









## Analysis of the implementation of POS terminals at the Tecamac food market, state of Mexico





## Análisis de la implementación de las TPV en la central de abastos de tecamac, estado de méxico

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### SECIHTI classification:

Area: Social Sciences

Field: Administration and business

Discipline: Administration and management

Subdiscipline: Business Administration

 <https://doi.org/10.35429/EJROP.2025.11.19.3.1.11>

Article History:

Received: January 27, 2025

Accepted: December 05, 2025

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### Abstract

The objective of this research is to analyze the operational, economic, and social feasibility of implementing Point of Sale Terminals (POS) in businesses established within the Tecamac Supply Center, State of Mexico. A mixed approach was used, collecting quantitative data (direct surveys) and qualitative data (observation and document analysis). It was identified that 65% of tenants already use some POS or digital payments, with non-bank terminals being the most common Clip, Zettle, Mercado Pago, and Billpocket are most popular due to their low entry cost, ease of use, mobility, and lack of formal tax requirements. Bank POS terminals, such as BBVA, Banorte, Banamex, and Intercam, are used less frequently but represent a solution with greater institutional support and security levels. From a cost perspective, it was concluded that non-bank POS terminals are affordable, with prices ranging from \$300 to \$2,000 MXN, with no fixed monthly fees. Bank-owned POS terminals, which cost more than \$4,000 MXN and carry lower monthly rentals and transaction fees. The study demonstrates that implementing POS terminals in the Tecamac Supply Center is technically feasible, economically profitable, and socially relevant.

### Resumen

Esta investigación tiene como objetivo analizar la viabilidad operativa, económica y social de implementar Terminales Punto de Venta (TPV) en los comercios establecidos dentro de la Central de Abasto de Tecamac, Estado de México. Se utilizó un enfoque mixto, con recolección de datos cuantitativos (encuestas directas) y cualitativos (observación y análisis documental). Se identificó que el 65% de los locatarios ya utilizan algún tipo de TPV o pagos digitales, siendo las terminales no bancarias como Clip, Zettle, Mercado Pago y Billpocket las más populares, debido a su bajo costo de entrada, simplicidad de uso, movilidad y falta de requisitos fiscales formales. Las TPV bancarias, como BBVA, Banorte, Banamex e Intercam, se utilizan menos, pero representan una solución con mayor respaldo institucional y niveles de seguridad. Desde una perspectiva de costos, se concluyó que las TPV no bancarias tienen precios accesibles, que oscilan entre los \$300 y \$2,000 MXN, sin cargos mensuales fijos, a diferencia de las bancarias, que superan los \$4,000 MXN e implican rentas mensuales y comisiones más bajas por transacción. El estudio demuestra que la implementación de TPV en la Central de Abasto de Tecamac es técnicamente factible, financieramente rentable y socialmente pertinente.



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TPV, PYMES, Central

POS, SMEs, Central

Area: Dissemination and universal access to science

**Citation:** Hernández, Maribel, Guerrero, Sylja, Colina Rocío and Ortiz Alicia. [2025]. Analysis of the implementation of POS terminals at the Tecamac food market, state of Mexico. ECORFAN Journal-Republic of Paraguay. 11[19] 1-11: e31119111.



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## Introduction

The growing demand for electronic payment methods and the emergence of accessible technological solutions, such as Point of Sale (POS) terminals, are opening up new opportunities for developing commerce in different types of businesses. The use of cash represents a conflict for the efficiency, security, and formalization of commercial transactions. This research focuses on analyzing the use of POS terminals at the Tecamac Central Market in the State of Mexico.

The various forms of payment received by merchants at the Tecamac Central Market were analyzed using a mixed approach that combines quantitative and qualitative methods to identify the main advantages, disadvantages, and barriers to the adoption of these payment tools. This analysis seeks to offer recommendations that will allow merchants to take advantage of the benefits of implementing POS terminals to improve their competitiveness and contribute to the economic development of the community.

In terms of the quantitative method, a structured interview was conducted with 116 merchants at the Tecamac Central Market, gathering information on the types of terminals they use, their level of satisfaction, frequency of use, and perception of security as reasons for their choice. With regard to the qualitative method, a documentary technique was used, consisting of the collection, analysis, and systematization of information from secondary sources. These include academic literature, market reports, and analyses by specialists related to the use of POS terminals in Mexico.

