitive, making it easier for users without much knowledge in this area to access it. One classic example is the apps that emerged as quickly as people interacted with them for various solutions, from ordering purchases to making payments and even locating people, as is the case with GPS – Global Positioning System. This has made life easier for micro and small business owners who use these resources to streamline their business.

Every system is made up of a set of elements that converge toward a particular result. The system has various elements connected to each other and has an interdependence to achieve its objective. The nervous system, for example, receives information from the outside world and from within the organism, processes it and responds with movements, thoughts, and vital functions of the human being such as breathing and heartbeat (Magalhães, 2025).

Drawing an analogy with the information system, it can be formed by a set of elements such as: people, machines, software, data; that converge toward a common objective. The information system cannot view the company as a set of isolated sectors or actions, but rather has a holistic view of the organization in such a way that its actions contribute to achieving the best result (Marzall *et al.*, 2018).

An information system is composed of a set of interrelated elements that goes beyond a mere set of information technology resources. The elements that make up the Information System are applied in the collection, storage, processing, and distribution of information for decision-making and to act in the control of the organization (Laudon; Laudon, 2022).

Information technology consists of hardware (computers, storage devices, and portable mobile devices) and software (Windows or Linux operating systems, the Microsoft Office suite, as well as software created exclusively for a specific organizational need).

Laudon & Laudon (2022) point to three interrelated changes in the area of technology: (1) the emerging mobile digital platform, (2) the increasing use of “big data” by companies, and (3) the growth of “cloud computing,” where more and more enterprise software is run over the Internet. Business leaders are shifting their decision-making to mobile devices, gaining agility and punctuality in decision-making.

An organization has sectors or departments that need an interconnection of their data for the final decision-making by its manager. The purchasing department, for example, needs information about how much of a given commodity or raw material to acquire for processing the product that must be delivered to the end consumer. In turn, the billing department needs

to receive information about the supplier and the end customer to process billing, which shows that the information system must view the company as a whole and not just as separate actions or sectors (Diana; Conejero; Mangini, 2017).

It is a vision of the control, organization, and planning of a company given that all departments are interconnected and interdependent on information for the manager's decision-making. The quality of data from each sector is important for achieving the best result. If the data input is poor or unreliable, its processing will be weakened and the result will be the worst possible (Marzall *et al.*, 2018).

Therefore, in an information system there are a series of data-emitting and data-receiving elements that are connected by a communication channel, which is the hardware, circulating this data according to the company's needs, showing how a given sector works and how that sector relates to the others, allowing the company to have full operational capacity (Vianna, 2016).

A good technical infrastructure for data communication represents a competitive advantage. In Brazil, the expansion of fiber optics starting in 2019 has provided greater agility to businesses. In 2021, 87% of companies were connected to the Internet via fiber optics; by 2024, this figure had risen to 92%. This shows the need for a more efficient tool to generate data for the business information system (ICT COMPANIES, 2024).

An Information System assists managers in analyzing and understanding a situation, as well as generating the possibility of discovering the causes of the problem, finding concrete and real solutions, with more efficient allocation of resources, creating products, and understanding the environment in which the company operates. Input, processing, and output of processed information do not conclude the role of the Information System. The people involved must be informed, and the result must be monitored to provide feedback to the process, continuously improving data input and the results obtained (Laudon; Laudon, 2022).

From its origin to the final decision, data quality is important. For this reason, when identifying the problem and the analysis process for its solution, the manager must be concerned with how to obtain the data to analyze, interpret, and decide what to do with it. Thus, the quality of data collection must be as reliable as possible and allow the manager to be certain that the decision is based on a reliable source. Suppose a company's problem is the cost of acquiring raw materials and the purchasing department has no reliable records of how much to buy and pay for an item in the product, nor any information about its supplier.

The manager will then have difficulty collecting the data, processing it safely, and reaching a final decision (Diana; Conejero; Mangini, 2017).

Therefore, data collection must be carefully evaluated regarding the method of insertion into a given information system so that the analysis and interpretation can be as reliable as possible. Digital source collection is a common practice given the availability of technological resources both in the hands of consumers and company managers of various sizes. When this occurs, the data source presents greater security in collection, but when data must be handled by people, incorrect entry may occur and compromise the analysis and decision-making for solving a given problem (Vianna, 2016) (Marzall *et al.*, 2018).

2.2 MICRO AND SMALL ENTERPRISE

The micro and small enterprise gives life to any village, both for its founding and its operation. Looking at the remote history of humanity, it is possible to notice a small cluster of stalls and people trading food, pottery, clothing, animals, decorative objects, and other necessities for the people of that locality. The growth of this village generates new businesses and the need for rules to prevent these activities from being carried out without regulation and to the detriment of one another or to the health of people when dealing with food and medicine businesses.

In the current context, it is possible to notice the presence of a small business on the streets and avenues of various neighborhoods in any city. This activity meets local needs with products and services ranging from the sale of fresh food to car washes and pet grooming services.

In Brazil, the National Statute of Microenterprise and Small Business was defined by Complementary Law 123/2006, which classified companies according to their annual gross revenue, categorizing them as: ME – Microenterprise, MEI – Individual Microentrepreneur, and EPP – Small Business (EMPRESAS & NEGÓCIOS, 2025).

Table 1

Classification of MEI, Micro and Small Business according to Complementary Law 123/2006

Classification	Definition	Annual Gross Revenue
MEI – Individual Microentrepreneur	Simplified form of enterprise serving self-employed workers and small entrepreneurs	Limited to R$ 81,000
ME – Microenterprise	Individual or partnership enterprise, in the commerce or services sector with up to 9	Limited to R$ 360,000

	employees, or in the industry and construction sector with up to 19 employees	
EPP – Small Business	Individual or partnership enterprise, in the commerce or services sector with 10 to 49 employees, or in the industry and construction sector with 20 to 99 employees	Greater than R$ 360,000 up to R$ 4,800,000

Source: Prepared by the authors based on EMPRESAS & NEGÓCIOS, 2025, MAPA DE EMPRESAS, 2025.

