

Empowering Bali's Economy During the Covid-19 Pandemic: Developing MSME C2C E-commerce

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Abstract. The sluggish tourism industry in Bali due to the Covid-19 pandemic has resulted in people being more creative in looking for alternative sources of the economy. Increasing the advancement of micro, small and medium enterprises (MSMEs) is one option that may be managed effectively. Being part of Bali Province, Bangli Regency has a significant number of MSMEs. The significant increase in e-commerce transactions during the outbreak indicates the potential for online product promotion. This is both an opportunity and a challenge for MSMEs to contribute to narrowing the marketing gap. However, due to the unique nature of manufacturing, such as items created to order, MSME, particularly in Bangli Regency, which is exceptional in its handicraft sector, has been unable to promote its products through current e-commerce platforms. This research aimed to develop an e-commerce system that is tailored to the demands of MSMEs in the Bangli Regency. The object of this research was the design of an e-commerce website that meets the needs of the research subject, namely MSMEs in the Bangli district. The created website was an e-commerce model with a C2C (consumer to consumer) classified model approach. The engagement of the Department of Industry and Trade of Bangli Regency in the implementation, especially authenticating sellers (MSMEs) who were included in the system, distinguished this system. This implementation had the potential to strengthen consumer trust. Based on black box testing, the developed application had fulfilled all the functional requirements specified.

Keywords: MSME, e-commerce, C2C.

1 Introduction

The tourism sector is one of the industries that has suffered the consequences of the global Covid-19 outbreak. The prohibition on public travel has paralyzed the tourist sector and its supporters [1]. According to BPS statistics on tourist visits, the number of international visitors visiting Bali Province in August 2020 dropped by -53.19 percent compared to the previous month (m to m). The impact of a slow tourism sector has been felt by the Balinese people as a whole, especially Bangli Regency.

This circumstance stimulates community innovation in reacting to economic challenges, one of which is the development of MSME [2]. Quoted from APEC Report, one of the keys to

more inclusive growth is the development of MSMEs and their increasing direct engagement in regional and global commerce. SMEs play an important role in many countries, contributing to 50 to 80 percent of employment and at least 40 percent of GDP (Accenture 2016). As a result, their increased participation in global commerce should enhance economic development [3]. The MSME sector is a key contributor to the Indonesian economy since it provides job opportunities and aids in the industrialization of rural and disadvantaged areas [4]. Micro, Small, and Medium Enterprises (MSMEs) are also important economic drivers in Indonesia [5]. After agriculture, MSME has been the second greatest economic potential in Bangli Regency. According to the Bangli Regency Industry and Trade Department, there are 4,402 MSME business players with 31 categories of industrial categorization in 2020.

The pandemic's condition has also drastically altered the world's people's lifestyle. These lifestyles combine a culture of healthy living and a culture of digitalization, with the internet supporting every aspect of human life. The advancement of digitalization culture with the support of the internet will at least cause these two phenomena to persist. First, the community is no longer bound by the rules of working in an office environment, and the previously unthinkable work from home culture will become one of the cultural choices of working with all the benefits and risks. The second phenomenon is the increasing popularity of online shopping in a global society. According to the current study, societies are excited about the usage of E-commerce, and many consumers are beginning to buy online due to its simple procedure and time efficiency [6].

Responding to the potential and challenges of the post-pandemic community's new living culture, of course, also applies to MSMEs in Bangli Regency. MSMEs in Bangli Regency must engage in filling cyberspace's digital market niche. According to research, during the Covid-19 pandemic, there was a substantial increase in the usage of e-commerce by Indonesian MSME players. During the pandemic, internet media usage in economic activities grew from 21.33 percent to 54.67 percent. Meanwhile, the MSME players' level of education had little impact on their decision to shift their transaction pattern from offline to online [7].

