ANALYSIS OF THE DESIGN OF A WEBSITE-BASED POINT OF SALES SYSTEM FOR HOTEL MANAGEMENT

Komang Mahayuni Chikara Wijaya[1*], I Wayan Nanda Asa Utama[2],
Ni Made Sri Rukmiyati[3], I Wayan Tuwi[4] , Christina Susanti[5]
[1-5] Hospitality Accounting Management Study Program, Bali Tourism Polytechnic,
Indonesia
E-mail: [1] myunichikara@gmail.com, [2] nandacore14@gmail.com, [3] madesri.rukmiyati@gmail.com, [4] iwayantuwi@yahoo.com, [5] christinasusanti@ppb.ac.id

Abstract

This research aims to design and develop an efficient and integrated website-based Point of Sales (POS) system for Kamala Bali Resort in Nusa Dua, in order to improve operational efficiency and service quality. The method used is a qualitative approach, which includes in-depth interviews, direct observation, and document analysis to understand the needs and challenges faced by the resort in managing the transaction system. The results showed that the development of a website-based POS system that integrates the Front Office Cashier (FOC) and Restaurant Bar Cashier (RBC) modules can accelerate the guest registration process, food and beverage order management, and real-time financial transaction management. The system also reduces the risk of human error and increases the transparency of financial reports. The contribution of this research is not only to provide practical solutions for small and medium-sized hotels in adopting technology, but also to enrich the literature regarding the application of information systems in the hospitality industry, as well as to become a model for other hotels in Indonesia that want to transform into the digital era.

Keywords: *Point of Sales System, Kamala Bali Resort, Operational Efficiency, Website-Based, Service Quality*

INTRODUCTION

The growing digital era, the need for an efficient and effective management system is very important, especially in the tourism and hospitality sector because it can improve operational efficiency, customer comfort, and hotel competitiveness in the modern era. The company's need to process information quickly, precisely and accurately makes the company try to implement an information system that suits the company's needs. With a good system the company will get accurate information about the business flow that occurs. Pakpahan et al. (2022) mentioned that the role of conventional cash registers is starting to be replaced by a more modern system, namely the Point of Sales (POS) system to run business processes. In the context of food and beverage services, POS allows real-time recording of orders, minimizes manual input errors, improves operational efficiency, and increases guest satisfaction.

[1]Bali Tourism Polytechnic
Komang Mahayuni Chikara Wijaya
*E-mail: myunichikara@gmail.com

Manual recording of POS systems often makes it difficult for hotels to monitor transactions in real-time, which impacts the accuracy of financial reports and increases the risk of human error in data management (Kwortnik & Thompson, 2023). This situation can affect the accuracy of the calculation of hotel revenue and operating costs, potentially causing losses. In addition, hotels that use traditional POS systems often take longer to process transactions, which can reduce the satisfaction level of guests who expect fast and smooth service (Baker, 2017).

Kelsey et al. (2023) mentioned customer engagement is critical in the digital era, where understanding how marketing activities emphasize engagement as one of the top priorities. Technology is used to increase productivity and efficiency, reach new markets, and optimize supply chains also mentioned by Kresnanto et al. (2020) . In this era companies can have the opportunity to create value by adapting new business models (Yanti, 2019).

With this digitalization, it is expected that a company can adapt quickly to market changes and customer needs, and improve customer experience through more sophisticated technology (Febianto et al., 2024). This research aims to discuss the design of a website-based Point of Sales system specifically designed for Kamala Bali Resort in Nusa Dua. Because, in Kamala Bali Resort, it is seen that it still uses a manual recording system, which often makes it difficult to monitor transactions in real-time.