### 1. Feasibility Analysis of Implementing POS Terminals at the Tecamac Central Market

This study focuses on the use of POS terminals at the Tecamac Central Market, located in Santo Domingo Ajoloapan, Tecamac, State of Mexico, which has modern facilities offering a wide variety of products at low prices.

## Box 1



**Figure 1**

Photo of the Tecamac Central Market

Source: (*Central de abastos de Tecamac*, 2025)

Note: The image is a panoramic photo of the Tecamac Central Market.

The implementation of bank and non-bank POS terminals in the businesses of the Tecamac Central Market is a financially viable and strategically timely initiative. as this market is a place where large volumes of cash circulate daily and there is a constant flow of buyers, creating conditions conducive to the modernization of payment methods. Incorporating technological solutions such as POS terminals contributes to improving operational efficiency, increasing transaction security, and promoting financial development among merchants.

([Cabrera Felipe, 2023](#)), in their analysis of the rapid evolution of payment methods in Latin America published in McKinsey & Company in 2022, point out that the current environment shows a growing consumer preference for digital payment methods, driven by factors such as the use of bank cards, electronic wallets, and social programs that distribute resources through cards or digital accounts.

Addressing this trend in local businesses helps capture a broader customer segment, increase revenue, and professionalize financial management. Additionally, there are POS options on the market with varying levels of complexity and cost, from traditional banking solutions to non-banking tools offered by Fintech, which allow small merchants to operate without the need to be fully banked.

Access to these tools is subject to certain conditions that must be met to ensure their success, including the need for adequate minimum infrastructure, such as mobile internet or Wi-Fi connectivity, as well as constant access to electricity to charge devices. It is also essential to implement training programs for merchants, as some are unfamiliar with the uses of these technologies. Digital literacy, awareness of the benefits of reducing cash use, and institutional support are key factors in promoting the effective adoption of POS terminals.

It is important to consider that not all businesses require the same type of terminal or face the same barriers, which is why the implementation model must be flexible, allowing the use of traditional POS terminals in more established businesses and simpler options, such as barcodes or mobile devices with readers, in informal or smaller-scale establishments. The participation of government entities, merchant associations, or financial institutions could facilitate this transition through subsidy schemes, soft loans, or equipment data.

From an economic point of view, the costs of acquiring and implementing these terminals vary. Bank POS terminals tend to involve higher initial costs, in some cases monthly rentals, while non-bank POS terminals have a lower fixed cost, with no monthly payments, making them more attractive to merchants with variable or informal incomes. Transaction fees for POS terminals typically range from 1.5% to 2.5%, while Fintech fees can reach 3.6% or 4% plus VAT, although many of the latter offer interest-free months and immediate payment facilities (Elizondo, 2025).

In terms of financial development, the project has significant advantages. The initial investment per merchant can range from \$300 to \$2,000 MXN in the case of non-bank POS terminals and up to \$4,000 in the case of bank POS terminals (Polanco, 2025). The increase in sales and return on investment can be achieved in a very short period, between one and three months, depending on the volume of transactions. Thus, there are financing alternatives or business microcredits that could facilitate the acquisition of equipment by tenants, which reinforces the viability of the project from an economic sustainability perspective.

Electronic payments have been on the rise, especially among young consumers, who tend to use bank cards or mobile payment apps. However, some merchants express fear of being audited by the SAT or losing control of cash flow. It will be essential to develop an awareness and training strategy that explains the benefits of banking, income formalization, and access to credit through a visible financial history. This would not only benefit tenants but also contribute to strengthening the local economy.

The implementation of POS terminals at the Tecamac Central Market is a viable measure with high potential impact, which not only modernizes payment methods and improves the customer experience, but also strengthens financial security, promotes the formalization of the local economy, and facilitates merchants' access to financial services. With the right approach, this strategy can become a key step toward the digital transformation of traditional commerce in the municipality.

The analysis of the feasibility of implementing bank and non-bank POS terminals in the Tecamac Central Market is prudent because it is a point of high economic activity, with significant daily circulation of people and cash, making it a conducive environment for introducing technological solutions that optimize payment processes, strengthen security, and expand financial inclusion.

