

# Factors that limit e-payments adoption by micro and small enterprises in Tumbes, Peru

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# Factores que limitan la adopción de pagos electrónicos por las micro y pequeñas empresas en Tumbes, Perú

## *Factors that limit e-payments adoption by micro and small enterprises in Tumbes, Peru*

Brayan Steven Hernández Camacho<sup>1</sup>

### Abstract

The purpose of this study is to determine the factors that significantly limit the adoption of e-payments by micro and small businesses in Tumbes city, Peru. As main factors presented in this study we had IT infrastructure, security, e-commerce culture, and entrepreneur characteristics, this study describes the results found through a dichotomous survey applied in person and online to fifty-one micro and small business owners from different commercial sectors, located in Tumbes. The findings of the study confirmed that, in Tumbes, there is a high percentage of MSEs that do not have the necessary tools to accept digital payments, although there is an intention in the use, the preference for physical money is greater, this study also reveals the lack of knowledge about the importance and benefits that the use of digital payments can have. The challenges associated with the implementation of digital payments include the qualitative characteristics of the owners and the limited knowledge and lack of digital culture for the implementation of new technological tools.

**Keywords:** electronic payments, e-commerce culture, security, MSEs

### Resumen

El objetivo de esta investigación es determinar los factores que limitan significativamente la adopción de pagos electrónicos por las micro y pequeñas empresas del departamento de Tumbes, Perú. Como principales factores presentados en este estudio tenemos, la infraestructura tecnológica, la seguridad, la cultura de comercio electrónico, y las características de los dueños de los negocios, esta investigación describe los resultados encontrados a través de una encuesta dicotómica aplicada de forma presencial y virtual a cincuenta y un dueños de micros y pequeñas empresas de diferentes sectores comerciales, ubicadas en Tumbes. Los resultados de esta investigación afirman que, en el departamento de Tumbes existe un alto porcentaje de MYPES que no cuentan con las herramientas necesarias para aceptar pagos digitales, aunque existe intención en el uso, la preferencia por el dinero físico es mayor, este estudio también revela el desconocimiento sobre la importancia y los beneficios que puede tener el uso de pagos digitales. Los desafíos asociados con la implementación de pagos digitales incluyen las características cualitativas de los dueños y el escaso conocimiento y la falta de cultura digital para la implementación de nuevas herramientas tecnológicas.

**Palabras clave:** Pagos electrónicos, cultura de comercio digital, seguridad, MYPES

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## INTRODUCCIÓN

Financial technologies have increased in recent years, evolving from cash payment, card use to online payments and digital wallets, financial technology is now widely used in a variety of applications due to technological advancements.

(BCG, 2021) Brazil has seen RTP (Real Times Payment) use soar since it introduced PIX in November 2020. This system, developed by Brazil's central bank, is now the country's dominant transfer model for person-to-person. RTP systems are also available in Argentina, Colombia, and Mexico, and will soon appear in Chile.

In Peru recently in 2020 appears PLIN. It ventures into the Peruvian Fintech sector as a new format for transfers between banks at zero cost, on the other hand, there is YAPE, a digital wallet in which it is not necessary to have a linked bank account. Both options are gaining participation in the Peruvian population (Vasquez R., 2022) the company YAPE announced reaching 10 million users, this represents 30% of the population, (Cáceda, 2021) PLIN already exceeds 4 million users, representing 12% of the Peruvian population.

(El Peruano, 2021) Sectors with the highest growth in digital payments in our country during the past year were electronic, home, and fashion, as well as beauty and sports. Governments are more interested than ever in developing financial inclusion because the pandemic has exposed existing weaknesses.

(Minsait Payments, 2022) Each inhabitant in Peru made only fourteen card payments in 2020, 2 credit, 0 direct debits and issued 0.1 checks. In terms of value, each inhabitant in Peru spent an average of 630 dollars with cards, in the region the countries which leads the indicator is Brazil with 100 card payments and 27 credit transfers and an average of 1.767 spent by each inhabitant, followed by Argentina (1,362 dollars and 46 card payments), Chile (120 card payments), Colombia (556 dollars and 17 card payments) and Ecuador (236 dollars and 8 card payments).

During the COVID-19 crisis, the payments industry had to take on challenges in months that otherwise would have taken years. the functionalities to avoid contact and the use of cash, safely. However according to (Minsait Payments, 2022) It is found that despite the impact of the pandemic on changing habits and forwards the digitization of daily payments, cash is still perceived by the industry as the most common means of payment.

