

ACISIWEBSHOP: THE FIRST REGIONAL MARKETPLACE IN THE CITY OF IVAIPORÃ, PR

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ABSTRACT

This article presents the marketplace project as a quick solution to the challenge for traders in the city of Ivaiporã-PR, Brazil, to continue supplying their products during a pandemic. It is known that small businesses commonly need digital platforms for their online sales and that access to technological solutions requires substantial investments. Realizing this need, a task force was organized to develop the ACISIWEBSHOP marketplace. The authors are linked to the Federal Institute of Paraná (IFPR), Campus Ivaiporã, and develop the extension project entitled “Technological support to the community of Ivaiporã.” Thus, ACISIWEBSHOP is one, among others, of the technological solutions that have been continuously developed with public-private partnerships. In this critical period of economic recovery, this tool aims to support business continuity, generating a cascading effect since it also contributes to the maintenance of jobs and income, resulting in the sense of accomplishment for all involved.

Keywords: IFPR; Marketplace; ACISIWEBSHOP; Ivaiporã, PR, Brazil.

INTRODUCTION

E-commerce has created immense inequality in retail markets, further intensified with the advent of the COVID-19 pandemic. André Dias (2020), coordinator of camara-e.net's Metrics Committee and executive director of Neotrust | Buy & Trust, stated the following in August 2020:

“Even with part of the reopening of physical stores in Brazil and July's seasonality, traditionally presenting lower sales volume because of the school vacation period, e-commerce maintained exponential growth. The set of new consumers, higher purchase frequency, and the acquisition of high turnover products will keep e-commerce one of Brazil's most promising sectors.” (Dias, 2020).

This report demonstrates that the consumer has protected himself from personally attending these retail establishments. The risk of contamination from the new coronavirus has led many consumers to embrace e-commerce, including basic consumer items. Naturally, many of these consumer segments experienced a sudden halt in the commercialization of their products and were left to wonder whether the pandemic would pass.

Given the above information and the awareness of its role in society, the Federal Institute of Parana (IFPR) Campus Ivaiporã, through its human capital and in partnership with the Commercial, Industrial, and Services Association of Ivaiporã (ACISI), enabled a task force to list the business owners who had been severely punished by social isolation and lacked the conditions, resources, and technological tools to resume trading online before they were incorporated by large e-commerces, which have rapidly adapted to incorporate this slice of the consumer market.

Three months after the onset of the pandemic, in mid-June 2020, it was observed in Ivaiporã-PR a certain tendency for traditional businesses to close their doors definitively, precisely because they lacked working capital reserves to maintain their businesses with a low flow of people. This has led to a negative balance in the number of jobs in the municipality, as shown in **Figure 1**, which brings the consolidated data from the General Cadastre for Employed and Unemployed (CAGED) of the Ministry of Economy of Brazil, referring to the city of Ivaiporã-PR. The quickest possible solution to ease the local problem was creating and implementing a regional sales marketplace available on the web platform and the mobile platform in the app Playstore (Martins, 2020).

Therefore, the theme of this article aims to support small businesses in Ivaiporã, PR, as well as the sustainable development of these businesses through the ACISI-WEBSOHOP (online) marketplace. Moreover, it aims at the most important thing: trust based on the people who know each other locally, thus permeating a favorable environment for technological innovation.

THEORETICAL FRAMEWORK

In the 2010s, large e-commerce companies emerged worldwide, resulting from technological changes and the unique characteristics of their regional markets regarding regulation and consumer preferences. Jindong and Alibaba are giants serving the thriving Chinese market, building as they grew their distribution capabilities that were yet to be available. Rakuten and B2W Digital are, respectively, the largest e-commerce companies in Japan and Latin America in Brazil (Rodrigue, 2020). In Europe, the largest e-commerce companies come from adapting retailers to online sales (e.g., Otto, Sainsbury, and Tesco) or from new digitally focused companies (e.g., Zalando) that can leverage already effective parcel delivery services. Nevertheless, Amazon symbolized this emerging e-commerce logistics and remained the largest e-commerce company globally, with a strong focus on North America and Europe, where it ranked first in online sales (Bloomberg, 2019). In 2018, it represented 38% of all online retail sales in the United States and 4% of total retail sales. In its early growth phase, Amazon could use the distributional capabilities of third-party postal services and logistics service providers.