This condition impacts the accuracy of financial reports and increases the risk of human error in data management (Trigo et al., 2014). As a result, the calculation of hotel revenue and operating costs can be less precise, potentially causing losses. In addition, slower transaction processes due to the use of traditional systems can reduce the level of guest satisfaction who expect fast and efficient service (Baker et al., 2017). Based on the identification of initial problems that occur at Kamala Bali Resort, this research will focus on designing and building a more efficient and integrated website-based POS system. A website-based POS system is seen as an effective solution due to its ease of access and management through various devices, as well as its ability to connect with other systems such as room, restaurant, and inventory management (Wijit & Chaisongkram, 2023).

The implementation of a website-based system is expected to reduce dependence on expensive and complex hardware, speed up transaction and reporting processes, and improve overall operational efficiency (Baker et al., 2017). The implementation of a website-based POS system not only improves operational efficiency, but also provides the flexibility needed to adapt to evolving business needs. As stated by Juventauricula et al. (2024), the website-

based POS information system developed for Altari Restaurant aims to improve operational efficiency by simplifying transaction recording and data collection. Through the application of the Waterfall method, the system successfully meets user needs and shows a significant increase in transaction effectiveness, with an average score of 86.5 on the System Usability Scale (SUS), reflecting a high level of usability.

In this context, some relevant use cases will illustrate how a website-based POS system can be implemented to improve operations at Kamala Bali Resort. Faster and more accurate sales transaction process, efficient reservation management, and real-time financial reports will provide significant benefits for managers and guests. In addition, integrated food and beverage menu and inventory management will support better service quality. On the other hand, the main challenges in the adoption of website-based POS systems, especially for small and medium-sized hotels, are infrastructure limitations and perceived high implementation and maintenance costs (Nkosana, 2016). The hesitation to invest in technology that is perceived as expensive and complicated is often a deterrent, despite the obvious potential long-term benefits (Wijit & Chaisongkram, 2023).

A review of previous research shows that studies on POS systems generally focus on large hotels with adequate budgets and infrastructure (Sharma, 2002). The results of research conducted by Li et al. (2015). Present and future hotel website marketing activities: Change propensity analysis. International Journal of Hospitality Management, 47, 131-139. highlight the advantages of website-based POS systems in international hotels, while the results of research by Wijit and Chaisongkram (2023) lack practical and affordable guidance for small and medium-sized hotels in developing countries such as Indonesia.

Similarly, the research by Hwang and Lockwood (2006) which emphasizes successful implementation in large hotel chains does not specifically address the challenges faced by small hotels. This research gap indicates the need for a more in-depth study on the implementation of a website-based POS system that suits the characteristics and limitations of small and medium-sized hotels (Wijit & Chaisongkram, 2023). Based on the phenomenon and previous research, this research will focus on designing and developing a website-based POS system that can be implemented easily and at an affordable cost at Kamala Bali Resort Nusa Dua hotel.

By designing a system that suits the needs of Kamala Bali Resort Nusa Dua hotel, it is expected to increase operational efficiency, reduce errors in transactions, and increase guest satisfaction. Theoretically, this research is expected to contribute to the development of

knowledge related to the application of technology in the hospitality industry, especially in the context of small and mediumsized hotels in developing countries. This research will also enrich the literature on technology adoption in hotel operations and provide a deeper understanding of the challenges faced by hotels with limited resources.

Practically, this research is expected to help small and medium hotel managers, especially at Kamala Bali Resort Nusa Dua, in designing and implementing a website-based POS system that can improve their operational efficiency and effectiveness. This research is expected to produce a system that helps Kamala Bali Resort in reducing operational costs, where with a more integrated and easy-to-use system, it is expected to reduce costs incurred. In addition, this application also aims to improve service quality, as an efficient system can contribute to increased customer satisfaction. Lastly, this application is expected to make a positive contribution to the development of the hospitality industry, particularly in improving the efficiency and competitiveness of small hotels in an increasingly competitive market.