According to (INEI, 2022) 88.9% of the total number of companies in the country is made up of microenterprises; 9.4% are small businesses. 0.4% are medium-sized companies and 1.3% are large companies. That means the micro and small business predominance in the make-up of national business. These are established to cover sectoral needs, where the target audience has easy access to the product offered, and the commercial flow is fast and simple. MSEs (Micro and Small Enterprises) in Peru have establishments, stands or premises where the purchase/sale takes place face to face.

(Calderón et al., 2019) The district of Surco concentrates the largest number of cardholders and a large part of its economically active population is familiar with the use of smartphones and technology, however MSEs in Lima dedicated to the purchase and sale of groceries do not offer digital payment methods for their customers, since there is a preference for cash. If this happens in one of the districts best adapted to the use of e-payments, it also happens throughout Peru since it is a subject of scarce digital culture.

Tumbes region has been characterized as a department with a notable commercial movement by MSEs, however, they have faced competitive scenarios such as the arrival of the first shopping center in 2017, leading for large companies, the health emergency of COVID-19 in 2020, and the preference in the use of electronic payments by consumers, the adoption of digital payments is not an easy task for the owners of these small businesses, since a process is required learning and adoption of these new technologies.

Maduku et al., (2016) the adoption of technology is necessary for companies to achieve competitiveness and sustain their profit margins in the markets.

In Peru, an enterprise was classified as micro if it had between 1 and 10 employees and its annual sales did not exceed 150 UIT, whereas a small enterprise was one that employed 1 to 100 workers and had annual sales of not more than 1,700 UIT, in 2022 the unit of taxation (UIT) is S/. 4,600 PEN. (IMF, 2022) The main source of strain in the small taxpayer regime is between the intention to simplify and reduce the tax burden for businesses with lower resources.

Peru has three special tax regimes for MSEs New Single Simplified Regime (Nuevo Regimen Único Simpiificado – NRUS), Special Income Tax Regime (Regimen Especial de Renta – RER), and Micro and Small Enterprise Tax Regime (Regimen MYPE Tributario – RMT).

The first regime, Natural persons and undivided estates conducting merchandise sales or providing services to end consumers as well as natural non-professional persons in any trade (independent service providers) can take advantage of this regime. (IMF, 2022) The NRUS covers 607,000 active taxpayers, or 47 percent of taxpayers with third category income. However, the NRUS segment participates with just 0.69 percent of the tax revenue contributed by the third category. This segment has the highest number of taxpayers. To be part to the NRUS, annual net income must not exceed in S/96,000 or S/8,000 monthly. Business in this regime must pay S/20 or S/50, depend in their incomes.

Special Income Tax Regime (Regimen Especial de Renta – RER), Individuals and legal entities that generate income from the sale of goods or services can benefit from this regime, (Lanza, 2018) Annual net income must not exceed S/525,000; the value of the fixed assets affected to the activity must not exceed S/ 126,000 and the number of personnel affected to the activity must not exceed 10 people. Business in this regime must pay 1.5% of the net income monthly.

Micro and Small Enterprise Tax Regime (Regimen MYPE Tributario – RMT). It was designed for micro and small businesses with the aim of promoting their growth. This regime requires simpler conditions to comply with their tax obligations. (Estado Peruano, 2022) excluded from this regimen are the taxpayers whose net annual income exceeds 1700 UIT, headquarters of foreign companies and private educational institutions.

MSEs in all these regimes lead with a competitive market, which is why they must update and adequate the way in how they buy and sell their products, using tools as internet, adopting e-payments, and providing a reliable experience to their customers.

(WPR, 2013) define e-payments as digital payments made over the internet for e-commerce activities. The largest segment of e-payments is the consumer-to-business (C2B) payments, which are used for goods purchased in online stores and are being driven by the fast-growing global e-commerce market (Elijah, 2015). Electronic payment systems are classified into four categories; credit cards and debit cards; electronic cash; Micropayment systems; and session-level protocols for secure communications.

(Mohd & Mohamed, 2018) E-payment system has benefits for the payers, payees, e-commerce trading, banks, organizations and to the government. Some of these benefits are low cost, convenient means, time saving and an alternative to cash. Innovations in the payment industry have also led to greater financial inclusion, where e-payment service providers help to facilitate payment transactions into the formal financial system even in the absence of banking accounts. (Coskun et al., 2022) In recent years, electronic payment systems have begun to replace cash payment methods. With the COVID-19 pandemic affecting the entire world in 2020, online purchasing became more popular, and the demand for next-generation payment tools increased.