The new SARS-CoV-2 (an acronym for severe acute respiratory syndrome) has caused the respiratory infection of thousands of people and has spread rapidly around the world, as discussed by Stoecklin et al. (2020). The recent COVID-19 pandemic crisis has brought great insecurity to consumers who used to make their purchases in person, and many of them have adhered to ways that replace in-person purchases, for example, through the Internet with home delivery or e-commerce. The growth of home delivery is one of the most tangible impacts of e-commerce, as consumers are replacing a portion of their consumption, which used to be done physically, with purchases made online (Gössling, 2018). Initially, this demand was mainly discretionary, but e-commerce as a consumption paradigm increasingly involves essential goods, such as housewares and groceries. Although several e-commerce aspects are perceived as virtual retail, e-commerce can be better understood from a freight distribution perspective because the distribution and delivery aspects are essential. A successful e-commerce

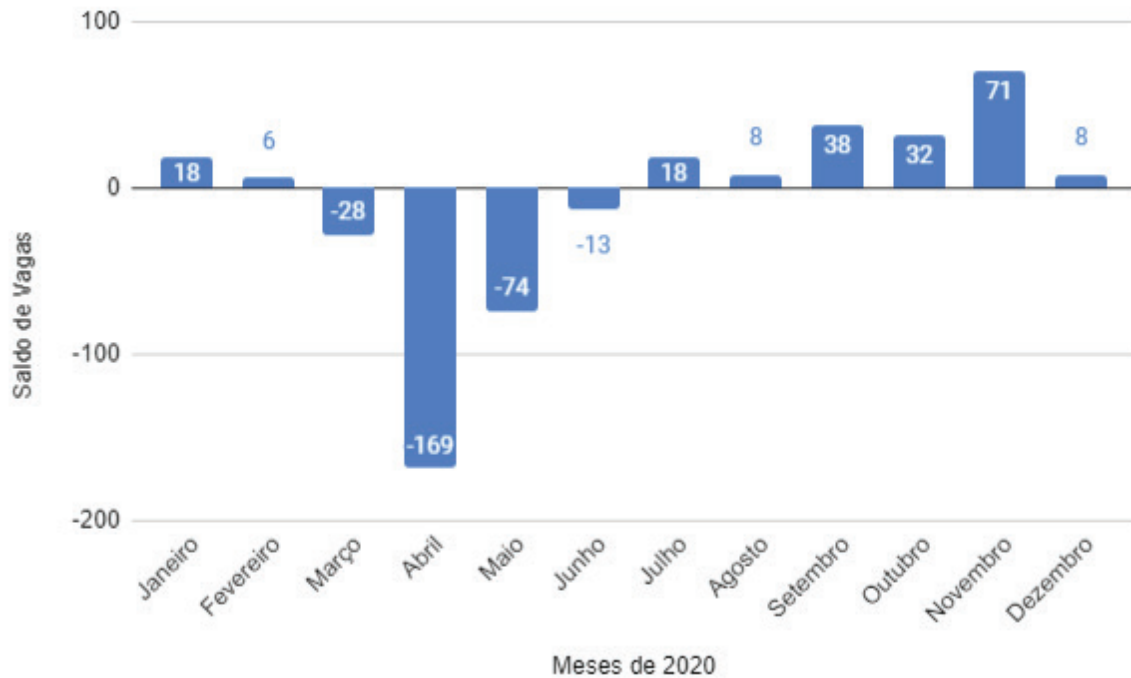


Figure 1. Formal employment balance in Ivaiporã, PR

Legend: Job Balance; January; February; March; April; May; June; July; August; September; October; November; December; Months of 2020
Source: Elaborated from the CAGED source (2021).

transaction and its value to consumers depend on the ability to deliver the order within a specified time frame. Thus, distributive consumption is a fundamental characteristic of e-commerce.

