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Means of Payment Used by Consumers in Ecuador Zone 5

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Abstract

The article presents a study conducted in Zone 5 of Ecuador, analyzing the sociodemographic characteristics of consumers and their relationship with online payments through mobile applications. A two-part questionnaire was used and 1873 refined responses were obtained for analysis and a sample of 475 consumers. The results revealed a significant presence of women in the area's consumer market, as well as a majority of employees and consumers in the 25-44 age range. People with a college education, formal employment and residence in urban areas showed a higher likelihood of using digital payments. In terms of income, the majority of consumers were in the middle and low income brackets, with the province of Guayas concentrating the largest number of consumers. Both debit and credit cards were found to be widely accepted, but cash remains the preferred method, especially for face-to-face purchases. Although an increase in the use of digital payments was observed, a lack of user confidence persists. The article highlights the importance of addressing user concerns and perceptions to encourage the adoption of digital payments and provide secure and convenient options for cash payments.

Keywords: *payment methods, consumers, zone 5 Ecuador, internet payments, credit cards, debit cards.*

Introduction

The transformative influence of digitalization on our society has dramatically reshaped the landscape of payment systems, revolutionizing how consumers engage in financial transactions. In particular, the payment industry in Latin America has exhibited significant expansion, as highlighted in Boston Consulting Group's (BCG) nineteenth annual report on the global payments industry. The industry is projected to grow at an annual rate of 8.3%, spurred on by rapid adaptation to pandemic-era changes and an evident shift in consumer behavior towards online payments. Payment revenues globally are anticipated to reach a staggering $2.9 trillion by 2030 (BCG 2021).Despite these global trends, regional variations in payment methods persist in Latin America. Consumers utilize a range of options in commercial and financial transactions, including traditional forms such as debit and credit cards and cash, alongside innovative digital systems like Pix, a popular instant payment system in Brazil. The choice of payment mode varies

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significantly across different countries, influenced by regional consumer preferences (Rodriguez 2022). At the onset of the COVID-19 pandemic, a peculiar trend of increased cash demand was observed across the globe, including in Ecuador. The transactional use of cash might have witnessed a downward trend, but its role as a reliable store of value surged, particularly during situations of heightened uncertainty or emergency. An additional $1.6 billion was noted in the demand for cash in Ecuador between March and June 2020, as compared to the same period in the previous year (Statista 2023). Concurrently, the pandemic era instigated an increase in consumers' trust in electronic payment methods. A surge of 35% was observed in the number of transactions for interbank payments between May and September 2020. The Interbank Payment System (SPI), used for transfers of smaller amounts, became an integral part of everyday transactions. Furthermore, real-time transfers saw substantial growth in terms of transaction volume and the amounts transferred (Statista 2023; Duque 2022). While cash continues to hold a dominant position in Ecuador, there is a discernible evolution in the adoption of electronic payment methods. In 2018, the total amount processed through electronic payment channels surpassed the country's GDP by 1.2 times, signifying a growing consumer demand for digital payment options (Statista 2023). A considerable uptick in the usage of electronic payment methods has been noted over the past three years. In 2022 alone, 183 million interbank electronic transfers were processed, amounting to USD 176,729 million, representing a dramatic increase of 116% in transaction volume and 51% in the transacted amount as compared to 2019. Moreover, real-time transfers witnessed an exponential increase, and digital payment modes were embraced by beneficiaries of the Bono de Desarrollo Humano for collection of basic services (Duque 2022). This research fills a significant gap in the literature by focusing on Zone 5 of Ecuador, a region known for its economic and commercial relevance. This geographical division includes bustling cities like Guayaquil, Durán, Samborondón, and more, each offering a myriad of commercial establishments, ranging from small local businesses to extensive shopping centers (Mendoza et al. 2019). Amidst this dynamic marketplace, consumers navigate a diverse array of payment methods, influencing not only their consumption habits but also compelling businesses to adapt to evolving payment landscapes. Moreover, personal preferences, heavily influenced by regional availability and supply (Masabanda et al. 2020), play a crucial role in determining consumer choices. However, adoption patterns of payment methods do not occur in isolation. They are influenced by a multitude of factors, including geographic location and social class. Developed urban areas often provide a diverse spectrum of payment options, from credit and debit cards to mobile payments, while rural regions may see a predominance of cash transactions due to inadequate financial services and infrastructure (Espinosa 2022). Socioeconomic status also significantly influences payment preferences. Higher-income groups, with access to a range of payment options, may prefer electronic methods for their convenience and additional benefits, such as rewards programs (Bajoit 2014). Conversely, lower-income groups might favor cash transactions due to limited access to financial services, mistrust of electronic payment systems, or lower financial literacy (McAndrews 2020). To this end, our study proposes to analyze the