Although the classification of a company is made by the person responsible at the time of registration, this framework helps in identifying the company's classification in its initial process. As the company's operational activities develop, the Federal Revenue Service seeks the best classification, even if the owner does not perceive tax advantages, either in tax collection or in the acquisition of raw materials (EMPRESAS & NEGÓCIOS, 2025).

The total number of companies of this size in the second four-month period of 2025 was 24,213,445, of which 93.8% are microenterprises or small businesses. Considering that the registration of the company's size depends on the information provided at the time of registration by the person responsible. Over the course of the company's activities, it may undergo a new legal classification to comply with the normative and regulatory rules imposed by the fiscal and tax administration (MAPA DE EMPRESAS, 2025).

Breaking down the total of 24,213,445 companies, 12,660,170 represent MEI – Individual Microentrepreneurs (52.29% of the total). The MEI is a simplified form of enterprise serving self-employed workers and small entrepreneurs, subject to specific rules regarding revenue and the hiring of labor (MAPA DE EMPRESAS, 2025).

Table 2

Ten largest MEI – Individual Microentrepreneur activities

Category	Total Active Companies
Hairdressers, manicurists and pedicurists	768,830
Retail trade of clothing and accessories	661,519
Sales promotion	586,726
Masonry works	497,295
Document preparation and specialized administrative support services not otherwise specified	439,536
Road freight transport, except dangerous goods and moving, municipal	355,492
Other auxiliary land transport activities not otherwise specified	292,265
Supply of prepared food predominantly for home consumption	285,660
Express delivery services	218,981
Mail services not provided by the National Post Office	212,174
Total of the ten largest activities	**4,318,478**

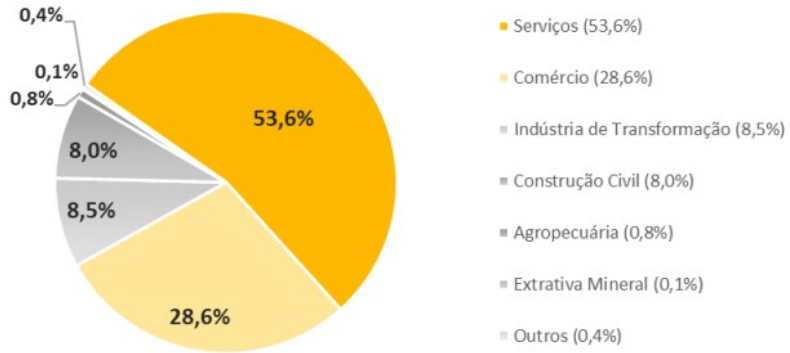
Source: Prepared by the authors based on MAPA DE EMPRESAS, 2025, p.16.

Considering the total of 12,660,170 MEIs in Brazil in September 2025, the total of the ten largest activities of 4,318,478 represents 34.11%, meaning that one third of the total serves the services sector specifically for the second four-month period of 2025.

This company profile emerged with changes in the labor market and in the relationship between companies and workers throughout the 1990s and early 2000s. Some activities ceased to be relevant under CLT – Consolidation of Labor Laws registration and did not fit into the category of Outsourced Activity. The MEI does not require permits and licenses to carry out its activities according to CGSIM Resolution No. 59, of August 12, 2020; it only requires the entrepreneur to sign a responsibility statement on the Entrepreneur Portal, acknowledging that the activity to be carried out is low-risk, and therefore must comply with the safety, sanitary, and environmental requirements established by law (SEBRAE/RR, 2025).

Figure 1

Distribution of Companies in Brazil by sector of activity



Source: MAPA DE EMPRESAS, 2025, p.6.

The current state of the economy shows that the tertiary sector has the largest supply of companies. In addition to cyclical factors such as changes in the labor market, a predominant factor is urbanization, which requires city residents to have access to a series of services provided by micro and small enterprises in the services and commerce sector, representing 82.20%. Several factors support this supply of activities, including the internet, home office activity, and the availability of applications that guide the Information System of modern life, such as apps for various purposes.

3 METHODOLOGY

The methodology of a research study means the path, means, or trajectory to describe the objective, propose the research problem and its respective hypotheses, gather information, analyze and interpret the collected data, and finally conclude whether the objective was achieved or not. It must seek to meet a methodological structure that answers the following questions: what is the purpose or what is the contribution to science? (nature of the research); what is the level of familiarity with the research topic and how deep does one intend to go? (regarding the research objectives); what are the characteristics of the methodology? (regarding the methodological approach or what technical research resources to use to achieve the objective and the research problem) (Oliveira, 2011) (Demo, 2017).

This research aims to analyze the application of an information system in the management of micro and small enterprises in the period from 2016 to 2026, even if it is a simple resource like WhatsApp, which, although seen as a simple messaging application, brings together all the elements of an information system defined in the theoretical framework section of this article and further explored in the discussion and presentation of results section.

Therefore, to meet the methodological requirements of this research and achieve its objective, it is important to describe the concepts of nature of research, research objectives, and its methodological approach.

3.1 REGARDING THE NATURE OF THE RESEARCH

This is applied research, as it analyzes a specific problem expecting to generate knowledge or information directed toward understanding how the information system can assist in the management process of micro and small enterprises (Oliveira, 2011). With applied research on this topic, the authors expect to obtain subsidies for interpreting the central concepts of the topic: one of them is the information system and the other, management of micro and small enterprises, and most importantly, how the former contributes to the latter.

3.2 REGARDING THE RESEARCH OBJECTIVES

It is exploratory research, as it seeks to gain greater knowledge about the problem, create new hypotheses, and carry out future research with greater clarity in formulating questions that provide a more objective interpretation of results (Cervo; Bervian, 2002).

Seeking through ideas and intuitions to bring to the surface the central element of the discussion: how the information system can produce better results for micro and small enterprises.