Piccinini et al. (2015) demonstrated that technologies are essentially changing the producer-consumer relationship. The importance of the digital (online) platform is on the rise, and, as such, changes can be seen in how people communicate (Nuseir, 2016) and how companies communicate with their customers. Recent years have also seen a dramatic increase in consumer spending time and money online. Thus, innovation has become imperative for organizational sustainability and has demonstrated its importance during the current COVID-19 pandemic crisis (Bello et al., 2020). However, getting things done quickly and right has proven to be challenging for small inland companies in Brazil.

According to the Organization for Economic Cooperation and Development - OECD (OECD, 2011), public policy to support innovation comprises different policy instruments and programs that aim to foster innovation directly through financial and non-financial support; or indirectly through regulations and standards. Thus, the engagement of public-private partnerships is fundamental as mobilization tools for hard-hit local businesses to do well in the current economic crisis.

Furthermore, there are many definitions of the marketplace. According to Verhagen et al. (2005), a marketplace is a meeting place for buyers and sellers in a more specific field (Verhagen et al., 2005). Moreover, according to Mulyaningsih, a marketplace is an e-commerce website, but not every e-commerce website is a marketplace. A key difference is that the marketplace has many vendors (Guicheron, 2018).

METHODOLOGY

In the development of the present system, the project analysis and system design proposed in Whitten and Bentley's methodology were used. The fundamental understanding of system analysis means discussing how to solve a problem. In addition, system analysis is the study of a business problem to recommend improvements and establish the business needs, which is necessary to devise a solution. Furthermore, system design consists of several stages, including the application architecture project, database project, and interface project (Whitten & Bentley, 2007). The results of the problem analysis are listed in **Table 1**.

Requirements analysis can be divided into functional requirements and non-functional requirements. The system developed is web-based; therefore, it has a function-

al requirement. Details of the functional requirements can be seen in **Table 2**.

At least three proposed solutions exist for the conducted analysis. First, create an online store for each merchant; second, create a financial records system digitally; and third, create a marketplace system specifically for small and medium-sized merchants. Each solution has implementation possibilities reviewed based on four criteria: economic, technical, operational, and timeframe.

Based on the feasibility analysis matrix performed, it was found that the marketplace system development solution, specifically for small and medium merchants, is better than the other two solutions. The advantage of this solution is the development of a relatively small implementation cost. In addition, the solution can also solve the problem in general and meet the needs of small

and medium merchants. The disadvantage of this solution is that the development takes relatively more time and requires extra human resources that understand the IT (information technology) field to be able to run the system.

The business process analysis was based on the assessment made earlier. The business process design is done to modify business processes that already existed in these trades but were only enhanced by the application of information technology. The details of the business process analysis can be seen in **Figure 2**.

The role of an administrator is the most unique in business process design. Therefore, the administrator is vital and links the customer and the service provider. We came up with the idea, considering that many merchants do not own computers, to provide the marketplace for

Table 1. Problem Analysis

No.	Problem or Opportunity	Classification
1	No marketplace serves local businesses;	Problem
2	There is no information about what demands the system needs to meet;	Problem
3	There is no follow-up custom information among local merchants for the system;	Problem
4	There is no system for doing marketing in an integrated way;	Problem
5	In some cases, the financial recording is still done manually;	Problem
6	There is no automatic control of the products and services produced;	Problem
7	Only in-person purchases at stores are permitted;	Problem
8	The customer has no means to place orders online;	Problem
9	The customer cannot get clear information when orders are finished;	Problem
10	The small merchant offers a low price while maintaining the same quality as large suppliers.	Opportunity

Source: The authors

Table 2. Functional Requirements

AWS-ID	Description
AWS-1	The system has a mechanism for secure registration or login;
AWS-2	The system has a mechanism to perform secure logout;
AWS-3	The system can perform data storage;
AWS-4	The system can display information about the web in general and how to make purchases;
AWS-5	The system has an interface to make purchases by category: appliances, clothing, and electronics;
AWS-6	The system can display the change of product and model and show the type and price;
AWS-7	The system can provide a review of orders that have been placed before payment is made;
AWS-8	The system can display a progress update request that has been placed in the "order status" header;
AWS-9	The system can display a list of all the trades belonging to a certain category;
AWS-10	The system can display a merchant's portfolio.