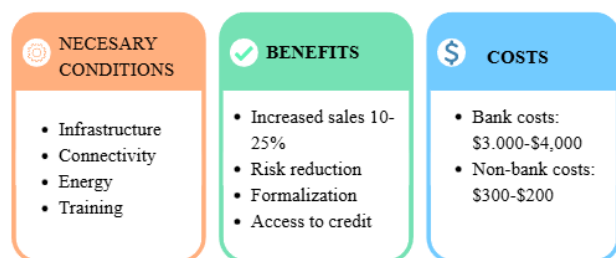
There is a growing trend among consumers towards the use of digital payment methods, motivated by the expansion of the use of bank cards, electronic wallets, and social programs that distribute resources through cards. This demand represents an opportunity for merchants to increase their income, expand their customer base, and professionalize their management. The market offers various POS options, from traditional banks with greater technological robustness to non-bank options offered by Fintech, which are accessible to small merchants without the need to be fully banked.

In addition to this, there is a proposal to implement training programs for tenants of the Tecamac Central Market, as a large percentage of them are unfamiliar with the use of POS terminals and related technologies.

It is important to raise awareness among them of the benefits of reducing cash payments and to encourage them to accept training and support in the use of POS terminals wherever they decide to purchase them, so that they can adapt to them successfully.

Implementation will be another element of analysis, as not all businesses require the same type of terminal. Therefore, an adaptation phase is required that considers bank POS terminals in established businesses and simpler solutions, such as QR codes or mobile readers, for informal merchants or micro-enterprises.

## Box 2



**Figure 2**

Feasibility analysis of implementing POS terminals

*Own Elaboration 2025*

Note: The figure shows the elements of analysis in the feasibility of POS terminals in the Tecamac Central Market.

### 1.1 Identification of the types of banking and non-banking POS terminals most commonly used in markets and commercial areas in the State of Mexico

Bank terminals continue to predominate in formal businesses and established chains, such as supermarkets, pharmacies, and convenience stores. These POS terminals are usually provided directly by financial institutions such as BBVA, Banorte, Citibanamex, or Santander, and integrate complete functions such as EMV chip readers, NFC technology for contactless payments, and connectivity through fixed or wireless networks. Their use is generally linked to a business account with pre-established commissions and formal technical support, making them a robust but less flexible solution with higher barriers to entry for small merchants. The growth of e-commerce, changing consumer habits, and the need to modernize payment methods in the informal sector have significantly driven the adoption of POS terminals in Mexico.

In the context of the State of Mexico, one of the most densely populated and commercially active entities in the country, the use of POS terminals has expanded in both formal and informal sectors, although with clear differences between them.

However, their adoption involves certain requirements such as having a business account, credit history, and tax compliance (RFC and invoicing), in addition to possible monthly fees or variable commissions. For these reasons, their penetration in informal or low-income markets is limited, as the barriers to entry are high for micro-entrepreneurs, tenants without tax registration, or mobile merchants.

POS terminals developed by Fintech companies such as Clip, Mercado Pago, Zettle, Billpocket, Kiwi, and Sr. Pago have revolutionized access to electronic payment methods. These terminals stand out for their low acquisition cost, starting at MXN 299, no monthly fees, fixed transaction fees of 2.9% and 3.5%, (Polanco, 2025), and ease of use. Some models connect via Bluetooth to smartphones, while others are autonomous, with batteries, card readers, and 3G/4G connectivity.

These features have allowed for their widespread adoption in street markets, public markets, and small shops in municipalities such as Ecatepec, Tecamac, Chimalhuacán, and Neza, where infrastructure is limited and mobility is essential. These solutions do not require an RFC or mandatory invoicing, which facilitates their implementation in semi-formalized environments and can represent the first step toward financial inclusion.

Recognizing these two main types of POS terminals reveals a clear pattern of segmentation: banking solutions dominate formal commerce, while Fintech effectively responds to the needs of traditional and popular commerce. Thus, for the Tecamac Central Market, in an environment characterized by a mix of formality and informality, the successful implementation of POS terminals must consider this duality and design differentiated strategies for each merchant profile. POS terminals are a key option for improving operational efficiency, reducing the use of cash, attracting customers with digital payment methods, and encouraging the transition to more structured financial models.