3.3 REGARDING THE METHODOLOGICAL APPROACH OR WHAT TECHNICAL RESEARCH RESOURCES TO USE

This addresses which path or means is most appropriate to deal with the research problem, indicating the characteristic of the research to achieve its objectives (Demo, 2017).

This article adopts a mixed methodology, that is, it adopts both qualitative research (the search for meanings for the concepts studied) and quantitative research (seeking to represent the concepts studied through graphs, tables, mathematical and statistical formulations) (Oliveira, 2011).

Creswell (2010) summarizes that in the quantitative method, the researcher collects, analyzes, interprets, and communicates the results of their study. This method seeks to work with numerical data or quantity information about the researched element. In the case of this research, the data are presented in table form, revenue values, participation percentages, and sector growth, among other quantitative data.

As for the qualitative method, it is present in textual information, concepts, or definitions that make up the collection, analysis, interpretation, and writing of the research report (Cervo; Bervian, 2002). Thus, the sample arranged in tables and interpretive information are components of qualitative research.

3.4 PROCEDURES OR TECHNICAL RESOURCES

There are basically two ways to obtain information or data for research: written means (books, newspapers, documents, photos, scientific articles, dissertations, doctoral or post-doctoral theses) or through people (field research, case study) (Demo, 2017).

This article employs bibliographic research to obtain research data, especially those available in books, scientific articles, dissertations, and theses, as well as specific and reliable information portals such as: SEBRAE/RR, the Federal Government Purchasing Portal, the Ministry of Entrepreneurship, Microenterprise and Small Business, and IBGE.

The information obtained from these sources represents the qualitative and quantitative data described in the graphs, tables, and statistical relationships on the total number of micro and small enterprises, success rate in management, use of an Information

System resource, total revenue, how much they buy and pay suppliers, among other information represented numerically.

3.5 REGARDING THE APPROACH TO THE PROBLEM

It seeks to identify what contributions an Information System produces for the management of micro and small enterprises. Since this is exploratory research, the process of obtaining data is based on understanding the concepts and how they relate so that the result is the best for the performance of micro and small enterprises. Although exploratory research does not require a hypothesis due to its flexibility during data collection, analysis, and interpretation, this article starts from the argument that an Information System efficiently applied by the manager produces better and positive results regarding the performance of the organization as a whole (Barros; Lehfeld, 2007).

4 DISCUSSION AND RESULTS

In the current context, micro and small business owners are competing in a highly competitive market due to changes in the consumer profile that have been influenced by changes in the information system, which in turn constantly receives new tools to facilitate the communication process between supply and demand. This requires the inclusion of new practices that allow innovation in the business environment, leaving micro and small enterprises more vulnerable due to the limited resources available or management skills (Lima; Silva, 2019).

4.1 INFORMATION SYSTEM IN THE ORGANIZATIONAL ENVIRONMENT

The information system brings together people, tools, software, data, and processes with the objective of collecting, processing, storing, and distributing this information in the form of management reports for decision-making (Laudon; Laudon, 2022). There are several examples where organizations employ at least one information system tool to gain greater agility in their management processes (OECD, 2021).

- **TPS – Transaction Processing System:** records daily operations at a point of sale (store, market, bakery, snack bar), which can be seen in manual cash registers or digital ones that read barcodes or QR codes to process payment and receipt of a purchase. These, in turn, are integrated with a database and can process other information integrated with inventory, billing, and can indicate which product has the

highest turnover, its flavor, quantity, and other management information. Since it is integrated with other systems, it can update information instantly.

- **MIS – Management Information System:** assists in business management through reports with information for planning and control. Thus, the inventory report makes it possible to understand the volume and characteristics of stocked items and the periodicity with which this inventory turns over in the organization.
- **DSS – Decision Support System:** through simulation, it assists in more complex decisions that are not routine in the operational activity of the company, such as a simulation to forecast demand, inventory, cash flow, or other needs that cannot be obtained through the simple linear entry and exit of data, as happens with a cash register in an establishment.
- **ESS – Executive Support System:** applied to decisions by the board of directors, presidency, or senior management that require strategic and highly relevant information for the business. The performance indicator, such as the KPI – Key Performance Indicator, is an example of this strategic system. The KPI shows whether targets are being met and how indicators are being achieved according to the plan.
- **ERP – Enterprise Resource Planning:** unifies data from finance, human resources, inventory, sales, production, and other departments in a centralized manner, preventing the organization from having isolated information that could harm decisions. In general, this type of system is customized by specialized companies that adjust the software according to the organization's needs. The fact that this type of information system concentrates all departments reduces cost and time in processes.
- **CRM – Customer Relationship Management:** the idea of this system is to manage the relationship between the company and the customer completely, from the first contact, through the product interaction process, the purchase decision, and after-sales — that is, how the customer's experience was during the purchasing process and how they feel about the product now, making it possible to discover whether the customer would recommend the company to others, for example. This information will be part of a history that the manager can use to create targeted offers with time savings and cost reduction from disorganized processes.

Although these resources are available to everyone participating in a market, access to them is limited to only a few companies. Access to these management tools is not limited by

cost or how much the hiring and implementation process costs in an organization. This depends on the manager's knowledge and their willingness to implement changes to achieve the best results. Therefore, small and medium-sized enterprises have limitations in adopting these technologies due to their size and lower revenue compared to large or better-structured companies in the market (Caldeira; Ward, 2022).

Fewer financial resources, less knowledge and technical skills among managers, coupled with difficulties in interpreting the environment in which the company operates, are some of the factors that limit competitive capacity and the adoption of strategies using Information Systems to increase the company's strength in its sector. Financial limitations represent an obstacle to this change, but the lack of knowledge among managers is a significant barrier for the company to implement one or more of these resources (ERP, CRM, for example) as a growth strategy (Caldeira; Ward, 2022).

