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ROOM RESERVATION INTEGRATION DESIGN TO SIMPLIFIES LEARNING PROCESS IN UNIVERSITY

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Abstract

This research highlights the challenges that developing countries face managing room reservations within institutions. Nigeria and the Philippines lack transparency and real-time information, leading to confusion and inefficiency. Pakistan, the absence of an online system hinders access and raises data security concerns. Indonesia, the manual reservation process wastes time and creates uncertainty. The purpose of this research emphasizes the need for an online room reservation system to address issues such as transparency, real-time information, and efficiency. This research explores and Enterprise Resource Planning (ERP) system as a potential solution. Odoo Quickstart methodology was used to design and implement this solution. The Quickstart was chosen due to its affordability, flexibility and ease of modification. Odoo was chosen for its flexibility and configurability, allowing it to be customized and combined to meet the needs. The rental module in Odoo supports room reservation requirements by providing reservation form, schedule, delivery, and return functions in a single interface. Overall, the results of this study advocate for implementing an online room reservation system to improve the reservation process within educational institutions in developing countries.

Keywords: Odoo, room reservation, enterprise resource planning, rental module.

Introduction

Establishing criteria for the room reservation system must be a decision guided by the specific needs of each user. In line with forward-thinking trends, the room reservation system should be available online and easy to navigate in its approach to the digital platform, as workflows and systems will evolve with the emergence of new technologies (Atkinson & Lee, 2018). An online room reservation system should support maximum and minimum borrowing periods, enable the use of unique student IDs and passwords, send reservation reminder emails, and allow users to cancel reservations. (Withers, n.d.) The valuable and limited time of staff necessitates collaboration, which can be facilitated by an automated room reservation system that enforces policies and procedures (Atkinson & Lee, 2018).

The following table illustrates the room reservation issues faced by developing countries.

Table 1. Issue

No	Country	Issue
1	Nigeria (Shettima et al., 2018).	Users are finding it difficult to track their reservation status and receive updates on availability. The lack of transparency is causing confusion.
2	Philippines	The room reservation process is still manual, making it inefficient. The

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No	Country	Issue
	(Avenido & de Gracia, 2020).	current reservation system does not provide real-time information on reservation availability and lacks robust features to prevent double bookings.
3	Pakistan (Nawaz et al., 2023).	The lack of an online system to check room availability and book additional classes, such as makeup classes, conferences, and meetings, is a major drawback. Data security for students, staff, and the institution is paramount.
4	Indonesia (Kantami et al., 2019).	When making a reservation, student or other still need to inquire about the schedule directly at the campus and visit the room providers. This causes students or other parties who want to reserve a room to waste a lot of time and creates uncertainty about whether the room is available.

The research found that the issues in the table from different countries further highlight the importance of room reservation systems. Nigeria and the Philippines lack transparency and real-time information, which leads to confusion and inefficiency. Pakistan, the absence of an online system hinders access and creates data security concerns. Indonesia, manual reservation processes waste time and create uncertainty. By addressing these issues, a room reservation system can create a more efficient, transparent, and user-friendly experience involved in reserving a room within an institution.

One potential solution to these issues lies in Enterprise Resource Planning (ERP) systems. Enterprise Resource Planning (ERP) is a cross-functional enterprise system driven by a suite of modules that support a company's internal business processes. For example, ERP software for manufacturing company will process data related to sales, inventory, shipping, invoices, and forecasting raw material and resource requirements. Therefore, ERP serves as a cross-functional business process and as a flow information between suppliers and customers (Brien & Marakas, 2007). Erp systems are a suite of applications used to manage an organizations operations, encompassing a wide range of functions from accounting to customer support (Magnusson, 2016). The implementation of an ERP system can optimize a company operations and minimize ineffective operational costs, such as losses due to technical errors (Mahendra yana et al., 2022). Odoo is integrated workflow system enhances data processing efficiency by seamlessly connecting various business processes. This interconnected data streamlines procedures and facilitates informed decision making (Ramadhani et al., 2019). A key factor in the success of ERP is focusing on business processes and requirements. While there are various economic implication for businesses, including costs and time (Pajk & Kovačič, 2013).

Software solution this approach is Odoo. Odoo software is a web-based application that uses python, XML, and JavaScript programming languages. Anyone can set up and combine it to meet their needs (Suminten, 2019). Odoo is a full suite of user-friendly tools designed to satisfy company requirements. Because of Odoo is flexibility, applications may be added in accordance with the company growth (Odoo, 2016).