Source: The authors

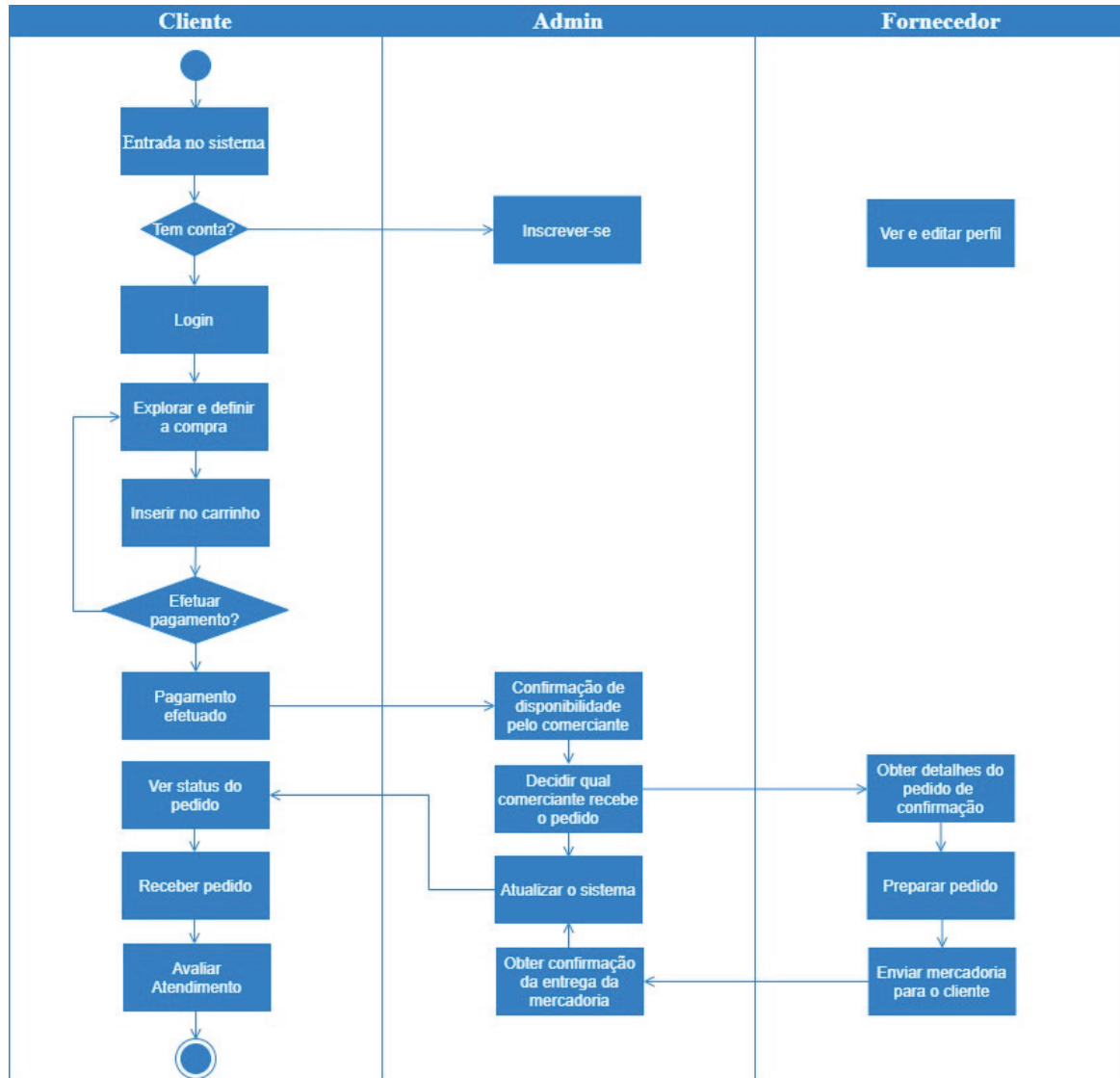


Figure 2. Business Process Analysis

Legend: CUSTOMER: System entry; Have an account?; Login; Explore and Set Up Purchase; Add to cart; Make a payment?; Payment made; View order status; Receive Order; Rate service. ADMINISTRATOR: Subscribe; Merchant confirms availability; Decide which merchant receives the order; Update the system; Obtain shipment delivery confirmation. SUPPLIER: View and edit profile; Obtain confirmation request details; Prepare order; Ship goods to customer.