consumer payment methods in Ecuador's Zone 5, examining the interplay of various influencing variables. We utilized the CHAID (Chi-square Automatic Interaction Detection) method, a powerful tool in data analysis for detecting significant interactions among categorical variables. This study thereby aims to provide a robust understanding of payment method preferences, highlighting the importance of contextual factors in shaping these choices, and demonstrating the potential of advanced statistical techniques like CHAID in revealing such complex relationships. The insights gleaned could potentially guide policymakers and financial institutions in developing responsive, inclusive, and contextually relevant payment systems. The CHAID method involves dividing the data set based on the target variable, followed by the selection of a predictor variable that best correlates with the target variable using the chi-square test. This variable serves as the first node in the classification tree. The process continues, with chi-square tests applied to the remaining predictor variables in relation to the target variable, allowing for the classification of data into hierarchies of variable interactions. This technique is widely adopted in various disciplines like marketing and epidemiology, serving as a systematic tool to analyze categorical data and uncover critical relationships between variables (Valdés et al. 2022).

Materials and Methods

The present study was carried out using a cross-sectional quantitative approach and a non-experimental correlational design (Botto 2018). The inductive method was used, which allowed the researcher to start from a particular position to reach general conclusions (Palmero Suárez 2021). The approach used was exploratory des-criptive, since information, data and evidence were collected to analyze and reach con-clusions on the subject of study (González and Ricalde 2021). A mixed approach was used, combining quantitative and qualitative elements. In the qualitative part of the research, secondary sources were analyzed through a bibliographic review. We sought to identify the theoretical basis on the payment methods used by consumers in zone 5 of Ecuador at present and how they have influenced the new characteristics of the purchase and sale of goods and services. We used sources such as articles and publications found on the web, through platforms such as Scielo, Google Scholar and Redalyc, among others. For the quantitative part, a questionnaire was developed and divided into two parts. The first part consisted of 32 items with single and multiple choice questions, while the second part requested demographic information about the respondent (consumer) and consisted of 5 items. According to data from the National Institute of Statistics and Census (INEC) for the year 2022, the population of zone 5 is 2'286,782 inhabitants, so this population was considered for the study. A non-probabilistic sampling was used (Hernández 2021) and the questionnaire was distributed through an online form. A total of 1873 responses were obtained, which were filtered to exclude those records that did not correspond to consumers in zone 5 of Ecuador, finally obtaining a database with a sample of 475 consumers for the analysis. The validation of the questionnaire or survey was carried out with the participation of 5 experts in the area of administration, who evaluated and approved the instrument. IBM SPSS version 23 software was used for data

analysis. Descriptive and multivariate analyses were performed, including tests of independence and classification trees (Cochancela 2020). The objective of these analyses was to identify possible groupings in the population that would effectively describe the dependent variable of the study. The decision tree analysis used the CHAID method, suitable for categorical variables (Bassols et al. 2021). Several trees were performed to examine interactions between sociodemographic variables and store types. Segmentation was based on predictor catego-ries that best explain the dependent variable. This methodology provides relevant information on the relationships between variables and their impact on the dependent variable. By identifying the nodes with the highest response percentages, conclusions were drawn about the interactions and influence on payment methods. This provides a detailed view of the factors affecting online payments through mobile applications.