For many managers, the decision to implement an information system as a resource to improve and expand the company's market share is seen as a critical issue due to a lack of knowledge and perception that this decision will consume a large portion of limited financial resources. At the same time, there are managers who perceive gains from using information systems to improve activities, generate higher financial returns, highlight the brand and product in the market, and create a quality environment for customers, suppliers, and employees (OECD, 2021).

- **SCM – Supply Chain Management:** shows the flow of company activities from the acquisition of raw materials to the end consumer. All agents involved in the process appear in the SCM, including: suppliers, manufacturers, retailers, distributors, and the production process; so that the end customer is served in the shortest possible time and at the lowest cost, assuming that the steps linking product manufacturing and the end customer have been optimized, reducing operational time and cost.
- **OAS – Office Automation System:** office activity involves many routine and repetitive tasks. To make management more agile, these tasks are performed by software that collects, stores, allows manipulation, and simulates information to provide greater agility in decisions. The workflow gains greater security and speed with the application of software that handles data, generating efficiency in the process and reduction of time and cost.
- **WhatsApp – Communication and Data Traffic System**

Brazil is at the top of the total number of WhatsApp users, accounting for 90% of Internet users (MEIRELLES, 2025). WhatsApp concentrates the main elements of an Information System, as it acts as a communication network using the Internet as infrastructure for business data traffic. This data consists of information exchanged between users, ranging from price inquiries about a product or service, through the purchase decision, and ending with payment. In general, a mobile phone, regardless of model or manufacturer, is the hardware that runs the WhatsApp program (the software), which operates through the device's operating system (iOS – iPhone Operating System, Apple's Mobile Operating System, or Android – an open-source Operating System based on the Linux language). Finally, there are the people who are the users interacting in negotiation conversations.

These are the best-known resources of the information system, many of which are customized by large information technology companies such as: TOTVS, SAP, and Oracle. The Internet has allowed micro and small business owners to use WhatsApp to manage their business, even with the common-sense view that it is a resource for messages and everyday information (Valente, 2019) (SEBRAE, 2023).

Artificial Intelligence has been gaining ground in formulating management resources such as: CRM platforms, ERP, media and communication creation processes, reduction of sales funnel stages, and increased leads (identification of a potential customer for the business). Added to this is the generation of reports produced by one of the AI – Artificial Intelligence tools with decision suggestions for the business, thus facilitating the manager's decision-making on data collected and analyzed by AI – Artificial Intelligence.

4.2 MICRO AND SMALL ENTERPRISES AND THE INFORMATION SYSTEM

In the 21st century, the world is divided into two distinct moments, regardless of the agent involved: the moment before the COVID-19 Pandemic in 2020 and after that moment. The influence of COVID-19 brought changes in people's behavior, changes in production sectors with implications for purchasing, payment/receipt, and delivery of goods; the capital/labor relationship was altered with increased participation in home office activities and changes in the labor hiring process from CLT – Consolidation of Labor Laws to MEI – Individual Microentrepreneur; purchase of ready meals 24 hours a day, delivery services of various types, online medical consultations, blood collection and other laboratory test materials on a delivery basis, and other changes in the production process.

A large part of these activities are carried out by Micro and Small Enterprises, as they serve locally and must be close to the customer, offering products and services that can maintain business survival. To reinforce the argument, it is easy to notice throughout the city the movement of motorcycle couriers and bicycle couriers delivering all kinds of products and even carrying out payment transactions for people. Added to this are deliveries made in the early hours of the morning by people who do not fit the delivery person profile, but who make deliveries with their own vehicle, often accompanied by a wife and small child, but who use this activity for their financial survival.

These activities are carried out by MEI – Individual Microentrepreneur, which began in July 2009 under Complementary Law No. 128, of December 19, 2008, with the objective of regulating various professional relationship activities and providing legal and social security protection for its participants. The resource used to maintain their activities is WhatsApp, which takes on all the functions of an information system.

The participation of WhatsApp, Facebook, and other tools increased exponentially after the COVID-19 Pandemic (March 2020), which lasted close to one year of lockdown and the suspension of a large part of activities. Since the end of that lockdown, Internet use in 2024 shows that 50% of online sales were made through this communication channel. With this increased participation, WhatsApp, for example, had to change its original role as a simple message exchanger to an Information System portal capable of maintaining contact, transferring documents, and processing payments and receipts (Meirelles, 2025).

The participation of micro and small businesses is important to maintain the urbanization and verticalization process of a city. Therefore, the needs for goods and services are met by these businesses, which expand as the city grows. The growth rate of both the businesses and the city increasingly relies on the presence of the Internet and its applications, which help drive the market in both the acquisition of goods and the processing of payments, document exchanges, and other advantages the Internet can generate (ABDI, 2025).

From a management perspective, this micro and small business needs to professionalize itself to remain competitive in the sector where it operates. On the other hand, with the increase in demand for the most varied products and services, micro and small enterprises are forced to modernize and adopt management policies with cost reduction and profit margin maintenance for business sustainability. Since these companies do not have the assets or structural and financial size to dilute possible management losses, they are forced to maintain an agenda of process optimization and innovation in the field in which they

operate, while their managers must acquire new knowledge, including that related to Information Systems, to continually achieve the best results (Oliveira; Nogueira, 2023).

Competitive strategies are present in all businesses. Micro-enterprises, small businesses, medium-sized businesses, or large companies all use competitive strategies to strengthen their business and expand their market share with customers before their competitors.

Michael Porter's Theory of Competitive Advantage (1985) is important in helping a company create a competitive strategy to maintain its market leadership. A company without a strategy navigates the market according to the rules of its competitors. Having a good product or service, a competitive price, serving the market efficiently and with quality, and possessing a good team are not sufficient requirements for a company to dominate the market and maintain its leadership.

The company that adds value for the customer by providing a quality product or service, making faster deliveries, or offering a more competitive price than its competitors, stays in the market longer. Understanding how the five forces operate in the market helps in creating a competitive strategy to beat the competition.