The Odoo system is equipped with modules and supported by communities (Lie et al., 2023). Odoo is highly rated open-source ERP software designed specifically for managing room reservations. It stands out due to its multitude of features tailored to room reservations needs (Novita, 2023).

The rental module demonstrates Odoo is flexibility in business needs. This module is intended to handle rental and leasing businesses, including those that rent out furniture, cars, equipment, real estate, and other items. Information about rental businesses including booking forms, schedules, deliveries, returns, and the ability to create rental invoices, is all included in the Odoo rental module. A real-time overview of all rented goods is also provided by the rental module (Odoo, 2016).

Previous research has discussed the automatic calculation of travel fares for tours and travel, complete with detailed breakdowns of component according to the services ordered by customers using the rental module in Odoo (Wahyu, 2023). This is sufficient as a reference for the author in recording reservation room, complete reservation document, so the author is confident that this study can be a reference for room reservation compared to manual recording.

QuickStart is a methodology designed for software implementation. There are four phases. Phase one, kick-off call. This phase involves planning and preparation to initiate the project. Phase two, analysis. This phase involves documenting the business needs analysis. This phase involves configuring the software according to the business process requirements identified in the analysis phase. Phase four Production. This phases involves deploying the software and providing training to users (Kemal et al., 2022).

The learning objectives is to understand the importance of room reservation system, and how these systems can solve problems in developing countries, especially needs-based design. By designing using odoo, the rental module can be modified to meet the needs of room reservations.

Research Methods

Methodology Description

The design for room reservation integration takes a user-centered approach to understand user needs and preferences. This method from recent research in the field of informatic and control for identifying user need requirements. The proposed methodology involves three main phases for gathering user requirements (Băjenaru et al., 2020).

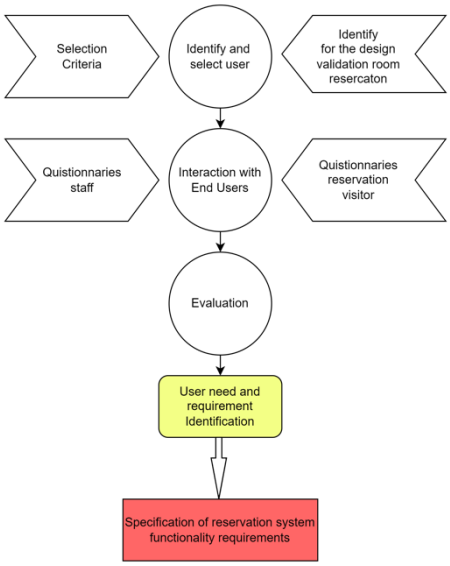

Figure 1. Methodology for identifying user need requirements
Source: (Băjenaru et al., 2020)

1) *Identify and select users*: The first phase aims to identify and select user for the design validation of the room reservation system.
2) *Interact with end-users*: This phase involves interacting with end-users through two distinct questionnaires developed for the two user categories staff and room reservation visitors.
3) *Evaluation phase*: The evaluation phase, translated into final design requirement for room integration and architecture development.

User need

1) *User need in research object*
   a) *The target users:* The room reservation integration project adopts a user-centered approach to gather insights into user needs and preferences. The target user groups encompass two primary categories. The first category includes room reservation heads and staff; these individuals oversee the room reservation process, manage reservations, and guest information, and ensure seamless pick-up and return procedures. The second category includes room reservation guests; these individuals initiate the room reservation process, experience the reservation and pick-up/return procedures, and evaluate the overall room reservation experience.
   b) *User need*: To ensure better data management and analysis, it is necessary to have a comprehensive and organized system for recording and storing reservation transactions. The current system lacks organization and completeness, which makes it difficult to summarize reservations. Therefore, a more efficient and accessible system is required that can handle a large volume of reservation data efficiently, since moving away from paper-based records and manual data entry into Excel is crucial. Finally, to facilitate improved data analysis and decision-making, users need a system that allows for easy generation of summaries and reports based on reservations.
2) *User need in developing countries*

The following table illustrates user need in developing countries.