EPS helps to Access to the financial system according to (Vasquez R. , 2022), the banking of funds increases opportunities for business owners, opening credit conditions that the system could facilitate. Also, there are a better an operation control, (Andina, 2020) In the case of handling large amounts of cash daily; the sale balance becomes somewhat tedious, due to counting the money and safeguarding it. (Vasquez R. , 2022) It helps to control the business process and automate it. Reducing time and extra unnecessary effort.

An important advantage of using EPS is the risk reduction, by breaking down the barriers to the use of cash, fraud with counterfeit bills and/or coins. In addition, in times of a pandemic, it reduced the spread of viruses and other germs found in printed money.

(Kritchka, 2021) comments that one of the main reasons for their business's decision to adopt EPS was to use its EPS to bring about superior engagement with customers and to build positive customer experiences. According to (Figuerola, 2015) There are more companies that have a higher percentage of profitability in relation to those that do not conduct electronic commerce. It is important to point out that electronic commerce creates a competitive advantage in the company, since thanks to its use, the company can have access to new markets.

According to (Dong, 2008) one of the factors to adopt the digital payment is Security, this element is the most pressing factor hampering e-payment adoption. (Tiwari, 2013) In Indian slums, businesses perceived cash as convenient and safer option of payment than electronic payment systems. (Quevedo & Pereda, 2017) Peru has an analogous situation with the cash, despite the development of alternative means of payment, continues to be the main means of payment in Peru, both urban and rural, 88% of people use cash as a means of payment. This indicator is highly related to the e-commerce culture that the population has.

(Aparicio & Huayta, 2015) Peru has an important percentage of people living in rural areas and in lower income quintiles have low educations levels, have

little knowledge of the benefits of formal financial services, indicate not to know how to use financial services and have no trust in the financial system.

(Ohunmah, 2016) SMEs in developing countries are reluctant to adopt and use the EPS despite its acclaimed importance. Some reasons include the excessive cost of acquiring telecommunication facilities (like computers, mobile phones, Internet subscription, etc.) and inadequate national infrastructure (such as lack of stable power supply and irregular and slow internet services). Arreyambi, et al. (2008) in their study submitted that lack of adequate IT infrastructure was part of the reasons why there is a slow uptake of ICT in SMEs in Cameroon as an emerging economy.

This research aims to identify the factors that limit e-payments adoption by micro and small enterprises in Tumbes, Peru. The main research question becomes: What are the factors that limit e-payments adoption by MSEs in Tumbes, Peru? Also 3 hypotheses have been formulated:

- H1: IT infrastructure limit e-payments adoption by micro and small enterprises in Tumbes, Peru.

- H2: Lack of the security limit e-payments adoption by micro and small enterprises in Tumbes, Peru.

- H3: E-commerce culture limit e-payments adoption by micro and small enterprises in Tumbes, Peru.

This study contributes valuable knowledge to the field of IT and Electronic-payment adoption in general. Scholars and researchers may use the findings to expand IT information and contributes to wards policy formulations on matters relating to electronic payments and controls in Peru.

## METHODOLOGY

The research constitutes a non-experimental study, due to there is not manipulation of the variables. Our object of study are the micro and small enterprises in various fields of business from Tumbes city, Peru.

We used an online questionnaire composed of three indicators, IT infrastructure, security, and e-commerce culture, which we prepared with the aid of the Google forms application, in total, 11 questions have been formulated according to the established indicators. design questionnaire was dichotomous, (Talikota, 2016) the dichotomous question is a question that can have two possible answers, dichotomous questions have the advantage to ease responses and ease the analysis of the data, they are used for a clear distinction of qualities, experiences, or respondent's opinions.

The type of research is exploratory, the questionnaire was developed based on the research framework and literature review. We thus established a non-probabilistic sample comprised of fifty-one business owners giving every MSEs equal opportunity to be selected (Field, 2005). Also, we created a session which contained three descriptive questions that allowed us to ascertain general aspects about the respondents such as age, sex, and field of business.

The information gathering was conducted between January 5 and 30, 2023. We send the questionnaire to the selected sample, through their Facebook pages, WhatsApp, or face-to-face visits at their sales outlets, along with a message informing them of the objectives of the study and soliciting their cooperation. The message also assured participants of the utmost confidentiality of any information they might volunteer during the survey.