The market has global competition, and every day new entrants emerge with proposals that can influence consumers to substitute traditional products. Suppliers may be swayed by new promises of higher order volumes and more advantageous payment methods. Therefore, the market begins to experience a new dynamic with more expensive raw materials, the replacement of cheaper inputs of dubious quality, and the emergence of new buyers with greater purchasing power and demands that can compromise the company's profits, resulting in higher costs and investments. The company cannot stop analyzing the market and creating competitive strategies to beat the competition (Porter, 1985).

Table 3

Productivity increase in micro and small enterprises with at least one Information System resource

Year	Software	Digitalization Stage	Survival Rate (%)	Productivity Increase (%)
2016	Financial Management	Low, greater offline presence	73	10
2017	WiFi/Cloud Computing Expansion	Transition to digital	75	12
2018	Social Networks as CRM	At least 45% have one tool	78	15

2019	Electronic Invoice	Strong Tax Automation	79	18
2020	E-commerce and Delivery Apps	Pandemic Forces Digitalization	65	22
2021	PIX and Digital Payments	Mobile payment consolidated	80	25
2022	WhatsApp Business and Web ERPs	Growing Digital Maturity	81	27
2023	Business Intelligence	Decision-Making with data analysis	82	29
2024	Marketing and Sales with Generative AI	Half use digital media in sales	83	32
2025	Predictive AI and Full Integration	Three quarters use computers in management	84	35
2026	Intelligent Automation (No-Code/Low-Code)	End-to-end digitalization	85	38

Source: SEBRAE/RR (2025); SEBRAE (2023) (2024); IBGE (2025); Conjuntura Industrial – ABDI (2025); FGVcia Pes TI 2025, SERPRO, 2019.

To meet the objective of this article, this table was prepared to show the productivity gains of micro and small enterprises that use at least one information system. The timeframe covers the period from 2016 to 2026, with 2026 data projected based on growth trends, mainly from the last five years.

The lack of technical knowledge and the cost of implementing new technologies are justifications presented by an OECD study (2021) for the delay in the adoption of digital technologies by SMEs. On an increasing scale, SMEs are less digitized than medium-sized companies, and these companies less so than large companies.

In general, SMEs are more financially vulnerable, and the lack of knowledge among managers, along with the fear of making new investments with limited resources, hinders any decision to improve the business. This degree of difficulty is lower the larger the company, but on the overall investment scale, all show delays in adopting new technologies due to difficulties in budget management and a lack of knowledge among managers to handle information technology tools that are new to the company (OECD, 2021).

A general overview prior to 2015 indicates low digital interaction by micro and small enterprises, which viewed the digital world more as a tax obligation than a tool that would help improve productivity. The justification for this distance from the digital world lies in the absence of technical knowledge on the part of managers and the implementation costs that these managers believed would compromise their profits with something they did not perceive as a viable management success (SEBRAE, 2023).

The introduction of the Electronic Invoice in April 2006 and the creation of Simples Nacional under Complementary Law 123/2006 aimed to reduce barriers to market entry for companies. Both events indicated the path toward the use of digital tools to increase productivity and achieve gains from cost reduction in creating these documents (SERPRO, 2019).

The results of these two initiatives still showed difficulties in engagement with the use of technology, such as implementation costs, as it was necessary to create infrastructure by purchasing computers capable of processing information and having adequate Internet connectivity. Another real concern was the increased cost of this new demand, which was generally handled by accountants who would charge more for the service (SEBRAE, 2023). The fear of change and the lack of technical knowledge also represented a major obstacle to this technological progress. SEBRAE data show that computerization reached only 50% of micro and small enterprises in São Paulo, compared to 35% in 2001.

Looking at things today, changes in the supply of computerized equipment, improvements in Internet bandwidth, increased storage and processing capacity of mobile phones, and the emergence of applications that assist and make various activities intuitive have altered this landscape, yielding significant productivity gains as shown in Table 3.

Discussing the results of Table 3, it is possible to note that in 2016, technology appeared with the use of financial management software, often purchased at office supply stores or with the support of the local SEBRAE. This software was essentially Excel spreadsheets with basic entries, and with a little skill or guidance from the accountant, it was customized to meet the needs of the micro and small business owner's activity. As a result, digital presence was low and there was a preference for maintaining manual processes. Even so, the survival rate approached three quarters and there was a 10% productivity gain.

The year 2017 created possibilities for greater data storage and traffic with the expansion of WiFi and Cloud Computing, bringing greater security for information and possibilities for sharing information over the Internet, even outside the office. Speed and data volume increased with the use of fiber optics, although still restricted to large cities or localities, replacing the traditional coaxial cable and bringing gains in speed and data storage capacity. Another positive factor in this year of digital transition was the expansion of WiFi and the use of new retransmission equipment, the so-called modems. As a result, more people in a company and in the same space could benefit from business information. The quantitative data for this year still maintains a three-quarters survival rate and a slight productivity gain to

12%. In that year, WhatsApp participation was approximately 42% as a management tool (TIC EMPRESAS 2024, 2025).

For 2018, social networks as CRM – Customer Relationship Management emerged as a great possibility to interact with customers through social networks such as: Facebook, WhatsApp, Instagram, Twitter (now X), Telegram.

What does CRM do? As stated in item 4.1, it is a process of managing the relationship between the company and the customer in its entirety, that is, from the first contact to after-sales, seeking to understand the customer's experience and how much they would engage in a new purchase or recommendation to third parties. Therefore, this is what social networks do: they identify the customer profile, motivate their purchase and engagement with likes and shares so that the company can continuously increase sales.

So, a social network tool takes on this role. Taking Facebook or Google as an example, both store customer data, their contacts, browsing history and likes, record interactions and suggest new ones, assist in automating sales and communication processes — that is, they are marketing tools that generate productivity increases.

In 2018, at least 45% of companies had and used one of these tools, which allowed the business survival rate to rise to 78% and the productivity gain to reach 15%.