MSMEs may increase their product marketing by promoting MSME items through an e-commerce platform. However, an e-commerce that caters to MSME players in Bangli Regency is not yet available. Although many e-commerce platforms are available in the market, such as Tokopedia and Bukalapak, these e-commerce platforms do not handle made-by-order products. This becomes important in supporting the craft industry. On the other hand, the platform cannot become a trading center for Bangli MSME products. As a result, this research was aimed to create an e-commerce system for MSMEs in Bangli Regency. Two main benefits were obtained by developing an e-commerce website, including being able to become a trading center for Bangli MSME products and obtaining a platform that suits the needs of MSMEs. The term *gagapan* 'souvenirs' originates from the Balinese language. Therefore it is expected that the existence of *gagapanbali.com* would allow the internet community to see souvenirs from Bali, particularly Bangli Regency.

This research was critical as part of an attempt to increase MSMEs' marketing in Bangli Regency and offer a platform for MSMEs to respond to the challenges of a new culture of life during the pandemic and a new culture of life after the pandemic in terms of digital business. The reason for choosing Bangli was because the economic potential of Bangli SMEs is quite large. Bangli has two superior products that are able to penetrate the export market, such as

Kintamani coffee and products made from bamboo. Bangli is the largest bamboo-producing area in Bali. If the system created with the test room for MSMEs in Bangli district was effective, it would likely be successful when applied to other districts in Bali's province.

E-commerce in Indonesia continues to grow year after year in terms of the number of transactions, users, and e-commerce apps. Bank Indonesia (BI) forecasts that e-commerce transactions would grow during the pandemic to Rp 429 trillion by 2020, up from Rp 255 trillion in 2019 and Rp 145.9 trillion in 2018 [2]. One of the supporting elements for this is that consumers prefer to buy online, which is dominated by 56 percent of women between the ages of 17 and 24, for reasons such as practicality, convenience, variety, speed, and low cost [8].

Electronic commerce (E-Commerce) has grown in importance as a means of conducting business. According to the findings, the most significant factor for MSMEs is the growing number of benefits that consumers experience when they utilize e-commerce [9]. According to research, MSMEs competitiveness is aided by the use of ICT in the form of E-Commerce, which has a beneficial influence on business unit operations [10].

According to research on the development of e-commerce for MSMEs in [11]–[19], there are research gaps where there is no study that develops C2C e-commerce for MSMEs in an organized and official forum. This present study has potential benefits because it aims to increase the economic strength of MSMEs, obtain specific C2C e-commerce modeling based on MSME functional needs, and the potential for consumer confidence. After all, it involved the Bangli Regency Industry and Trade Department in the implementation of validating sellers (MSMEs) that were incorporated.

2 Method

This study was under the topic of software development research and specifically to generate an e-commerce system development with the kind of consumer to consumer (C2C) within a 3-month time frame, therefore increasing the usage of Rapid Application Development (RAD) as a software development approach. This design was not only beneficial for MSMEs in Bangli Regency but could also be used as a reference for future studies in the field of creating e-commerce systems. This technique was distinguished by the close participation of software users in the software development stage as a contributor to information on system functional requirements and actively testing system prototypes. This technique had the effect of obtaining software that fulfilled the needs and expectations of system users.

2.1 E-Commerce

E-commerce is described as commercial transactions conducted between companies and individuals using digital technologies. Transactions using digital technology in the issue include those involving the internet, the web, and/or mobile devices [20]. In general, e-commerce is categorized according to the type of transaction and the parties involved. Some of the most common forms of e-commerce transactions are as follows [21]: 1) Business-to-Business (B2B): Companies or organizations that can serve as buyers or sellers are involved in the transaction process. 2) Business-to-Consumer (B2C): Transactions in this form of e-commerce involve retail transactions of items or services from businesses to individual

purchasers. E-tailing is another term for this sort of e-commerce. 3) Consumer-to-Business (C2B): Individual parties offer their goods or services to organizations or corporations that function as consumers over the internet or other electronic media under this form of e-commerce. 4) Consumer-to-Consumer (C2C): Consumers offer their products or services directly to other consumers in this kind of e-commerce. C2C e-commerce is divided into two models: classified and marketplace. Buyers and sellers have the option of transacting directly without the need for a specialized platform that handles online payments via the classified model. Online transactions under the marketplace model, on the other hand, use a specific platform supplied by the website.