To determine the reliability of the questionnaire, we used Cronbach's Alpha coefficient. (UCLA , 2006) Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. A reliability coefficient of .70 or higher is consider "acceptable".

## RESULTS

**Table 1.**

*Cronbach Alpha Reliability test Results*

Frecuencia	
Cronbach's Alpha	Number of Items
87	11

**Tabla 2.**

*¿La sociedad cuenta con una oficina de relación con inversionistas?*

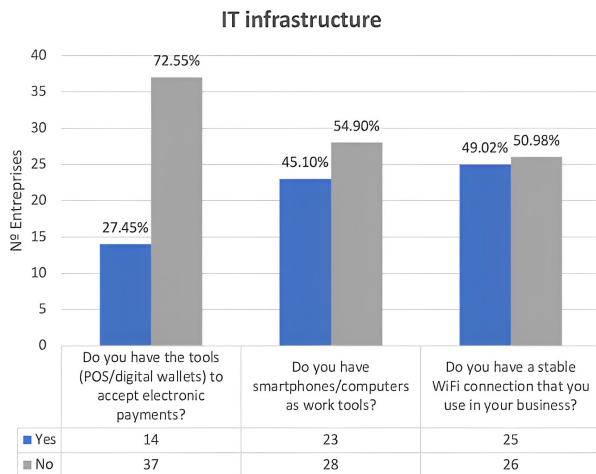
Category	Answers	Frecuency	Percentage
Sex	Male	12	23.53%
	Female	39	76.47%
Age	18 - 30 years	6	11.76%
	21 - 40 years	4	7.84%
	41 - 50 years	18	35.29%
	51 - 60 years	20	39.22%
	61 years and older	3	5.88%
Tax regime	NRUS	28	54.90%
	RER	17	33.33%
	MYPE	6	11.76%

The table shows the responses of the fifty-one people surveyed, of which it stands out that most of them are in the New single simplified regime (NRUS) represented by 60.78%, followed by the special income regime (RER) with 27.45%, and the Micro and small enterprise regime (MYPE) with 11.76%. According to owner characteristics 76.47% are female, and 23.53% are male sex. Also, the range of

owner's age which predominate is between 51 – 60 with 39.22%, followed by 41 – 50 with 35.25%, and between 18 – 30 with 13.73% more than owner with 31 – 40 years old, and older than 61 years old. Which could mean the young people tend to have their own business.

**Figure 1.**

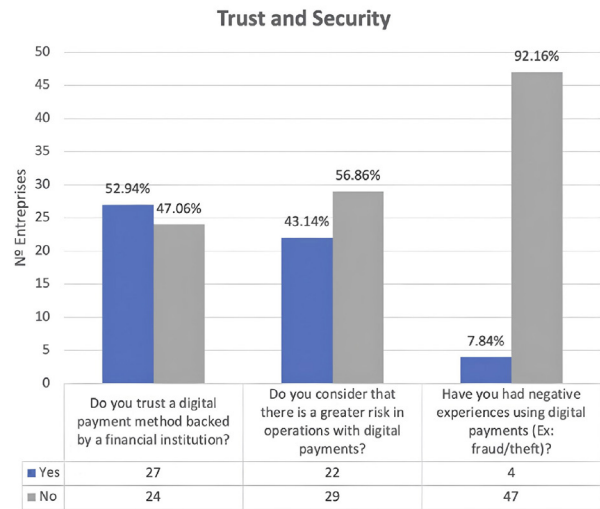
*Statistics of the IT infrastructure factor.*



The findings from the present study show that the levels of IT infrastructure for the use of digital payments are at a level of less than 50% of the total number of respondents. In the first item we can see that only 27.45% of the MSEs in Tumbes have tools such as digital wallets and POS for the acceptance of digital payments. That is why the population is accustomed to always carry cash to make purchases, because not all stores accept debit or credit cards. Likewise, close to 55% of MSEs do not use Smartphones or computers to control operations in their businesses, this is due to, little knowledge for the use of these devices and low budget to implement them in their businesses, although at this time the implementation of this equipment is equivalent to a great investment in control and savings in order to increase their rentability. Finally, close to 50% of MSEs in Tumbes do have a stable internet connection that they use in their business.