The electronic invoice strongly drove digital stage advancement in 2019. In São Paulo, Simples Nacional became mandatory in 2018, so the process brought the electronic invoice into this scenario, and the use of the Internet and Information System control tools became useful to facilitate and bring greater security and time savings. The Nota Fiscal Paulista, introduced in 2007, can be considered one of the elements driving increased digitalization, since consumers began requesting invoices to enter prize draws. Productivity increase rose to 18%, while the company survival rate stood at 79%.

During the COVID-19 Pandemic period in 2020, it was natural that an increase in the digitalization of companies would occur, but this did not happen at the expected speed, since the moment was still one of great uncertainty and without a future outlook regarding business and life in general. In that year, the survival rate stood at 65%, due to the collapse of many businesses that depended on daily revenue intake, without a defined management policy and lack of planning (SEBRAE, 2023). With forced digitalization, the productivity increase was 18%, with orders being placed by mobile phone, especially using WhatsApp, generating the growth of motorcycle couriers and bicycle couriers to fulfill customer orders during this lockdown. Purchases were not limited to food or ready meals; purchases were made via e-

commerce for masks, medicines, and home appliances such as blenders, ovens, and electric fryers (IBGE, 2023).

This period was marked by an intense search for alternatives to maintain business flow, sales volume, revenue, and mitigate losses from the lockdown. Researchers Cong, Yang, and Zhang (2024) presented results in their paper that corroborate the behavior of micro and small enterprises worldwide. The lockdown period forced people to stay home, and many economic activities were compromised by the lack of in-person customers at their establishments.

Companies that conducted business online experienced a greater impact on their operations than companies whose businesses did not sell over the Internet. During this period, these companies had to make adjustments to their business model to generate sales, revenue, and meet the needs of their customers. This migration to the digital environment reduced the impact on revenue, maintained the supply chain, met the demand for its products, allowed for faster adaptation of businesses when the lockdown was lifted, and generated growth possibilities due to this incorporation of the activity model through digital means (Cong; Yang; Zhang, 2024).

This change, which seemed to take only a short period of time, brought about a new business model that incorporates both physical and online stores. By transferring their activities to the digital environment, these companies helped create new solutions for work with intelligent transformation and a new rhythm for carrying out the purchasing process, the revision in the logistics of delivering goods with the emergence of new workers (motorcycle couriers, bicycle couriers), changes in negotiations with suppliers, expansion in the number of marketplaces, with these online platforms playing an important role in increasing the connection between users and the market, suppliers or resources (OECD, 2021).

A more advanced digital stage consolidation for micro and small enterprises emerged in 2021. The great impulse was given by the adoption of PIX as a means of payment for purchase, sale, bill payment, and other transactions. Its origins go back to studies carried out by the Payment and Market Infrastructure Committee of the Central Bank of Brazil, aiming to create an instant payment system that was free, fast, and extremely accessible. The motivation for creating PIX was the market's need for an instant payment method; however, companies could not unify their ideas around this need.

When PIX (there is no official definition of the meaning of this concept, only a reference to pixels, technologies, and transactions) was launched in November 2020, it quickly gained

popularity among customers, companies, governments, and others interested in having the convenience of making instant payments and receipts.

This was the impetus for micro and small business owners to adopt PIX as a means of payment, with the help of credit and debit card machine providers, using QR codes via mobile transactions. In that year, the volume of PIX transactions represented approximately 50 billion, with a projection of exponential growth for the following years (Meirelles, 2025).

The convenience was quickly embraced, especially by consumers, since they no longer had to carry money in bags, backpacks, or other places; money was stored digitally in bank accounts and was a mere reference on the mobile phone, which reduced the risk of robbery and losing money. PIX eliminated the inconvenience of carrying coins and the lack of change in metal coins.

For the micro and small business manager, it was an opportunity to innovate the payment and receipt process, even if forced by the market. Therefore, 2021 represented the great leap in the degree of digitalization of micro and small enterprises, with the adoption of CRM – Customer Relationship Management and ERP – Enterprise Resource Planning systems; even if these systems were condensed in smartphones and tools such as WhatsApp Messenger and WhatsApp Business, which is more appropriate for business because it has a commercial profile conversation organizer, resources for micro and small enterprises to build their product catalog, ease of sales due to conversation organization, emails, and messages citing customer needs (SEBRAE, 2024) (Valente, 2019).

Continuing the analysis and discussion of the data in Table 3, 2022 shows that 27% of micro and small enterprises that adopted the Information System as a management tool for their businesses had productivity gains, and the survival rate of these companies expanded to 81%.

The central focus of digitalization was the use of WhatsApp Business and Web ERPs – Enterprise Resource Planning. These two systems are appropriate for micro and small enterprises, with WhatsApp Business being more specific because it was an adaptation of WhatsApp Messenger, which was being used to conduct business, make payments, exchange documents, and perform other typical commercial functions.

As an Information System tool, WhatsApp Business brings together functionalities for micro and small enterprises such as quick messages to communicate new launches, absences, thank-you notes; a product catalog with high-definition photos, prices, and sales promotions; and tracks, through a history, the contact with the customer through to purchase

closing and after-sales. In 2022, WhatsApp participation (without distinguishing whether it is the Business modality, only) approached 55% (TIC EMPRESAS 2024, 2025).

Web ERP – Enterprise Resource Planning is a web-based tool that integrates the functions of human resources, finance, purchasing, sales, inventory, and other departments of a micro, small, or large enterprise. Information is stored in the cloud and can be accessed by all managers of a company, receive updates, generate reports, and serve as an analytical source according to the company's needs (SEBRAE, 2024).

The concept of BI – Business Intelligence gained strength in 2023 in the micro and small enterprise environment as an Information System instrument to enable decision-making with data analysis, generating a 29% productivity increase and raising to 82% the survival rate of companies that began using this tool.

Business Intelligence gathers raw data from sales, finance, marketing, social media, purchasing, logistics, and other sectors of a company. This raw data is transformed into information presenting a certain pattern of correlation so that the manager can develop ideas or make decisions based on analyses presented in the form of graphs and tables, in such a way that visualizing the scenario, understanding it, and drawing possible conclusions is facilitated by the aesthetic aspect of the presentation. This process of gathering, condensing, and analyzing data is defined as data mining (Nunes, 2023).