Correctly identifying these tools will allow the project to establish a solid basis for evaluating its viability, impact, and sustainability.

### **1.2 Compare the technical operating characteristics, advantages, disadvantages, costs, and benefits of POS terminals available on the domestic market**

The Tecamac Central Market has established itself as a fundamental pillar in the economic structure of the municipality and its surrounding area. Its operation has not only transformed the local landscape but has also had positive repercussions on the regional economy. This trade center plays a crucial role in supplying fresh food, guaranteeing the availability of quality products for the region's inhabitants. In its continuous growth, it has fostered the creation of both direct and indirect jobs, contributing to improving the living conditions of many citizens.

In this economic context, the modernization of commerce has significantly boosted the use of POS terminals, which have revolutionized the way commercial transactions are carried out at the Tecamac Central Market. Merchants have begun to recognize the importance of these technologies in optimizing their payment processes, improving transaction security, and ultimately offering a more satisfying shopping experience to consumers.

POS terminals are mainly provided by traditional financial institutions that are characterized by their direct interaction with business bank accounts. This connectivity allows merchants to manage their finances more efficiently by facilitating access to additional services such as loans and financing. On the other hand, POS terminals offered mainly by Fintech and technology companies have gained ground at the Tecamac Central Market.

The survey reveals that 42% of merchants in the area use this type of non-bank POS terminal, highlighting that the reasons are their accessibility and flexibility, which makes them an attractive option for entrepreneurs, street vendors, and small businesses that are not formally banked. These terminals operate through mobile applications or more economical devices, which reduces barriers to entry and allows a greater number of merchants to benefit from their advantages.

In this way, the commissions they apply are usually competitive, which is an additional attraction for small business owners seeking to maximize their profit margins.

In this environment, where both formal and informal businesses coexist, making sound financial decisions is essential to ensure the permanence and growth of businesses. One of these key decisions is the choice of a POS terminal, with banking terminals being particularly recommended due to the advantages they offer in terms of security, institutional backing, and access to complementary financial services.

The Tecamac Supply Center, as an important hub of commercial exchange, clearly demonstrates the positive impact of POS terminals. These solutions are backed by recognized financial institutions, and the use of POS terminals can open the door to lines of credit, financial history, formalization, and better conditions for business growth.

Implementing the use of POS terminals at the Tecamac Central Market not only strengthens trust between merchants and consumers, but also promotes financial inclusion and accreditation of local commerce.

Analyzing these differences not only allows us to understand how commercial processes are transforming in Tecamac, but also how technological advances are being integrated at different levels of the regional economy. This assessment is essential for promoting financial inclusion, commercial efficiency, and the competitiveness of local businesses.

### **1.3 Functioning and operational benefits of POS terminals at the Tecamac Central Market**

POS terminals are easy to use because they are designed for anyone, regardless of their level of technical knowledge, which helps them to operate quickly. This is particularly beneficial for merchants and micro-entrepreneurs who often lack the necessary information about more complex payment systems. The intuitive interface of the mobile applications that accompany these devices facilitates not only payment registration, but also the issuance of digital receipts and sales management, which is essential for maintaining effective control of business finances (Ríos, 2023).

POS terminals promote transaction security by enabling contactless payments, and the option to send payment links reduces the risks associated with handling cash, which can be stolen or lost. This increase in security also builds trust among consumers, who are more likely to spend when they know their data is protected.

POS terminals represent a revolution in the way merchants conduct their transactions. Their ease of use, low cost, and ability to promote financial inclusion make them an invaluable tool, especially for micro-enterprises and informal merchants. As we move toward a more digital future, these technologies are likely to continue to play a crucial role in the growth and modernization of local commerce, contributing to the sustainability and exposure of the economy in communities such as the Tecamac Central Market.

In an era of digital transformation and modernization of commerce, non-bank POS terminals have emerged as a highly effective technological alternative for small merchants and informal businesses. At the Tecamac Central Market, where these types of establishments predominate, the incorporation of these tools has proven to be an accessible, efficient, and strategic solution for improving commercial operations and competitiveness.