**Figure 2.**

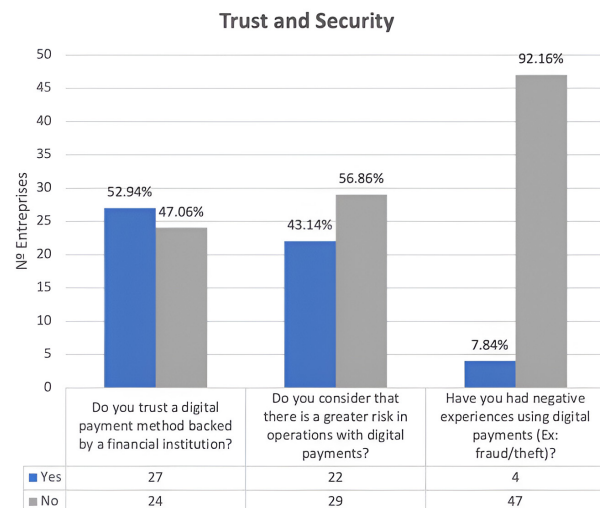
*Statistics of Trust and Security factor*



According to the security factor more than 50% of MSEs in Tumbes trust financial banks to make digital payments. Financial entities continue to implement simple methods for the use of digital payments, the best known now on the market are PLIN and YAPE. Likewise, another important item in this factor is the risk, according to the finds, 56.86% consider that there is no risk in the use of digital payments, while 43% of MSEs think otherwise, Despite the fact that there is a considered percentage who think that there is a high risk in the use of digital payments, more than 90% have indicated that they have never had a negative experience such as fraud or theft using digital payments methods.

**Figure 3.**

*Statistics of E-commerce culture factor*



The e-commerce culture factor has 5 items to determine the level of knowledge in the use of digital payments by the MSEs in Tumbes, in the first we can observe that only 25.49% of enterprises know how to use digital payments (digital wallets, transactions, QR code or POS), 56.86% owners of business consider digital payments is a reliable method for their customers, not offering varying payment options for customers could lead to decreased sales. According to the third item 62.75% of business are willing to accept and implement digital payments, which means that there is an important level of acceptance for the adoption of digital payments.

Another interesting indicator in this factor is the preference for cash, we see that 84.31% of businesses

consider the use of cash more practical than digital money, and this may occur since there is not enough custom or culture to use digital payments. In addition, consumers do not have digital money and tend to make frequent payments with cash. This can be bought in the last item, there is not much interest in using digital payments because they are not aware of the benefits that these can have, such as risk reduction, better cash flow control, creating a bank credit history for a future loan, among other benefits.

### Entrepreneurial characteristics

Age, education, and skills are some owner's attitudes that also influxes in the EPS adoptions, in this research we had this result.

**Table 1.**

*Adopters of electronic payment*

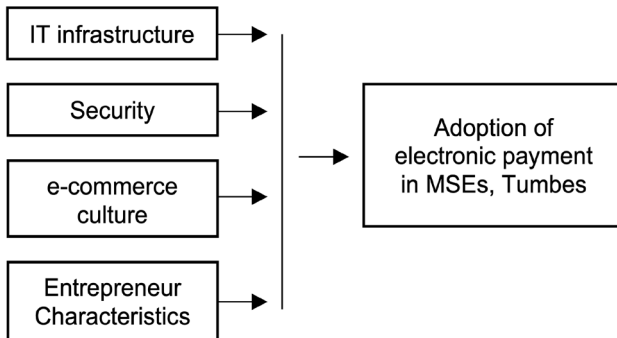
Age Range	Yes	%	No	%	Grand Total	%
18 - 30	6	100%	0	0%	6	12%
31 -40	2	50%	2	50%	4	8%
41 - 50	6	33%	12	67%	18	35%
51 - 60	0	0%	20	100%	20	39%
61 - mas	0	0%	3	100%	3	6%
<b>Grand - mas</b>	<b>14</b>	<b>27%</b>	<b>37</b>	<b>73%</b>	<b>51</b>	<b>100.00%</b>

Results in table 3 confirm that 100% MSEs owners from the group of 18 – 30 years who participated in the questionnaire accept digital payments, 50% of MSEs owners from 31 – 40 years also accept digital payments, this implies that adopters are youthful entrepreneurs. In the group of 41 – 50 years only 33%

accept electronic payments, which means 77% of this group do not use digital payments in their business, also the table 3 shows there is not any percentage in the use of digital payment from MSEs owners who have more than 51 years.



**Figure 4**  
*Conceptual Framework*



The conceptual framework depicted in Figure 4; factors were hypothesized to influence electronic payment adoption. The factors that limit the e-payments adoption were defined as IT infrastructure, security, e-commerce culture and entrepreneur's characteristics.