Results and discussion

Consumer profile

When analyzing the sociodemographic characteristics of consumers in Zone 5, focusing on gender, employment status, age, income level and geographic distribution. The results reveal that 78% of consumers are women (Larios 2021), indicating a significant female presence in the consumer market in the zone. In addition, 80% of consumers are employed, suggesting that the majority are gainfully employed. In terms of age, the 25-44 age groups account for 66% of consumers, with young and middle-aged adults being the main drivers of consumption (Latorre et al. 2022). Economic findings reveal that people between 25 and 40 years old, with university education, formal employment and residence in urban areas, are more likely to use digital payments (Aurazo and Vega 2020). In terms of income level, most consumers are in the middle and low ranges. Finally, the province of Guayas concentrates 56% of consumers, followed by Los Ríos, Bolívar, Santa Elena and Galápagos. These findings provide relevant information to understand the profile of consumers in Zone 5 and to adapt segmentation and communication strategies, as well as means of payment, to this predominantly middle-aged, middle- and low-income, employed female market.

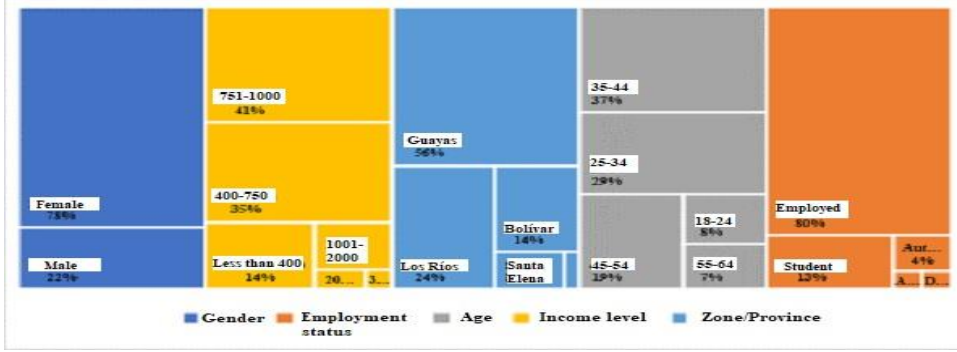

Figure 1: Sociodemographic characteristics of consumers in Zone 5.

Cards or use of mobile banking applications, online shopping and payments

It can be seen in Figure 2 that the general trend is that the majority of consumers have only one card in both debit and credit. However, a significant proportion also have two cards in both categories. These behavioral patterns suggest that the use of both debit and credit cards is widely accepted and used by Zone 5 consumers. The results also indicate that there is a preference toward using one card in each category, but a significant number of consumers choose to have multiple cards. According to the data collected (Bonifaz et al. 2021), there is a significant increase of 19% in the use of digital means of payment during the same period. However, it is important to note that digital money has not yet achieved the expected relevance due to the lack of trust by users in this type of platform. It is interesting to analyze this situation in order to identify the reasons behind this lack of trust, to understand the concerns and perceptions of users with respect to digital money. This information can be useful for companies and professionals in the financial sector when designing marketing strategies and offering products and services related to debit and credit cards.

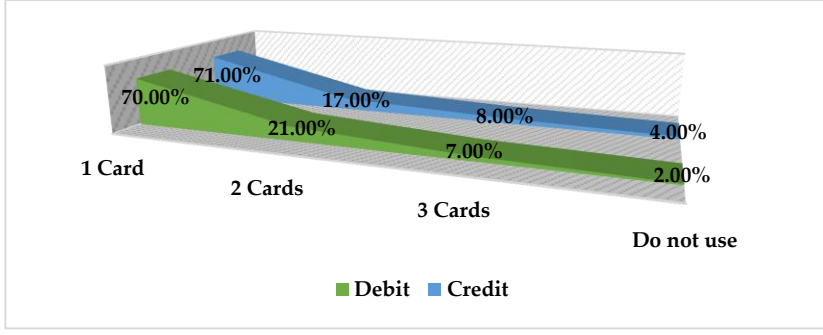

Figure 2: Use of Debit and Credit Cards in Zone 5.