Source: The authors

mobile applications, knowing that most of them, although they do not understand much about e-commerce technology, are used to using smartphones for social networks such as WhatsApp. For example, when the customer completes orders placed online, the marketplace will receive a summary of the order via smartphone. **Figure 3** shows the system architecture design or the demonstration of the system created based on the functional requirements.

The testing is done in two ways: functional testing, used to ensure that the system runs according to the

AWS-ID created, and UAT (user acceptance testing), used to get feedback from end users on what was developed.

RESULTS AND DISCUSSION

Usability tests were conducted with ten users, including students from the Bachelor of Information Systems course, information technology professionals, and merchants from the city of Ivaiporã-PR. The usability test is a qualitative test that shows how people interact with the application. During the interactions, users report their

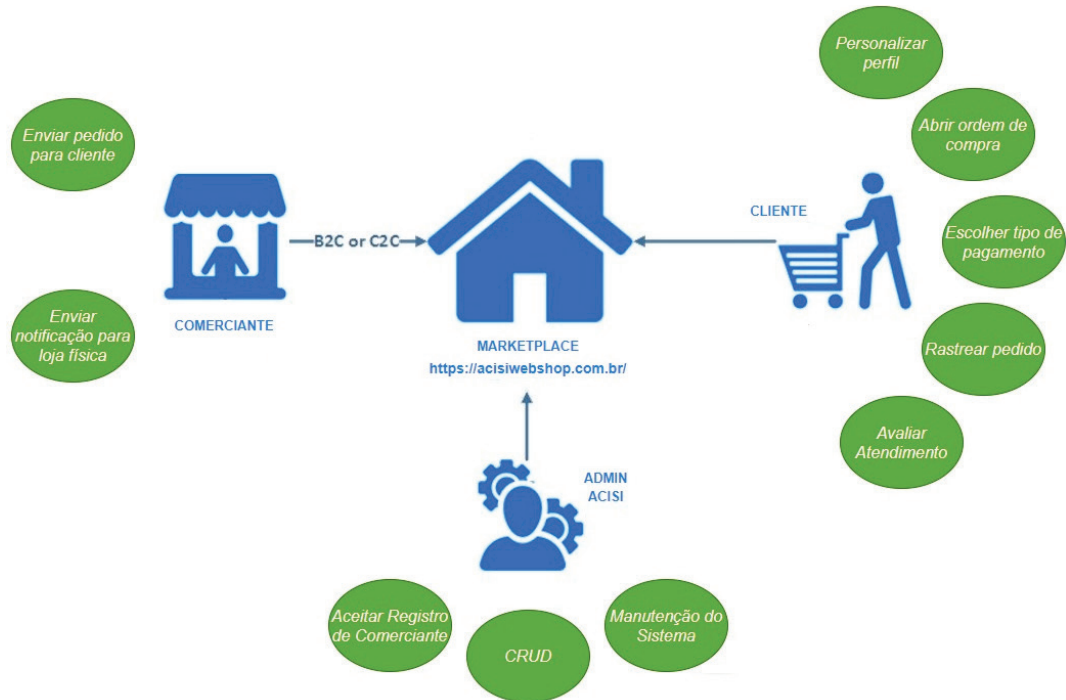


Figure 3. System Project

Legend: CUSTOMER: Customize Profile; Open Purchase Order; Choose payment type; Track order; Evaluate service. ADMINISTRATOR ACISI: Accept Merchant Registration; CRUD; System Maintenance. MERCHANT: Send order to customer; Send notification to physical store. B2C or C2C; MARKETPLACE; <https://acisiwebshop.com.br/>