LITERATURE REVIEW

Accounting Information System

Accounting Information System (AIS) is a system used to collect, store, process, and present accounting information that is relevant and useful for decision making in an organization. Although AIS can speed up and improve the accuracy of reports, close supervision is still needed to ensure compliance with accounting standards and to maintain transparency of financial information to the public (Utari & Harahap, 2024)

Accounting information systems in hotels, such as the one implemented in Batam Star Hotel, provide significant benefits that support operational efficiency and effectiveness. With structured financial data management, the system enhances accountability and transparency, and reduces the risk of human error that often occurs with manual data processing. Quick access to cost and expense information allows guests to view fee details via the website and confirm payment easily (Sari & Erki, 2024).

Accounting information systems play a crucial role in improving the operational efficiency and effectiveness of an organization, especially in the hospitality sector. Faster data processing also allows financial reports to be prepared in a shorter time, increasing management responsiveness to operational needs. With good data integration, all information related to transactions and expenses is stored in the database server, making it easier to manage and search data when needed (Winata & Dewi, 2024).

The AIS helps in monitoring the financial performance of the hotel, identifying areas that need improvement, and ensuring compliance with applicable regulations. Thus, the hospitality accounting information system not only serves as a recording tool, but also as a basis for better financial planning and control in hotel operations (Jawabreh & Alrabei, 2012).

Point of Sales

In this rapidly growing era of selling and buying goods, information technology is becoming increasingly important to help businesses run and grow. One of the main technologies in the retail and service industry is the POS system. To facilitate the transaction process, POS is a system that records all sales and purchase activities that occur in a business or store. POS can also be referred to as a cash register and the last stage in the process of purchasing goods. To meet the demands of daily transaction data processing, information systems support transaction data processing by processing, modifying, retrieving, and storing the data obtained. There are several types of applications that can be used to access information, one of which is located on the website (Vincensius, 2019).

POS is also an application that is often used to process transaction data in stores. POS is software for recording sales transactions or commonly referred to as a POS system. Point of sale is a system that supports the transaction process between goods and services and improves transaction security and data accuracy, and is also used to record inventory (Pakpahan et al., 2022) . The reasons for using POS include increasing transaction efficiency, speeding up the sales process, monitoring profits and losses. By using POS, entrepreneurs can more easily manage their business by generating accurate and real-time financial reports. The use of website-based applications has advantages in accessibility, scalability, easy maintenance, and the ability to be accessed from various devices and operating systems. In addition, the development of website-based programs allows for integration with other systems, real-time data and information sharing, and is more cost-effective in its development and maintenance (Farhan et al., 2024).

The importance of POS systems cannot be ignored, especially in the context of the development of information technology that makes services for customers must be continuously improved in order not to be left behind in the existing business competition. As consumer lifestyles and preferences change, the need for a fast, efficient, and responsive shopping experience increases. A good business should have an automated POS system so that the business can work more efficiently in improving customer experience and making

smarter business decisions based on the data they have. This will also reduce losses that can be experienced by companies, misinformation and recording sales (Vincensius, 2019).

Based on POS system testing, features like transactions, stock, reports, and receipt printing worked well and met the cafe's sales needs. The transaction management feature facilitates the sales process quickly and accurately, while the stock management feature allows real-time inventory monitoring. In addition, the report feature provides the necessary transaction data (Arman et al., 2022).

Previous Research

Based on a review of previous research, many studies on POS systems have been conducted such as research conducted by Li and Zhang (2021) on the use of website-based POS systems in international hotels identifying advantages in transaction management and integration between departments. The results of these studies have not provided practical and affordable guidance for small and medium-sized hotels in developing countries such as Indonesia.

Other research conducted by Mulyana and Rusmawan (2023) about Designing a Website-Based POS Information System conducted at Toko Andorio. The result of this research is a website-based Point of Sale information system application that can be used to facilitate the operational activities of Andorio Stores starting from the transaction process such as purchases and sales, as well as facilitating the recapitulation of reports such as purchase reports, sales and stock reports.