The data in Figure 3 reveal that a small percentage of consumers have definitely charged their cards on the phone, both for debit cards (5%) and credit cards (4%). In this sense, the study by (Gamba et al. 2021) reveals the fear of users towards cyber risk in digital channels, representing a share of 14.02%. This finding coincides with the concern detected in the study of the existence among users regarding the security and protection of their data and transactions in the digital environment. In addition, it is observed that a similar percentage of consumers have probably done so (2%) in both cases. On the other hand, a considerable proportion of consumers are neutral with respect to loading their cards on the phone, 20% in the case of debit cards and 18% for credit cards. In addition, there is a significant percentage of consumers who consider it unlikely to load their cards on the phone, 15% for debit cards and 13% for credit cards. Finally, a considerable number of consumers have never loaded their debit cards (29%) or credit cards (34%) on their phone. These behavior patterns indicate that the adoption of the functionality of loading cards on the phone is not widespread in Ecuador's Zone 5. There is some resistance or

hesitancy on the part of consumers to use this option. These findings may be valuable for financial services companies and mobile technology providers in designing strategies to promote and facilitate the adoption of mobile payments in the zone.

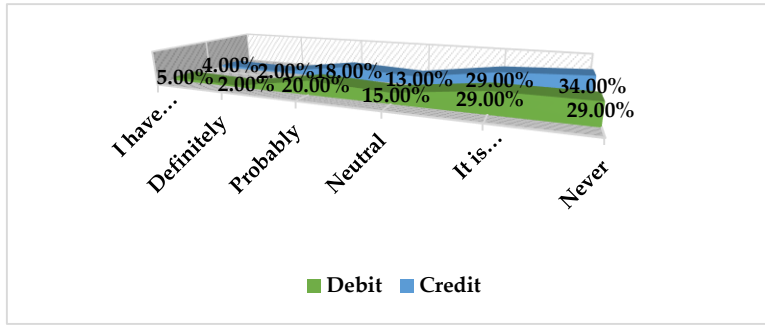

Figure 3: Adoption of mobile payments in Zone 5

Figure 4 shows that, in terms of online purchases, 48% of consumers use debit cards as a payment method, while 45% opt for credit cards. On the other hand, Paypal is used by 7% of consumers for this type of purchase. As for face-to-face purchases, it is evident that both debit and credit cards are used by 29% of consumers as payment methods. However, cash is preferred by 42% of consumers in this scenario. There is a strong preference for the use of cash by both the public and the financial system. This preference has a significant impact on the country's international reserves and on the logistical costs associated with importing and exporting dollars (Rubio et al. 2021). In general, it can be observed that, both for online and face-to-face purchases, debit and credit cards are widely used, showing similar percentages in both categories. In addition, the use of cash stands out as a popular option for face-to-face purchases. These behavioral patterns reveal the preference of Zone 5 consumers to use debit and credit cards for both types of purchases. However, the use of Paypal is mostly limited to online purchases. These findings may be of interest to e-commerce and retail companies and professionals, as they will allow them to adapt their payment strategies and promote secure and convenient options for consumers.

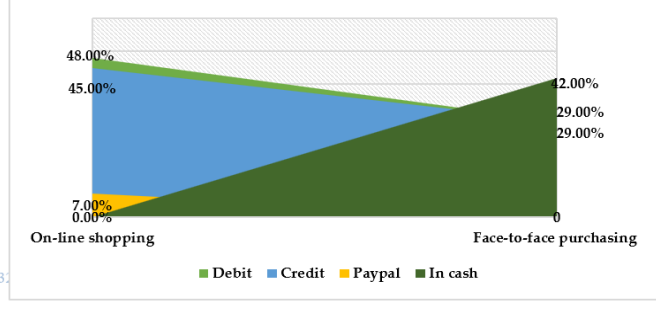

Figure 4: Preferred means of payment in Zone 5.