Artificial Intelligence arrived with force in 2024. Micro and small enterprises use it as marketing and sales instruments with Generative AI, and half of these companies use digital media in sales. This yielded a 32% productivity gain and an 83% survival rate for companies that made use of Artificial Intelligence as a competitive advantage in their business, as shown in Table 3.

In 2024, small businesses alone conducted 61% of sales via the Internet, making use of all available tools to facilitate the relationship between themselves and the customer. Artificial Intelligence assisted in the communication process with messages, identification of the consumer profile, preferences, and search for products or services (TIC EMPRESAS 2024, 2025).

Generative Artificial Intelligence is composed of LLMs (Large Language Models): systems that apply large language models to facilitate machine learning, produce responses, and execute tasks within a statistical probability that can approach zero error. It is a resource that aims to be the great revolution in all sectors of human activity, representing a disruptive change in society.

Artificial Intelligence is impacting the lives of 64% of people through the possibility of generating responses, analyzing problems, and offering solutions in fractions of a second. Therefore, this process applied to business generates productivity gains, increased sales volume, more efficient and dynamic marketing communication with customers, and greater security in contacts (SEBRAE/ES, 2024).

When applied to business, the possibilities become significant in the fields of marketing, customer relations, inventory control, delivery logistics, order control, and other organizational needs. In 2024, Artificial Intelligence was applied in the marketing field to generate customer communication messages, showcase products, create images of products traded by the company, and manage customer interaction messages; generating positive productivity increase results as indicated in Table 3. Its application was associated with the production of product catalogs with images and messages to demonstrate product functionality, price proposals, and the best forms of negotiation, for example.

The year 2025 began with positive data coming from 2024, as shown in Table 3, indicating that the digitalization process of micro and small enterprises had come to stay. Artificial Intelligence was the driving force produced by this new tool, but now it takes on a predictive role, meaning it can make inferences about what may happen based on the history or current information of a sector or any given event.

In 2024 was the year of Generative Artificial Intelligence, which produced new content based on information provided by the user. Now in 2025, Predictive Artificial Intelligence takes on the ability to forecast what may happen based on a quantity of data and their statistical correlations. For example: the micro and small business owner can apply this tool in their consumer market, identifying purchasing trends, preferences for product type, color, flavor, and other characteristics; identify customer rejection of a type of product and make a proactive decision to mitigate the problem, solve it, or resolve it definitively (ABDI, 2025).

For micro and small enterprises, Predictive Artificial Intelligence can be applied in various businesses, for example: logistics with inventory control forecasting, predicting customer needs for current and future demand, reducing operational costs by optimizing the supply chain, controlling fleet maintenance, and mitigating losses from vehicle breakdowns and downtime for repair.

Table 3 shows that 2025 had end-to-end digital application — going beyond the office to managers' hands via smartphones or tablets, with an average computer usage in management of just over 75%. With cloud data access, initiated in 2017 (Table 3), and the

investments made by Internet providers since then, 49% of small companies increased their Internet access, while 76% of medium-sized companies had Internet access in 2025 (TIC EMPRESAS 2024, 2025). This generated a 35% productivity increase and expanded the survival rate of these companies to 84%.

The year 2026 was projected for this research, considering an increase in values based on data obtained for the years 2021 to 2025, excluding 2020 due to the disruptive change in society caused by the COVID-19 Pandemic.

Thus, the expected survival rate for 2026 for micro and small enterprises was projected at 85%, the result of an index calculated for the aforementioned years of 1.0125. For the productivity increase indicator, the same methodology was adopted — the average for the years 2021 to 2025 — and the index obtained was 1.08, projecting an increase to 38%. With this, the growth in the total number of companies using computers, tablets, and smartphones should continue and consolidate in the range of 80 to 85% (TIC EMPRESAS 2024, 2025).

The presence of Artificial Intelligence will be significant going forward, and the way to use this tool tends to become increasingly intuitive, making its application viable in all areas of knowledge and societal needs. Micro and small enterprises benefit from this convenience and begin to operate with more communication elements to expose their products and services to their consumer market. In this way, the use of Intelligent Automation (No-Code/Low-Code) will be significant, with good contribution from advances in broadband Internet and fiber optic networks, and faster computers, tablets, and mobile phones for processing information (ABDI, 2025).

Intelligent Automation (No-Code/Low-Code) brings great gains for micro and small enterprises because the manager has the ability to create their own application or website without the help of third parties, reducing spending on this process. Therefore, by using No-Code Intelligent Automation, they can build their website without needing to write programming code, as it already has pre-formatted information and the user can add other elements simply by dragging and dropping what they want to include in the website or application (SEBRAE/ES, 2024).

Since the platform offering this No-Code Intelligent Automation includes forms, buttons, and access links, databases, and other resources needed for the manager to create their website or application, the construction process is similar to assembling a LEGO set, now with digital data.

As for Low-Code Intelligent Automation, it is suitable for building software using the same intuitive methodology as No-Code — that is, it has pre-formatted resources, allows dragging and dropping desired information, all with minimal or no manual configuration. In this way, a micro or small enterprise manager can create a solution to meet their needs, improving their systems and optimizing the processes of repetitive or non-repetitive tasks, with faster results than if they were to commission a specialist, not to mention the cost reduction that is so important for micro and small enterprises, which already work with limited financial resources.

5 FINAL CONSIDERATIONS

The purpose of this article was to present the application of the Information System in the management of micro and small enterprises based on the observation of data from subject-matter experts: SEBRAE, IBGE, FGVcia, ABDI, SERPRO, and scientific articles, seeking to identify a correlation between the two concepts with a positivist view that the business evolves more quickly and securely when Information System tools are applied, as presented in Table 3.