The latest research, namely research conducted by Li et al. (2015), about present and future hotel website marketing activities: change propensity analysis also emphasizes the successful implementation of website-based POS systems in large hotel chains, but does not discuss the challenges faced by small hotels in adopting this technology. The gaps in this research indicate that although website-based POS systems offer many benefits, their implementation in small and medium-sized hotels is still very limited.

RESEARCH METHODS

In this research, a qualitative approach is used to design and build a website-based POS system at Kamala Bali Resort Nusa Dua. The qualitative method was chosen because it allows researchers to gain a deep understanding of the needs and challenges faced by the resort in managing the transaction system. Qualitative method is a research approach that focuses on an in-depth understanding of human experience and its social context.

Researchers use interviews, observation, and document analysis to collect rich and detailed data (Creswell & Creswell, 2018).

In this research, the steps taken include in-depth interviews, direct observation, documentation, and data analysis. First, the researcher will conduct in-depth interviews with various stakeholders at Kamala Bali Resort, including the hotel manager, front office staff, and restaurant staff. Next, the researcher will conduct direct observation of the transaction process that takes place at the resort, including observation of workflows, interactions between staff and guests, and the use of the existing POS system.

The data obtained from these observations is expected to provide insight into best practices and areas for improvement. In addition, researchers will document the running of the POS through photos and videos, which will help in understanding the operational context and provide a visual picture of how the current system functions. Finally, the data obtained from interviews, observations, and documentation will be thematically analyzed to identify patterns, challenges, and emerging needs. The results of this analysis will be used to design a POS system that meets user needs and improves operational efficiency.

RESULTS AND DISCUSSION

Research Results

The development of a website-based POS system designed for Kamala Bali Resort focuses on use cases that can facilitate Kamala in managing hotel operations, improve efficiency, and provide a better experience for guests.

This research began by developing a website-based POS system designed to facilitate the guest registration process with clear and systematic steps. First, a front office officer (FO) can log into the system, which ensures that only authorized users can access sensitive data. After login, the FO can perform guest data registration, which includes important information such as Guest ID, Nationality, Name, Pax and Room Number, Phone Number, and Email.

The system is also equipped with an Adjustable Room Rate feature, which allows flexible room rate settings according to hotel policy and market demand. In addition, this application records the number of nights (Night of Stay) spent by guests, all of which are integrated in the generation of guest bills. Once the registration process is complete, guests can check-in and stay in their designated room, with a choice of various room types such as Superior, Deluxe, Junior Suite, or President Suite. All this data is recorded in the system and linked to the guest's personal account, allowing easy access to information in the future.
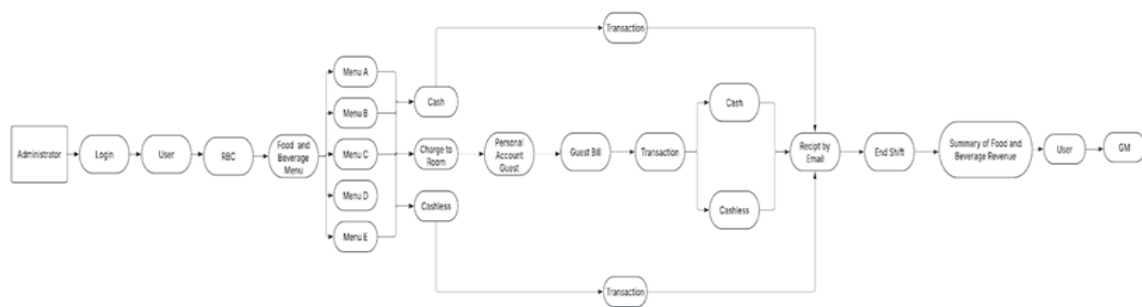
Figure 1. Front Office Cashier Use Case

Beside Front office, the system development will also include a module for Restaurant Bar Cashier (RBC) at Kamala Bali Resort. The system starts with the cashier logging in as an administrator, who can then access the Food & Beverage Menu module to capture guest orders. By providing multiple menu options (Menu A to Menu E), the system makes it easier for users to select products that suit customer needs, thus enhancing the guest experience.