2.2 Rapid application development

Rapid Application Development (RAD) is a comprehensive approach with four phases that parallel the conventional System Development Life Cycle (SDLC) phases. Prototyping and user interaction are essential parts of RAD. The RAD method enables users to review a functioning model as soon as possible, assess if it fulfills their goals, and suggest changes as needed. Companies utilize RAD to decrease development costs and time while increasing their chances of success [22]. RAD model is depicted in **Figure 1**.

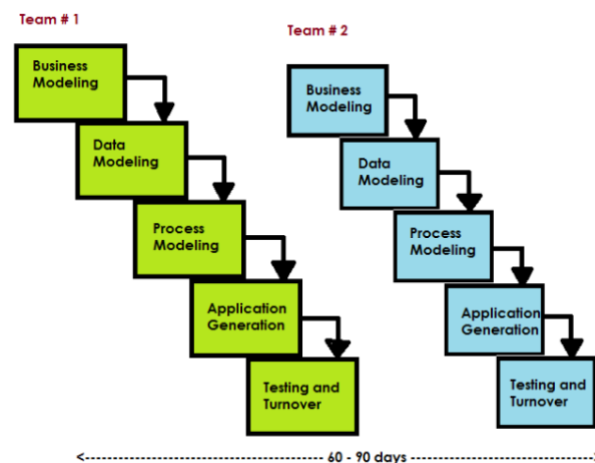


Fig. 1. RAD model [23].

The Bangli Regency Department of Industry and Trade took on the role of a software user, actively offering feedback on software requirements during the development stage. Aside from that, the department was responsible for offering users from MSMEs as system prototype testers.

3 Design and implementation

3.1 Business modelling

The classified approach of C2C e-commerce allowed sellers and buyers to deal directly. The classified e-commerce model merely connected sellers and buyers and was not allowed for

online buying and selling activities. Since there were no parties to supervise and manage transactions, the development of e-commerce could follow the concept of the classified model in this study. The second reason is that certain MSMEs items were made-to-order or through advance orders, as with handcraft products. By applying the classified model design, the system can overcome the sale of made-by-order products because transaction and delivery management was carried out independently between consumers and MSMEs outside the system. The business model offered to MSMEs was outlined in the diagram shown in **Figure 2**. The figure indicates that the developed system did not include a transaction payment mechanism or a method for delivering products to consumers. This procedure was carried out separately between consumers and MSMEs outside of the system. In a single unit, the buyer and seller subsystems were linked to the same database.

In 2019, a study was conducted for the development of e-commerce for MSMEs in Akah Bali [24]. The research resulted in a particular B2C (Business to Consumer) e-commerce website for Bangli Regency bamboo craftsmen represented by MSMEs Akah Bali and Ade Prima Bamboo. Website development has been successful in providing clients with shopping carts and an order check-out procedure. The issue was maintaining data on the website because the admin (seller) login was only intended for one user by the B2C idea. As a result, the present study was a continuation of prior research in which the seller's account would be made plural based on MSMEs registered with the Bangli Regency Industry and Trade Department.

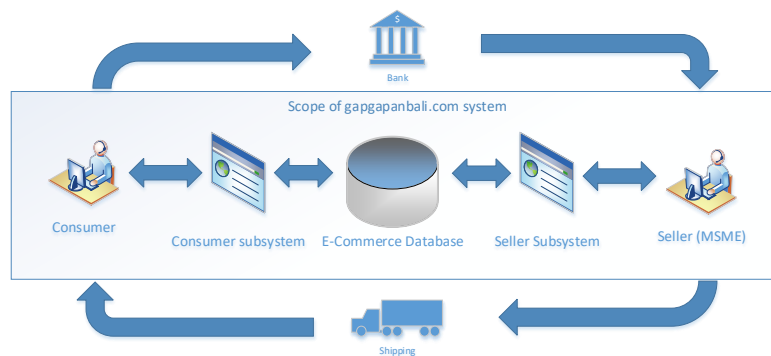


Fig. 2. Overview of the system.

3.2 Data Modelling

The database structure of the built e-commerce consisted of nine tables, namely carts, categories, products, d_invoice, invoices, sellers, users, provinces, and cities. The database structure is shown in **Figure 3**.