POS terminals offer practical and flexible operation, working with wireless connections, Bluetooth with smartphones, or through devices with integrated cards, eliminating dependence on traditional banking infrastructure. This feature allows merchants to accept multiple forms of payment, including debit cards, credit cards, barcodes, and even payment links sent via social media or messaging platforms. This functionality, combined with device platforms, has enabled their application in sales environments, from fixed locations to street markets and regional fairs.

From an operational perspective, these terminals can also optimize sales control and the issuance of digital receipts, which not only improves internal business management but also opens the door to fiscal and financial formalization. This adds to the security benefits, as the reduction in cash use reduces the risk of theft, loss, and counting errors, generating confidence in both merchants and customers.

POS terminals represent a tool for commercial transformation for small businesses in the Tecamac Supply Center. Their cost, ease of use, technological flexibility, and impact on formalization and financial inclusion position them as a viable solution for promoting local economic development and strengthening the transition to a more modern, secure, and competitive commercial ecosystem.

## Results

In the digital age, POS terminals have undergone a profound transformation, adapting to changing needs in commerce, and merchants at the Tecamac Central Market are no exception in their use of POS terminals. For this study, 116 interviews were conducted with tenants at this location, 49 of whom use POS terminals.

### 1. Overview of POS terminal use

In today's commerce, the use of POS terminals has become common practice among merchants at the Tecamac Central Market. With 42% of sellers choosing to use some type of terminal, reflecting a growing trend toward digitization in the sales environment. However, it is notable that the dominant terminals are Mercado Pago and Clip due to their accessibility and ease of use. These tools allow entrepreneurs to receive payments quickly and easily.

On the other hand, bank POS terminals, although less represented in this commercial ecosystem, are explicitly mentioned in some cases as "terminals." These are usually associated with recognized financial institutions such as BBVA. Despite their inherent advantages, such as greater institutional support and security, their adoption remains limited among merchants at the Central Market, raising questions about the factors that inhibit their penetration in this market.

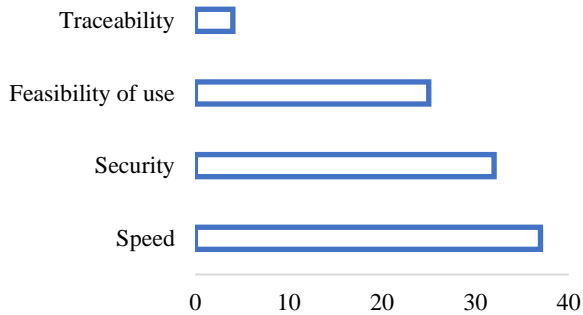
### 2. Perceived advantages of POS terminals

Merchants at the Tecamac Central Market highlight several advantages associated with the use of POS terminals. Among the most valued are:

**Speed:** Transactions made through these platforms are easy, allowing merchants to serve their customers more efficiently and reduce waiting times.

Security: POS terminals offer a higher level of security than handling cash, which is essential as it reduces the risks associated with theft and loss of cash, according to the Central de Abastos merchants.

### Box 3



**Figure 3**

Advantage of digital payments

Source: Own 2025

Note: The graph shows the Central de Abastos merchants' assessment of the security of payment methods.

Ease of use: Both POS terminals have been designed to be easy to use, which encourages their adoption even among merchants with limited technological knowledge.

Although non-bank POS terminals stand out for their operational simplicity and rapid integration into small businesses, bank terminals are notable for providing security and institutional backing. This is a critical issue, given that many merchants are not yet taking full advantage of these benefits.

The payment ecosystem at the Tecamac Central Market is characterized by a varied combination of payment methods. Merchants implement various strategies to optimize their transactions, including:

Combinations of POS terminals and cash: It is common for payments to be completed partly in cash through POS terminals.

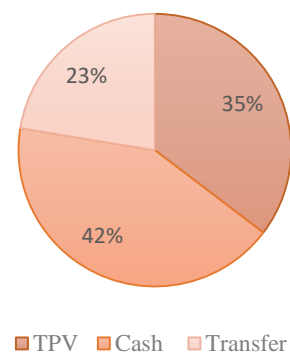
Use of POS terminals with bank transfers: some merchants prefer to use transfers, which saves them from having to handle cash, completely bypassing POS terminals.