Once the order is recorded, the system offers a wide selection of payment methods, including cash, non-cash, or through the "Charge to Room" function. The "Charge to Room" feature automatically links the invoice to their room bill (Guest's Personal Account), allowing guests to add food and beverage charges to their room bill. Each transaction made generates a receipt, and the system also offers the ability to send receipts via email, so guests can document transactions easily.

The entire transaction process is complemented by the Captain Order and Print to Kitchen and bar functions, which allow orders to be distributed directly to the kitchen and bar operations. This not only increases the speed of service, but also ensures that orders are processed accurately and on time. Once a transaction is completed, the system records it in the database as part of the transaction history, and the process is ended with the "End Shift Transaction" feature, which signifies the completion of operations for a specific employee's timeframe.

All transactions made will be summarized in the system and compiled in a final report in the form of a summary of food and beverage sales. This report can be accessed by the General Manager (User GM) for the purpose of sales performance evaluation and financial analysis. The full integration between the RBC module and the hotel's financial and operations systems makes the entire food and beverage invoicing process more efficient, accurate and well-documented. This feature not only supports the ease of payment for guests,

691

but also strengthens transparency and internal control on the hotel management side, thus making a positive contribution to the management of resources and overall improvement of hotel profitability.
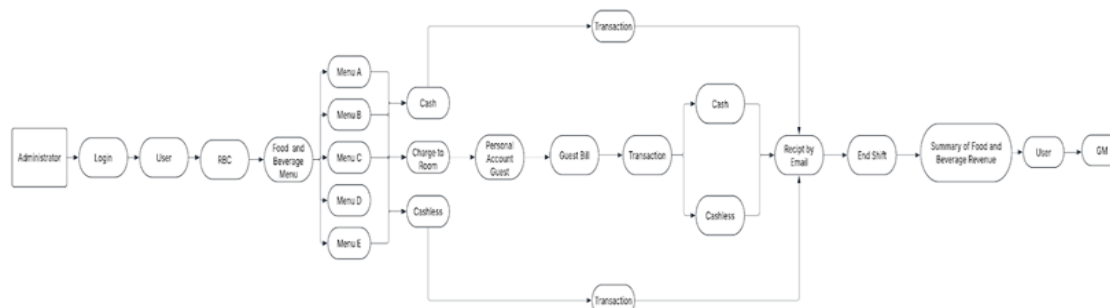

Figure 2. Restaurant and Bar Cashier Use Case

The final result of this activity is a system with front office cashier & restaurant bar cashier transactions made with a programming language, and can be accessed via the website, with the following display.
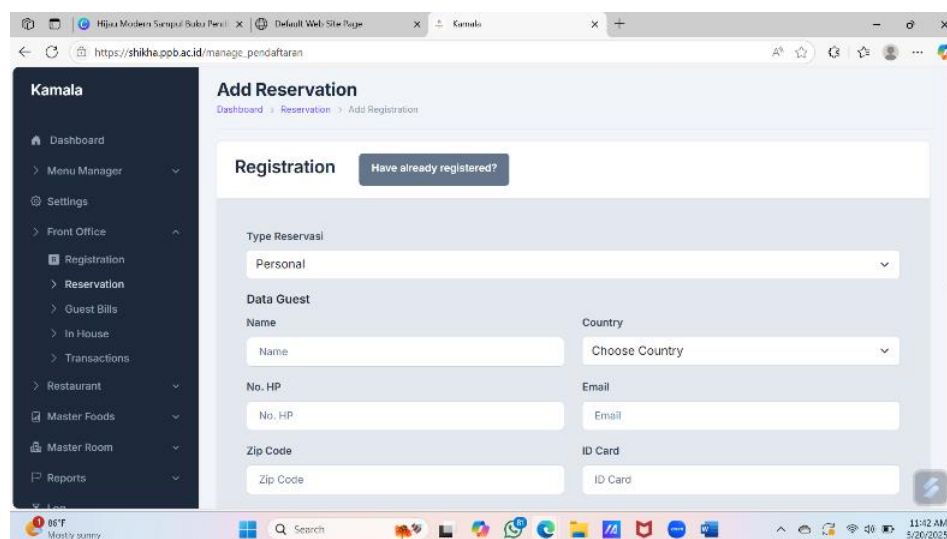