Source: The authors

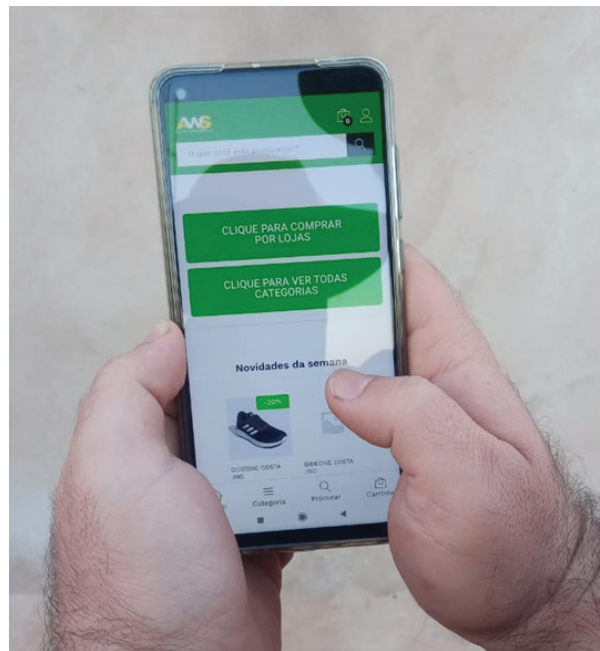


Figure 4. Home Page

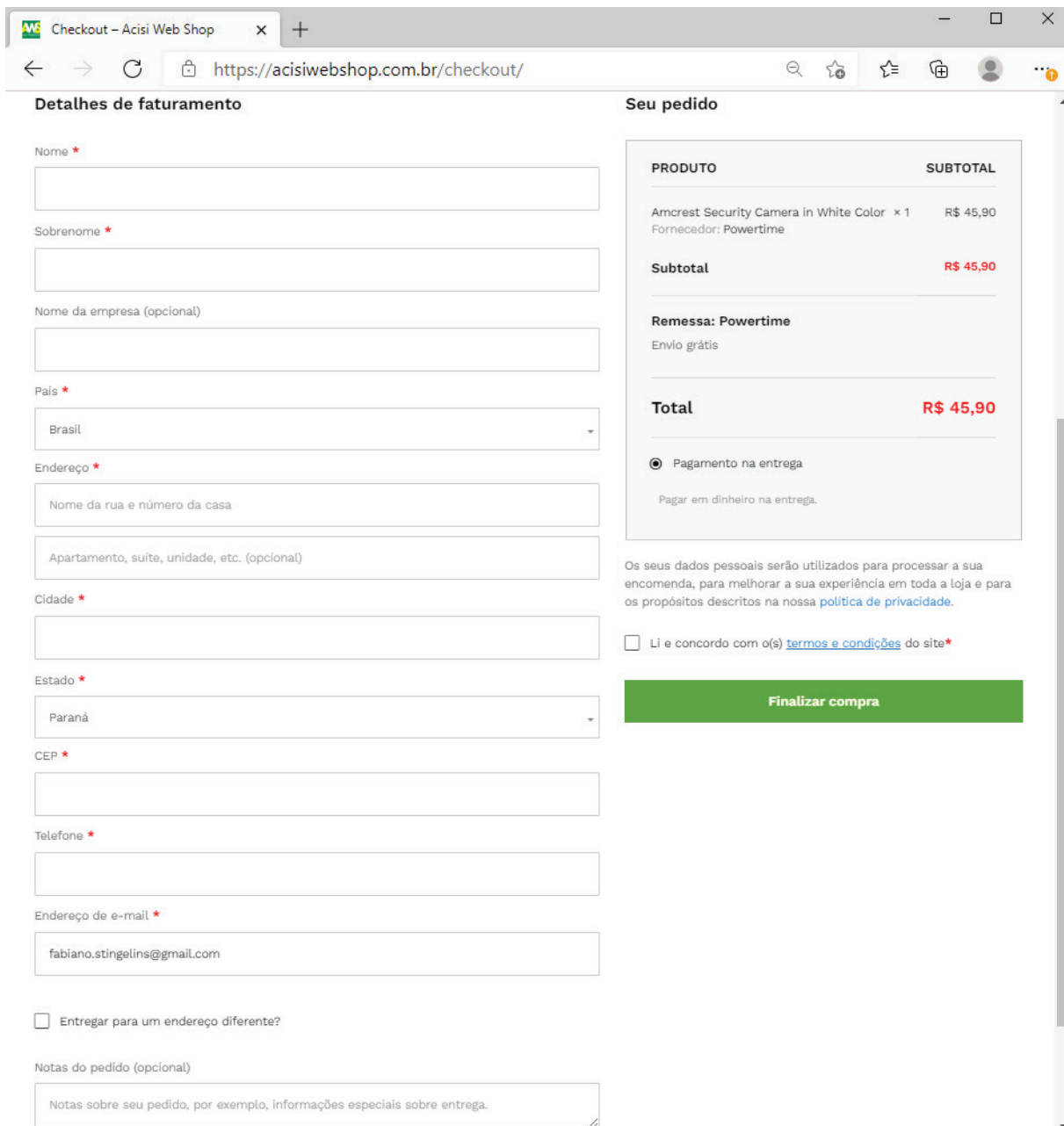
Legend: CLICK TO SHOP BY STORES; CLICK TO SEE ALL CATEGORIES; Novelties of the week