Inferential Analysis

An inferential analysis is carried out to explore the possible interactions between the sociodemographic variables (independent) and the study variables (dependent). The classification tree method is used to analyze qualitative variables and classify the population into groups that best describe the dependent variable. Specifically, we examine whether the sociodemographic characteristics described have interactions with the different types of stores where consumers make their payments using credit, debit or cash cards. To detect the presence of these interactions, the classification tree technique is employed using the CHAID (Chi-square AID) method, which is based on categorical variables, marginal tables and the chi-square test at various stages of the process. In addition, segmentation is performed according to the categories of the best predictor. In this context, the most relevant results of the interactions identified in the study are presented. Two classification trees that contribute significantly to this study are shown. The first tree, represented in Figure 5, consists of one level with four nodes and three terminal nodes.

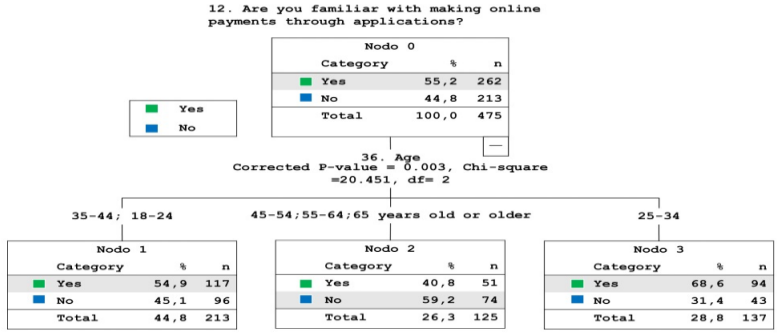

Figure 5: Classification tree, on-line payments through applications

The statistical analysis reveals the relationship between households and online payments through mobile applications. Of a total of 475 families analyzed, 55.2% made online payments, while 44.8% did not. When analyzing the "age" variable, significant results were found. With a corrected p-value of 0.003 and a chi-square of 20.451 with 2 degrees of freedom, different age groups and their relationship with online payments were identified. In node 1, it was found that 54.9% of the families belonging to the age groups 35 to 44 years and 18 to 24 years make online payments. In node 2, it was observed that 40.8% of families in the 45 to 54 years, 55 to 64 years and 65 years and older age groups also make online payments. Finally, in node 3, it was determined that 68.6% of the families in the 25 to 34 age group make online payments. These results indicate that the age variable has a significant influence on families making online

payments. In general, it is observed that younger families show a greater propensity to make online payments through mobile applications (Rubio et al. 2021). According to Rubio et al. (Rubio et al. 2021), various characteristics, such as age, educational level, income, geographic location, financial literacy and region, have been found to influence the probability of using electronic payment methods in Ecuadorian households. In relation to the model used, a risk estimate of 40% was obtained, indicating that the model has a 40% margin of error in predicting whether or not a consumer is familiar with online payments. That is, there is a 40% risk of misclassifying consumers. It is important to note that since this type of interaction is being explored for the first time, a 40% margin of error is considered acceptable. In addition, a second interaction was carried out that analyzed the payment method variables according to the type of store, specifically in the context of fast-food outlets. This interaction considered the sociodemographic variables of gender and city/province. The results of this interaction are presented in Figure 6, which shows two levels, five nodes and three terminal nodes.