Figure 3. Front Office cashier page

In Figure 3 it can be seen that in the front office cashier admin can access options including Reservation, Registration, Guest Bills, In House, and Transactions. Where in the reservation section the admin processes guest data that will book rooms both online and offline, if you have made a reservation the admin will process guest data that will check-in on the registration menu. On the guest bills menu the admin can see all transactions made

by the guest concerned, to see guests who are staying at the hotel the admin can see on the In House menu, and finally on the transactions menu there is a choice of payment method options that will be used by guests.
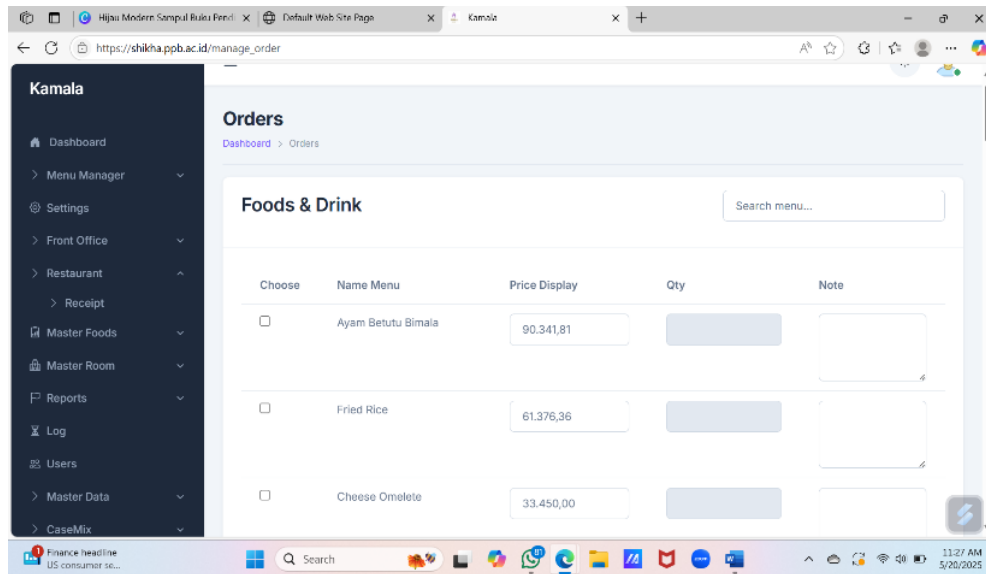
Figure 4. Restaurant Bar Cashier Page

In Figure 4 it can be seen that in the restaurant bar cashier section there are several food and beverage menus available at the hotel. Admins can choose the food or drink menu ordered by guests on this page.

Discussion

Kamala Bali Resort faces an urgent need to adopt an integrated system to support the smooth operation of the front office and restaurant bar cashier simultaneously. The Front Office Cashier (FOC) system development is designed to simplify the guest registration process that includes complete information such as Guest ID, Nationality, Name, Pax and Room Number, Phone Number, and Email. The system also provides an Adjustable Room Rate feature to flexibly set room rates and record the number of nights of stay, all of which are integrated in the Guest Bill generation. The check-in to checkout process is optimized with cash and non-cash payment features and digital receipt delivery to guest email. Shift completion is done through the "End Shift Transaction" feature, which also ensures transparent and accurate transaction recording. A summary report of room revenue can be accessed by the General Manager for evaluation and decision-making.