Source: The authors

thoughts and ask questions about the tool's features. The demonstration of the system, which was created based on the functional requirements, can be seen on the application's home screen, as shown in **Figure 4**.

After loading the web page or the application, one can see the overview, log in, register, and log out. After selecting his product choices and inserting them in

the shopping cart, the customer can close his order, as shown in **Figure 5**. An important detail of this order closing screen is the payment option at product delivery, which can be done in two ways: with a cash payment or by indicating in the field "Order Notes (optional)" that the delivery person should bring the debit or credit card machine at delivery.



Detalhes de faturamento

Nome *

Sobrenome *

Nome da empresa (opcional)

País *

Brasil

Endereço *

Nome da rua e número da casa

Apartamento, suite, unidade, etc. (opcional)

Cidade *

Estado *

Paraná

CEP *

Telefone *

Endereço de e-mail *

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Entregar para um endereço diferente?

Notas do pedido (opcional)

Notas sobre seu pedido, por exemplo, informações especiais sobre entrega.

Seu pedido

PRODUTO	SUBTOTAL
Amcrest Security Camera in White Color x 1 Fornecedor: Powertime	R\$ 45,90
Subtotal	R\$ 45,90

Remessa: Powertime
Envio grátis

Total **R\$ 45,90**

Pagamento na entrega
Pagar em dinheiro na entrega.

Li e concordo com o(s) [termos e condições](#) do site*

Finalizar compra

Os seus dados pessoais serão utilizados para processar a sua encomenda, para melhorar a sua experiência em toda a loja e para os propósitos descritos na nossa [política de privacidade](#).

Figure 5. Order Closing Screen

Source: The authors (2021)