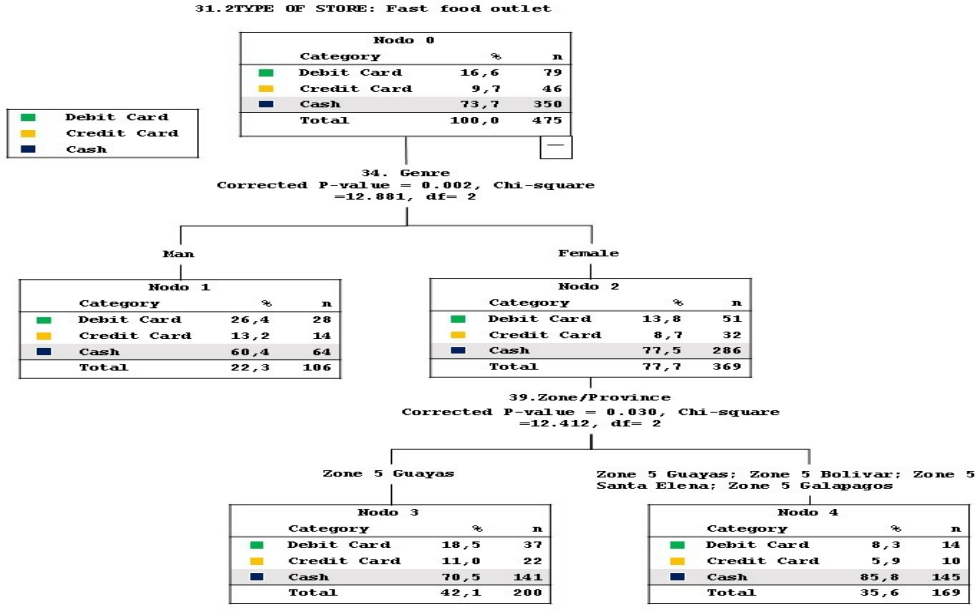

Figure 6: Classification trees, Type of store: fast food outlet.

The percentages of the payment methods used by the individuals in the sample are presented. 16.6% used debit cards, 9.7% used credit cards and 73.7% used cash. In total, 475 individuals were analyzed. An analysis of the variable "gender" was carried out, which yielded a corrected p-value of 0.002, a chi-square of 12.881 and a degree of freedom (df) of 2. In Node 1, 26.4% of men used debit cards, 13.2% used credit cards and 60.4% made cash payments. In Node 2, it was found that 13.8% of women are more likely to use a debit card, 8.7% use a credit card and 77.5%

pay with cash. A total of 106 male and 369 female individuals were analyzed. Subsequently, an analysis of the variable "area" was carried out. In Node 3, corresponding to Zone 5 (Los Ríos, Bolívar, Santa Elena, Galapagos), 18.5% used debit cards, 11% used credit cards and 70.5% used cash. In Node 2, corresponding to Zone 5 (Guayas), it was found that 8.3% used debit cards, 5.9% used credit cards and 85.8% used cash. A total of 200 individuals from Zone 5 and 169 individuals from Zone 5 (Guayas) were analyzed. These results indicate that there are significant differences in payment methods according to gender and geographic area. Men tend to use more debit cards compared to women, while women use more cash (Larios, 2021). In addition, it is observed that in Zone 5 (Guayas) there is a greater preference for the use of cash compared to Zone 5 (Los Ríos, Bolívar, Santa Elena, Galápagos).

Conclusions

In the analysis of the sociodemographic characteristics of consumers in Zone 5, it was found that there is a significant presence of women in the consumer market in the zone. In addition, it was observed that the majority of consumers are employed and belong to the 25 to 44 age groups, representing 66% of the total. People between 25 and 40 years old, with university education, formal employment and residence in urban areas, have a higher probability of using digital payments according to authors (Rubio, Pérez, Acosta, & Arroyo, 2021). In terms of income, most consumers are in the middle and low income brackets, and the province of Guayas concentrates the largest number of consumers (56%) compared to Los Ríos, Bolívar, Santa Elena and Galápagos. In relation to the use of cards and digital payments, it was determined that both debit and credit cards are widely accepted and used by consumers in Zone 5. However, cash is still the preferred method, especially for face-to-face purchases. Although an increase in the use of digital payments was observed, there is still a certain lack of confidence on the part of users in this type of platform. Charging cards on the phone is not very common in the area, and consumers show some resistance or hesitation in using this option. These findings highlight the importance of addressing user concerns and perceptions to promote the adoption of digital payments, as well as offering secure and convenient options for cash payments.

Author Contributions

Conceptualization, D.M.H. and C. O.; methodology, D.M.H. and C. O..; formal analysis, E.E.S.; investigation, L.S.G.; supervision, LS.G. and E.E.S.; writing—original draft preparation, D.M.H., C.O., L.S.G. and E.E.S.; writing—review and editing, C.O. and L.S.G. All authors have read and agreed to the published version of the manuscript.

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Not applicable.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Not applicable.

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Conflicts of Interest

The authors declare no conflict of interest

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