On the other hand, the Restaurant Bar Cashier (RBC) system complements hotel operations by allowing the cashier as an administrator to manage guest orders through the Food & Beverage Menu module that provides menu options in the form of Menu A to Menu E. A flexible payment system with cash, non-cash, or "Charge to Room" that automatically links charges to guest accounts, strengthens financial integration between modules. Captain Order and Print to Kitchen and Bar features improve service efficiency by distributing orders directly to the kitchen and bar. Once the transaction is completed, the data is recorded in the database and the shift is closed using "End Shift Transaction". The resulting food and beverage sales report can be accessed by the General Manager for performance evaluation and in-depth financial analysis.

The full integration of the FOC and RBC modules in one unified system provides great benefits to Kamala Bali Resort. The system provides efficient, accurate and well-documented transaction processes, while improving transparency and internal control. With the support of this technology, the hotel can be more responsive to the needs of guests and management, strengthening competitiveness in an increasingly competitive hospitality market and increasing profitability on an ongoing basis.

CONCLUSION

This research shows that the development of a website-based Point of Sales (POS) system at Kamala Bali Resort can provide a significant solution to improve operational efficiency and service quality in the hospitality sector. By integrating the Front Office Cashier (FOC) and Restaurant Bar Cashier (RBC) modules, the resort can optimize the guest registration process, food and beverage order management, and real-time financial transaction management.

The system not only simplifies data recording and transactions, but also reduces the risk of human error that often occurs with manual systems. Features such as Adjustable Room Rate, Charge to Room, and digital receipt delivery increase convenience for guests and speed up the service process. In addition, automatically generated financial reports provide accurate and transparent information for management, supporting better decision-making.

Although challenges in technology adoption, such as infrastructure limitations and implementation costs, remain, the potential long-term benefits of this website-based POS system are clear. By designing a system that suits the needs of small and medium-sized hotels, this research is expected to make a positive contribution to the development of the

hospitality industry, improve competitiveness, and provide a better experience for guests. Overall, the implementation of this system at Kamala Bali Resort is expected to serve as a model for other hotels in Indonesia looking to transform into the digital era and improve their operational efficiency.

REFERENCES

Arman, M., Maberur, R., Purnama, C., & Sales, P. O. (2022). Perancangan Aplikasi Point of Sales Pada. *Jurnal Ilmiah Sistem Informasi Dan Teknik Informatika*, *5*(April), 43–50. https://doi.org/10.46576/djtechno

Baker, M. A. (2017). Electronic customer relationship management and customer satisfaction. In *The Routledge Handbook of Consumer Behaviour in Hospitality and Tourism* (pp. 396–403). Routledge.

Creswell, J. W., & Creswell, J. D. (2018). Qualitative, quantitative and mixed methods research (Dörnyei). *Introducing English Language*, 9781315707181–60.

Farhan, A., Fatimah, F., & Rachmawati, F. (2024). Web-Based Bread Sales Information System Case Study Ro Bakery and Cake. *Jurnal Inovatif: Inovasi Teknologi Informasi Dan Informatika*, *7*(2), 108–117.

Febianto, R., Sokibi, P., & Sevtiana, A. (2024). Pembangunan Aplikasi Reservasi Hotel Puri Pesona Cirebon Berbasis Web Menggunakan Metode Extreme Programming (XP). *JATI (Jurnal Mahasiswa Teknik Informatika)*, *8*(6), 12030–12036.

Hwang, L. J., & Lockwood, A. (2006). Understanding the challenges of implementing best practices in hospitality and tourism SMEs. *Benchmarking: An International Journal*, *13*(3), 337–354.

Jawabreh, O. A., & Alrabei, A. M. (2012). The impact of accounting information system in planning, controlling and decision-making processes in Jodhpur hotels. *Asian Journal of Finance & Accounting*, *4*(1), 173–188.