The research timeframe covered 2016 to 2025, with 2026 treated as a projection for micro and small enterprise productivity growth, considering the fiscal parameters for defining company size (Table 1). In this case, the group of microenterprises considered includes MEI – Individual Microentrepreneur with revenue of up to R$81,000, the microenterprise with revenue of up to R$360,000, and the small business (EPP) with revenue ranging from R$360,000 to R$4,800,000.

The Information System used by micro and small enterprises or MEI – Individual Microentrepreneurs, is represented by people, equipment, and processes to collect, gather, analyze, interpret, and provide results through reports to assist the manager in decision-making about their business, as described in the Theoretical Framework section.

The Information System in a business can be represented by the recording of payments in a cash register at a supermarket, snack bar, bakery, or other establishment that needs this tool. With the information generated by a cash register, the manager can identify which product is most sought by customers, the time of day when the highest sales volume occurs, the payment method used, and the team's productivity, for example.

This research identified that WhatsApp is an important tool for micro and small enterprises, both Messenger and Business. The great impetus for the adoption of this

Information System tool was given by the lockdown during the COVID-19 Pandemic and the introduction of PIX in 2021 (Table 3).

During the Pandemic, business was conducted via WhatsApp, mainly to fulfill orders for medicines, masks, hand sanitizer gel, food, and other products to meet the population's needs. With the introduction of PIX, this Information System tool (WhatsApp) gained prominence, generating positive productivity results for micro and small enterprises with percentages ranging from 25% in 2021 to 35% in 2025 and a positive projection for 2026 of 38%.

Another conclusion of this research was the application of WhatsApp Business, which has features that enable the way to do business, make payments, exchange documents, and perform other typical commercial functions. The manager uses this tool to optimize the business, gain time, reduce operational costs, and provide ease of operation, culminating in a 27% productivity increase in 2022 and a synergistic effect on the increase of this indicator in subsequent years, as demonstrated in Table 3.

The research revealed that micro and small enterprises use other Information System resources beyond the traditional ones — ERP and CRM — namely, managers seek to take advantage of resources such as Marketing and Sales with Generative Artificial Intelligence.

This tool enables communication with the customer by creating messages targeted to their interests, creates catalogs with product photos and messages about their usability, keeps a contact history, and generates alternatives to assist the manager in decision-making, preventing sales from being lost. Because it is generative, this AI learns and improves its process every time it incorporates more information. This was clear in the results presented for 2024, with a 32% productivity increase.

The disruptive change for micro and small enterprises was the entry of Artificial Intelligence, which gained strength in 2024 and 2025 and continues forward as yet another powerful resource for organizational management. There are great prospects for increased application of AI in management due to its intuitive form of use, allowing the user to easily accomplish what their business requires.

The conclusion of this research was that Artificial Intelligence has valuable resources for the management of a micro and small enterprise; it can reduce operational costs, prevent waste and losses from forgotten equipment maintenance, wear and tear, and increased customer dissatisfaction if the company fails to deliver or makes improper charges.

As reported in Table 3, the years 2024 and 2025 were remarkable for this tool. Sales made with the application of generative AI impacted 64% of people and 61% of sales were recorded via the Internet.

For 2026, this research projects that micro and small enterprises will continue the end-to-end digitalization process, which will bring a 38% productivity increase to businesses. This percentage may be even higher each time the manager uses Intelligent Automation (No-Code/Low-Code). Both have pre-built resources that can be applied to a website, application, spreadsheet, report, or other need. The manager saves time by applying this Intelligent Automation because it is intuitive, and the manager can build their website or application by dragging and dropping what they deem best for their proposal, as reported in the analysis of Table 3 in the results discussion section.

This dedication of micro and small enterprise managers in the search for an appropriate Information System tool to improve their results has generated an increasingly positive business survival rate. This rate ranges from 73% to 85% projected for 2026.

The difficulties of micro and small enterprises lie in the lack of resources or very significant limitations; investments in used or low-performance equipment due to the high cost of branded, high-productivity equipment; precarious or inappropriate facilities — often businesses are started in the owner's own home or in an improvised location due to the cost of rent or land for the company's installation; the mixing of company funds with personal funds, which creates problems with insufficient financial resources for the business, since the funds were used to pay personal expenses.

These, then, are some of the difficulties that contribute to a high company mortality rate or many businesses operating with difficulty. However, if managers train themselves, have a good understanding of their activity, and make use of Information System tools available and free on the Internet — accessible via the smartphone, such a common device today — the results for their enterprise will certainly be promising.

As a result, this research identified the trend of micro and small enterprises focusing on the digital environment, maintaining digital communication on social networks whether using WhatsApp Messenger, Business, or another application. Although Intelligent Automation (No-Code/Low-Code) has been very present in 2024 and 2025, the operational ease of building one's own website or application — especially using Low-Code Intelligent Automation — will lead these companies to increase their digitalization participation on social networks.

The limitations of this research lie in the scarce information available on the topic. Although data was obtained from specific sources, it was found scattered throughout the context; therefore, the need to condense it into a line of reasoning converging toward the research objective was laborious.

Added to this is the treatment given to the Information System topic, which is still concentrated on traditional tools such as ERP and CRM. These are important and many companies customize them for their clients, but for micro and small enterprises, they can be applied using the WhatsApp resource, for example.

Several offshoots of this research can be carried out and applied in future studies. One of them could be the exclusive application of WhatsApp in the communication process of small businesses or in the activities of MEI – Individual Microentrepreneur, since from 2024 onwards this resource has been used by managers of this business profile.

Other tools such as: Telegram, Snapchat, TikTok, and Flickr can be part of a research study that associates these tools as information systems in the management of micro and small enterprises, including MEI – Individual Microentrepreneurs. Information from TIC EMPRESAS 2024, published in 2025, indicates that these resources jumped from 22% in 2017 to 74% in 2024 — that is, a growth of 3.36 times compared to 2017. The ease of use and availability of equipment is the reason for this numerical growth, since in Brazil there are 272 million smartphones.

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