There are also 23% of merchants in the Central region who use transfers and 35% who use cash exclusively, completely bypassing POS terminals.

However, 18% use POS terminals and transfers, reflecting a hybrid ecosystem where the use of POS terminals is complemented by other traditional methods, especially in businesses with a lower level of formality.

They were asked: Which of the following payment methods does your business mainly use?

### Box 4



**Figure 4**

Which of the following payment methods does your business mainly use?

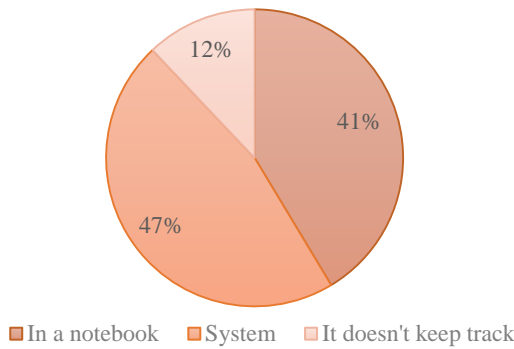
Source: Own 2025

Note: The graph shows the payment methods accepted at the Tecamac Central Market.

### 3. Level of formalization

A relevant fact is that a large number of establishments keep inventory control, which implies a move towards digitization in the management of their operations. However, it is important to note that those merchants who still record their transactions manually in a notebook or do not keep any formal records tend to rely more on transfers and non-bank point-of-sale terminals.

**Box 6**



**Figure 5**  
How do you keep track of your merchandise inventory?  
*Source: Own 2025*

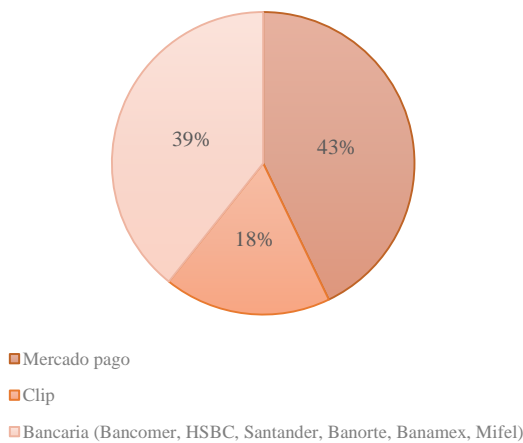
This phenomenon suggests that the use of bank POS terminals is associated with a higher degree of formalization in commercial activity. In this sense, the low penetration of bank POS terminals could be linked to a lack of awareness of their benefits or the perception that their implementation would involve more complicated processes.

**4. Digital payment platforms**

The digital payment platforms most frequently mentioned by merchants include:

- Mercado Pago 43%
- Clip 18%
- Bank point-of-sale terminal 39%

**Box 5**



**Figure 6**  
Digital platforms  
*Source: Own 2025*

Note: The graph shows the preference for digital platforms in POS terminals.

This pattern reinforces the idea that small merchants tend to opt for more accessible and straightforward solutions, which, although effective in the short term, do not necessarily provide the robustness and security benefits that bank POS terminals could offer in the short term. The current situation represents a clear opportunity for merchants in the Tecamac Central Market to become banked. There is ample room to promote bank POS terminals, especially for those merchants who have already taken the step toward digitization, as they could benefit significantly from aspects such as financing, fraud protection, and better tax formalization of their operations.

A key recommendation would be to implement training programs and incentives. Many merchants already use basic technology, so offering training could accelerate the adoption of bank POS terminals. Encouraging them to explore these tools and understand their benefits could transform the way they operate and manage their finances.