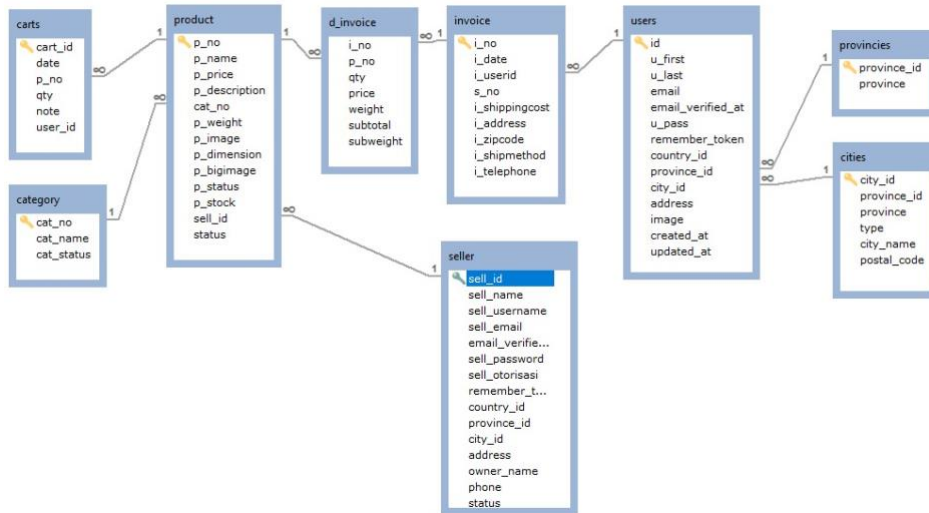


Fig. 3. The database structure.

3.3 Process Modelling

The implementation of a seller verification procedure was a distinct characteristic of this e-commerce system. The Department of Industry and Trade of Bangli Regency conducted verification to verify that sellers participating in e-commerce are competent MSMEs with the ability to transact properly. MSMEs would receive a personal account after being authenticated, where they would be able to do data maintenance on items sold independently. When an order was finished, both consumers and MSMEs would receive a copy of the invoice in their respective emails. Consumers might track the status of their orders and review the history of previous orders. As we all know, not all MSMEs were ready to trade online immediately, even if they already have locally marketed items. It necessitates some planning in terms of both technology and product quality. As a result, the function of Bangli Regency Industry and Trade Department in evaluating was critical. All of the processes listed above are descriptive explanations of the data flow depicted in **Figure 4**.

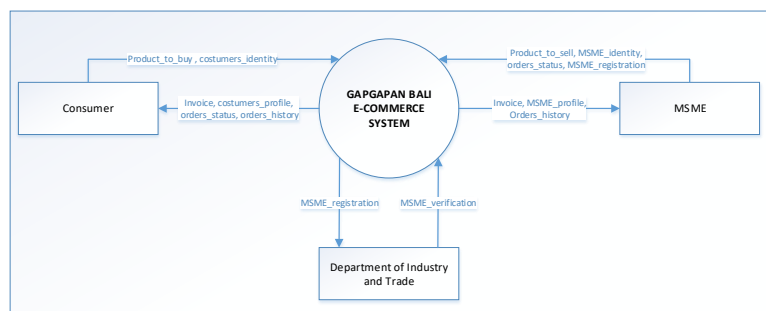


Fig. 4. Context diagram.

3.4 Application generation

Figure 5 shows an initial view of gaggapanbali.com e-commerce. There were three users who could access this e-commerce, namely administrators from the Department of Industry and Trade of Bangli Regency, sellers (MSMEs), and buyers.