Juventauricula, P., Hanggara, B. T., & Pramono, D. (2024). Pengembangan Sistem Informasi Point of Sale (POS) berbasis Web menggunakan Pendekatan Metode Waterfall (Studi Kasus: Restoran Altari). *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, *8*(1), 97–106.

Kelsey, J., Nakaya, Y. S., & Santoso, I. G. (2023). Transformasi Digital Berkelanjutan Industri Perhotelan (Fokus: Studi Terhadap Industri Perhotelan Di Indonesia). *Journal Social Society*, *3*(1), 1–10.

Kresnanto, M. A., Hanggara, B. T., & Prakoso, B. S. (2020). Analisis Pengalaman Pengguna

pada Aplikasi Mobile Booking Hotel dengan menggunakan Metode User Experience Questionnaire (UEQ)(Studi pada RedDoorz dan Airy). *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, *4*(10), 3637–3646.

Li, X., Wang, Y., & Yu, Y. (2015). Present and future hotel website marketing activities: Change propensity analysis. *International Journal of Hospitality Management*, *47*, 131–139.

Mulyana, A., & Rusmawan, U. (2023). Rancang Bangun Sistem Informasi Point of Sale (POS) Berbasis Web (Studi Kasus Toko Andorio). *Majalah Ilmiah UNIKOM*, *21*(1), 43–50.

Nkosana, T. (2016). *Use of information and communication technology (ICT) and e-commerce in small remote hospitality establishments in KwaZulu-Natal.*

Pakpahan, W. M., Febrian, A., Jati, P. R., Winardi, S., & Pardosi, I. A. (2022). Analisis dan Perancangan Sistem Aplikasi Pengkasiran Digital (Point of Sales). *Jurnal SIFO Mikroskil*, *23*(1), 41–50. https://doi.org/10.55601/jsm.v23i1.864

Sari, I. U., & Erki. (2024). Penerapan Sistem Informasi Reservasi Hotel Berbasis Web Pada Hotel Batam Star. *Jurnal Ilmu Komputer Dan Sistem Informasi*, *1*(1), 12–24.

Sharma, D. S. (2002). The differential effect of environmental dimensionality, size, and structure on budget system characteristics in hotels. *Management Accounting Research*, *13*(1), 101–130.

Trigo, A., Belfo, F., & Estébanez, R. P. (2014). Accounting information systems: The challenge of the real-time reporting. *Procedia Technology*, *16*, 118–127.

Utari, R., & Harahap, J. P. R. (2024). Analisis Sistem Informasi Akuntansi dalam Meningkatkan Efisiensi Pelaporan Keuangan Dinas Sosial Kabupaten Labuhanbatu Utara. *Jurnal Mutiara Ilmu Akuntansi*, *2*(4), 362–376.

Vincensius, D. (2019). *Analisis dan Perancangan Sistem Informasi Point Of Sales pada CV. Sanjaya Abadi/Denny Vincentius/46140295/Pembimbing: Budi Wasito.*

Wijit, S., & Chaisongkram, S. (2023). The Future of Hospitality: Leveraging Robotics for Enhanced Customer Service. *International Conference On Digital Advanced Tourism Management And Technology*, *1*(2), 820–824.

Winata, I. G. P. H. W., & Dewi, N. W. Y. (2024). Pengaruh Sistem Informasi Akuntansi Manajemen dan Pemanfaatan Teknologi Informasi terhadap Kinerja Manajerial: Studi Empiris pada Hotel Se-Kabupaten Buleleng. *Vokasi: Jurnal Riset Akuntansi*, *13*(1), 93–103.

Yanti, D. (2019). Pemanfaatan Digital Marketing dalam Industri Perhotelan di Kota Medan. *Jurnal Ilmiah Akomodasi Agung*, *6*(2), 42–53.