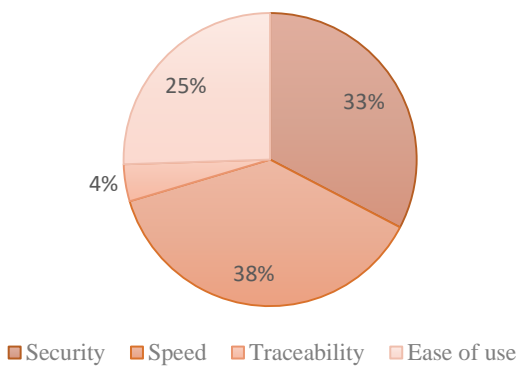
It is especially important to promote progressive formalization among businesses. bank POS terminals can act as a gateway to the formal financial system, providing merchants with tangible medium- and long-term benefits, not only in terms of security, but also access to credit and other economic opportunities. The transition to more secure payment methods and forms will contribute to the strengthening of the local economy and the sustainable development of the Tecamac community.

Based on an analysis of businesses operating in the Tecamac Central Market, a high willingness to adopt technology in terms of commercial control and payment methods was identified. Sixty-five percent of establishments already implement some type of POS or accept bank transfers, while the remaining 35% continue to operate solely with cash.

It was also observed that 47% of businesses keep track of inventory using digital systems, which shows a trend toward process digitization. However, 41% still use manual methods such as notebooks, and 12% do not keep track of their inventory, which represents an opportunity for operational improvement.

In terms of the most commonly used payment methods, the combined use of POS terminals, cash, and bank transfers stood out, in addition to other means such as card payments and electronic wallets (only 2%). The banks most commonly used in POS transactions are HSBC, Santander, BBVA, and Banamex, reflecting a diversity of banking options among merchants.

## Box 2



**Figure 7**

Advantages of using digital payments

Source: Own 2025

Note: The advantages considered by business owners at the Tecamac Central Market are shown.

The main advantages perceived in the use of point-of-sale terminals were speed (38%), security (33%), and ease of use (25%), reflecting a balanced assessment between operational efficiency and risk reduction. Some businesses also identified benefits such as traceability of operations and accounting organization.

These results also allow us to conclude that there is a solid basis for strengthening banking and digitization at the Tecamac Central Market. The data show that most merchants are familiar with basic technological tools and value their benefits, but there are still sectors that lag behind, especially those that operate exclusively with cash and manual means, which opens up an opportunity to implement training, financing, and incentive strategies that promote the universal adoption of bank POS terminals as alternatives.

## Conclusions

The proposal to implement both bank and non-bank POS terminals at the Tecamac Central Market proves to be a viable alternative from a technical and financial perspective. Based on the analysis carried out, it is concluded that the existing infrastructure is adequate to carry out this transition and that the return on investment can be realized in a relatively short period, estimated between six and twelve months. This implementation not only responds to a current market need, but also promises to generate a series of tangible benefits in the short and medium term.

## Acknowledgments

We would like to thank the Polytechnic University of Tecamac, the chair of the Board of Directors of the Tecamac Central Market, as well as the tenants for their collaboration in the research, and the International Business students who helped with the application of instruments.

## Declarations

### Conflict of interest

The authors declare that they have no conflict of interest. They have no competing financial interests or known personal relationships that could have influenced the article.

### Author contribution.

*Hernández-Velázquez, Maribel Rocío:* Contribuyó a la idea del proyecto, al diseño de la metodología, análisis de información estadística y a la recolección de información.

*Guerrero-García, Sylja Viridiana:* Contribuyó a la idea del proyecto, al diseño de la metodología, análisis de información y a la aplicación de entrevistas.

*Colina-Ramírez, Rocío Alejandra:* Contribuyó a la revisión del manuscrito y a la aplicación de entrevistas.

*Ortiz-Bravo, Alicia:* Contribuyó a la revisión del manuscrito y a la aplicación de entrevistas.

## Funding

El trabajo de investigación fue financiado por la Universidad Politécnica de Tecamac

Hernández, Maribel, Guerrero, Sylja, Colina Rocío and Ortiz Alicia. [2025]. Analysis of the implementation of POS terminals at the Tecamac food market, state of Mexico. ECORFAN Journal-Republic of Paraguay. 11[19] 1-11: e31119111  
<https://doi.org/10.35429/EJROP.2025.11.19.3.1.11>

## Abreviaciones

TPV Terminal Punto de Venta  
 RFC Registro Federal de Contribuyentes  
 EMV Europay, Mastercad y Visa  
 NFC Technology Near Field Communication

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