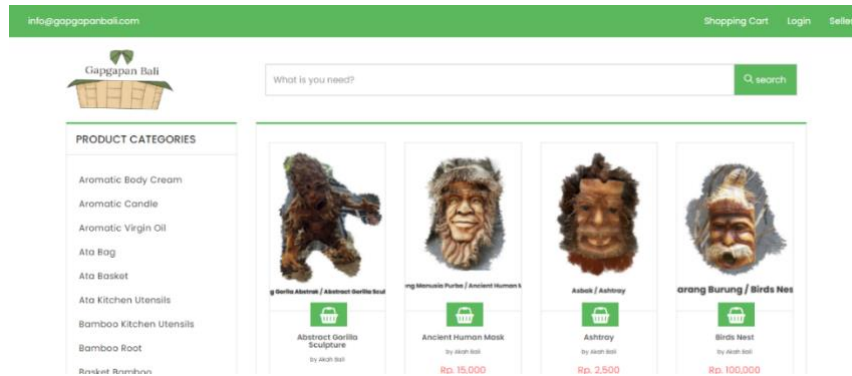


Fig. 5. Website screenshot capture.

3.5 Testing and turn over

Black box testing was used to test the functionality of the built e-commerce. The test results shown in Table 1 and Table 2 were the results of functionality testing related to the addition of MSMEs as well as validation carried out by the Administrator.

Table 1. The result of add sellers.

No.	Testing Scenario	Expected Results	Test Result	Status
1.	Click the Seller menu from the Administrator page	The system goes to the Seller page	The system went to the Seller page	Valid
2.	Click the Add New Seller button	The system goes to the Seller form	The system went to the Seller form	Valid
3.	Fill out every field on the Seller form completely, then click the Save Seller button	The system receives the data and displays the message "Seller Saved"	The system received the data and displayed the message "Seller Saved"	Valid
4.	Fill out the Seller form by leaving the Name or Username or Email or Password or Retype Password field blank, then click the Save Seller button	The system displays the message "Please fill out this field"	The system displays the message "Please fill out this field"	Valid

Table 2. The result of activate or inactivate sellers.

No.	Testing Scenario	Expected Results	Test Result	Status
1.	Click the Seller menu from the Administrator page	The system goes to the Seller page	The system went to the Seller page	Valid
2.	Click the Action button on the Seller List	The system goes to the Seller form	The system went to Seller form	Valid
3.	Fill in the Status column with Active or Inactive, then click Save Seller button	The system displays the message "Seller Updated"	The system displayed the message "Seller Updated"	Valid

The test results shown in Table 3 and Table 4 were the results of functionality testing related to adding products to shopping carts and checking out carried out by the Buyers.

Table 3. The result of add shopping cart.

No.	Testing Scenario	Expected Results	Test Result	Status
1.	Click the Shopping Cart button or the product name from the product image	The system goes to the Product Detail page	The system went to the Product Detail page	Valid
2.	Fill in the Qty Order and Add note (optional) fields in the Product Detail page, then click Add to Cart button	The system receives the data and displays the message "Added to shopping chart"	The system received the data and displayed the message "Added to shopping chart"	Valid

Table 4. The result of check out.

No.	Testing Scenario	Expected Results	Test Result	Status
1.	Click the Shopping Cart menu from the Buyer page	The system goes to the My Shopping Cart Page	The system went to the My Shopping Cart Page	Valid
2.	Fill in the Qty Order and Add note (optional) fields in the Product Detail page, then click Add to Cart button	The system receives the data and displays the message "Added to shopping chart"	The system received the data and displayed the message "Added to shopping chart"	Valid
3.	Tick the checkbox of the product added, then click the Check Out button	The system goes to the Check Out Page	The system went to the Check Out Page	Valid
4.	Fill out the courier for the shipment, then click the Check Out button	The system receives the data and displays the message "Check out successful, please process the payment"	The system received the data and displayed the message "Check out successful, please process the payment"	Valid

4 Conclusion

The e-commerce system developed in this study offered numerous distinguishing features. This is because system environment adaptations were acquired through the system analysis process while maintaining prioritizing the system's aims and advantages, namely improving the economic power of MSMEs. Since there were no entities that would supervise and control

transactions, e-commerce modeling was created using a classified model definition technique. The second reason is that certain MSMEs items were made-to-order or through advance orders, as with handcraft products. Another distinctive feature of this system was the engagement of the Bangli Regency Industry and Trade Department in the implementation, specifically to validating sellers (MSMEs) who were included in the system. This implementation has the potential to strengthen consumers' trust.

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