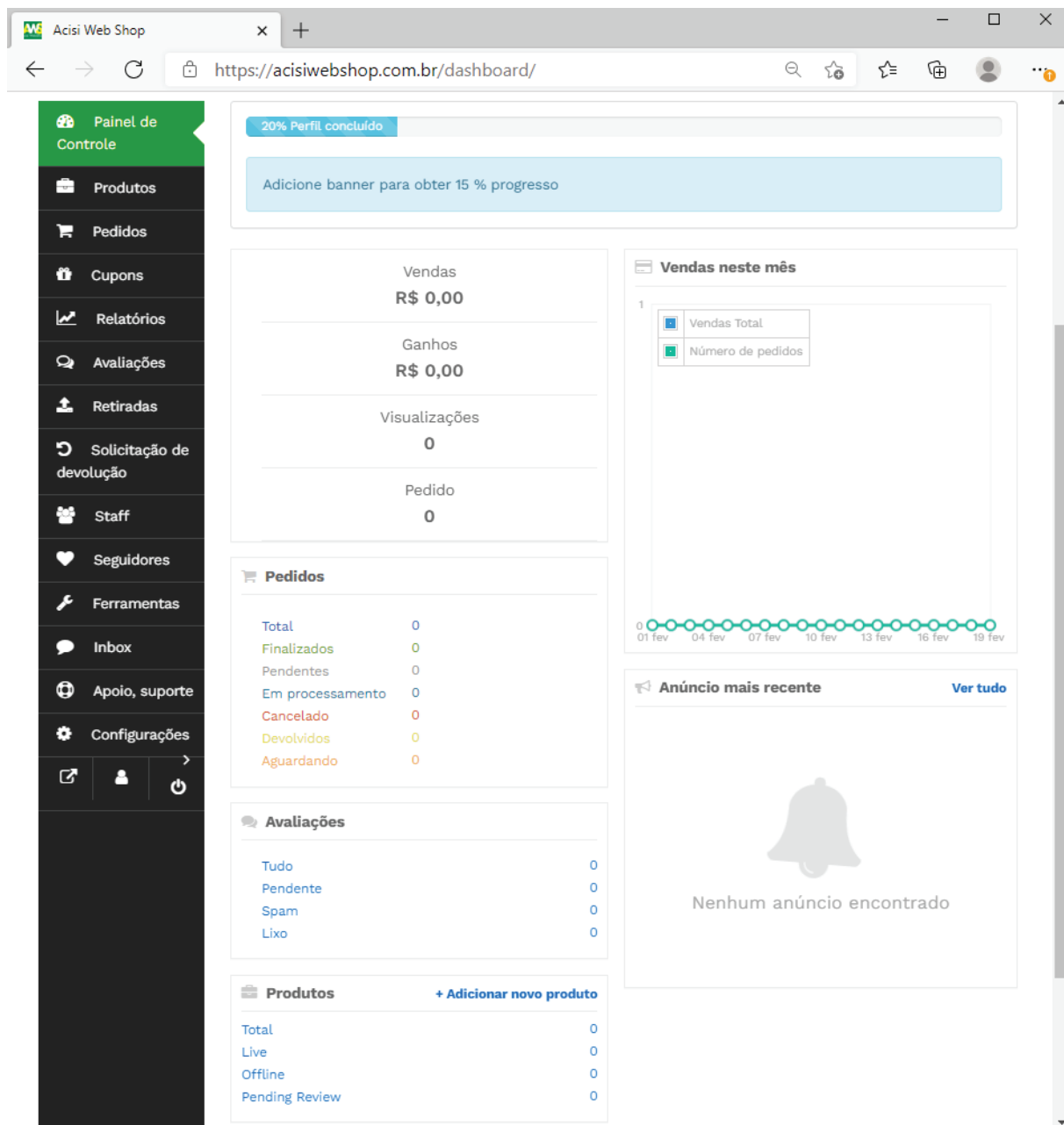


Figure 6. Vendor Profile Screen

Source: The authors

Figure 6 shows the vendor profile page. The feedback was definitely positive. They rated the interfaces as clean and easy to understand and use, even though it was their first contact with the tool.

As mentioned, the test results were positive and extremely important for the project, in addition to providing tips to complement the platform and better meet the users' needs.

FINAL CONSIDERATIONS

This article presents the problems of small local businesses in Ivaiporã-PR, highlighting the drop in sales in the current pandemic period and the reasonable number of businesses affected by it. Another aspect was the lack of a public policy to assist these merchants, who were deprived of reliable information about online sales and a tool that would make it possible.

Overall, the developed marketplace can solve the problems mentioned above while also providing benefits to the medium and small businesses in Ivaipora, PR. This could be demonstrated by the results of the analysis of the problems that can be solved and the results of the analysis of the needs that can be met. The test results also yielded positive conclusions.

The ACISIWEBSOHOP emerges as a proposal to help solve these problems, allowing the buyer to know the small local businesses better and bringing precise, easy-to-understand, and easy-to-access information. In addition, it creates business opportunities and market repositioning in the face of unfair competition, allowing continuity of product supply. As a result, ACISIWEBSOHOP assists buyers who want a better experience in their local online shopping while remaining in the comfort of their homes, enabling sellers to improve their services based on buyer feedback.

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