## DISCUSSION

The factor Entrepreneur characteristics agrees with (Elijah, 2015) who found in his study that the owners characteristics such as age and study are factors influencing adoption of electronic payment by small and medium business in Kissi town, keyna. According to (Kritchka, 2021) the MSEs owners must do their own research by observing publicly available information on the activities relating to EPS or social networking of competitors or other businesses within their industry sector, and by subsequently imitating and adapting the best practices that are most relevant to their business or that most fit their organizational culture, resources, and customer base. The owner's mindset is crucial to adopt and improve the EPS.

Security is an important factor for adoption EPS, in our findings we found that only 50% of MESs trust in financial institutes, according to (Dong, 2008) security is the most pressing factor hampering e-payment adoption, the open environment of the online market increases the commercial risk, and together with uncertain IT security influences e-payment usage

or adoption. Peruvian government has to provide the population with confidence and security, protect economic resources so that small businesses can trust and not be afraid of new technologies, which are risky, but it is their right to have all the tools to mitigate it.

Although security is an important factor to adopt EPS, e-commerce culture is most relevant, in our findings we can see MSEs are willing to adopt the EPS, however they don't know how to do it and there is a huge preference for traditional payment, this finding disagree with (Dong, 2008) who said e-commerce culture does not constitute the main influencing factor in the adoption of EPS, in their research in China, on the other hand e-payment adoption levels are not the same in different regions nor in different industries.

(Aparicio & Huayta, 2015) An important percentage of the people living in rural areas and in lower income quintiles have low educations levels, have little knowledge of the benefits of formal financial services, report not knowing how to use financial services, and do not trust the financial system.

According to (Coskun et al., 2022) the covid-19 makes digital payment methods gain popularity and acceptance, they will transform from a convenience to a need. There will be an increase in the issuance and use of virtual cards. Small- and medium-sized businesses now have a stronger internet presence. Consumer behavior will shift due to the increased acceptance of digital payments. Our findings disagree with Coskun due to more than 84% of businesses consider the use of cash more practical than digital money, and the majority of MSEs in the region do not have to tools to accept digital payments.

IT infrastructure is also one of the main factors to consider for the implementation of EPS, according to (Calderón et al., 2019) Implementation Costs factor represents the greatest limitation for the adoption of digital means of payment in wineries, in our findings this factor represents a big barer to adopt digital payments due to MSEs don't have the tools to accept them. Also, there is a considerable percentage

of business which do not have stable internet and that is why they prefer cash. (Aparicio & Huayta, 2015) Although mobile phone services have reached prominent levels of penetration and coverage in much of the country, still a sizeable percentage of people living in rural areas and a large percentage of people in lower income quintiles have no access to mobile phone services.

## CONCLUSION

There are several factors that limit the adoption of electronic payments by small businesses in Tumbes, the main ones on which this research has focused are IT infrastructure, security, e-commerce culture, in addition to the characteristics of the owners, because there is an impact on the adoption of digital payments according to the age they are.

The lack of the IT infrastructure is a crucial factor to limit the adoption of e-payments for MSEs in developing countries. Only 27% of MSEs in Tumbes have the tools to accept digital payments and only 45% MSEs owners use smartphones or computers to control operations in their businesses, which is one of the main reasons why the population is used to continue cash. Our first hypothesis was accepted, IT infrastructure limit e-payments adoption by micro and small enterprises in Tumbes, Peru.

Although more than 90% of MSEs in Tumbes have indicated had not have a negative experience such as fraud or theft using digital payments just 50% trust financial banks and 43% consider there is an elevated risk in the use of digital payments. The levels of confidence that companies have before financial institutions to adopt electronic payments are less than 45%, so we can determine that the security factor is also a limiting factor for the adoption of digital payments, to promote recovery and facilitate the transition to the new digital era, it is critical for the

digital payments ecosystem to expand rapidly and contribute to develop the trust and security that's why Peruvian Government, regulators and banks will all continue to push for the adoption of digital payments.

Small business entrepreneurs know that today the use of digital payments has increased its use in the population, and they intend to adapt it, however only less than 30% know how to use digital wallets or the POS, it is for this reason, more than 80% consider cash as a more practical and faster payment tool. Sixty percent of MSEs in Tumbes are unaware of the benefits of banking their operations, benefits such as access to bank credit, security of the money and process automation, which is why digital culture is also considered a limiting factor in the adoption of digital payments.

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