Table 2. User need in developing countries

No	Country	Category	User need
1	Nigeria (Shettima et al., 2018).	Information access and transparency	Users need a system that allows them to easily check the status of their reservation and access updates on room availability in real time. User students require updates to the information web page and room availability page. Campus administrators are required to access the user-detail administration web page and change account details.
2	Philippines (Avenido & de Gracia, 2020).	Efficiency and error prevention	Users need a system that displays a calendar to avoid reservations that conflict with existing reservations. Users desire the ability to easily track the status of their reservation request.
3	Pakistan (Nawaz et al., 2023).	Online access	Users need access to an electronic with online resources and functionalities, users desire a system for submitting forms or other materials electronically.

No	Country	Category	User need
4	Indonesia (Kantami et al., 2019).	Online reservation management	Users require a user-friendly and comprehensive reservation management system that enables them to easily create, modify, and cancel reservations, search for rooms, and interact with the system.

The need for improved data management at private university in Bandung reflects a common challenge faced by institutions in developing countries. Examining user needs from these countries (Nigeria, Philippines, Pakistan, and Indonesia) can provide valuable insights for system development. While private university in Bandung struggles with data management, a closer look at user needs in developing countries table II reveals additional functionalities desired in the reservation system.

Systematic Problem Solving

The problem-solving systematics show in Figure 2 using the QuickStart method.

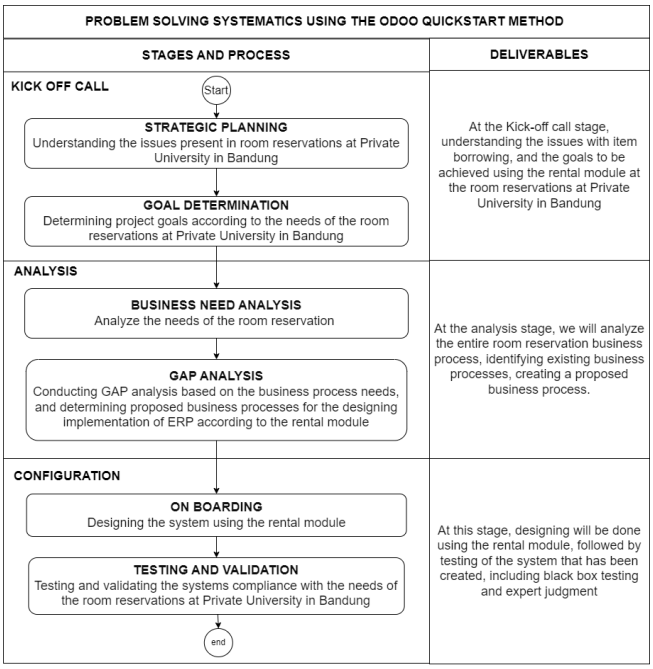

Figure. 2. Systematic Problem Solving

It starts with strategic planning, which involves understanding the problems faced by the private university in Bandung. This is followed by goal determination to set project goals according to the needs of the private university in Bandung. The analysis stage begins with analysing the needs based on the planning business process and the Odoo business process for room reservation. This is followed by a fit/gap analysis, which serves as a reference for the proposed business process. The configuration stage begins with the onboarding stage for configuring the rental module. Finally, testing and validation are conducted to test and validate the systems configuration based on the university needs.

Data Collection

The table below describes the data collection process conducted by the author in this research:

Table 3. Source Information

Source Information	
Source Information	The research informant in this research was the Head of Laboratory Affairs, private university in Bandung
Place and time research	The research was conducted at Jl. Telekomunikasi No.1, Sukapura, Dayeuhkolot District, Bandung Regency, West Java, Indonesia.

The primary data and secondary data are shown in Table IV. The primary data collection technique used is structured interviews. The table below describes the data collection table based on data type, data collection technique, data source, and data obtained.

Table 4. Data Collection

Data Type	Data Collection Technique	Data Source	Data Obtained
Primary Data	Interviews	The interview subjects in this research were head of laboratory affairs, laboratory staff, room borrowing visitors.	The author obtained information on how the problems occurred and collected data on room borrowing. The results of the interviews were recorded and can then be used as material for processing and analyzing the business process.
	Documentation	In this research, the interview subjects are the laboratory head, members, and room borrowing visitors.	The documentation method is used to collect documents, regulations, and diaries, photos. Documentation can provide a picture for researchers to know what has happened.
Secondary Data	Research literacy	Previous research	Journal "Implementation of Customer Relationship Management Information System for Futsal Fields Using Odoo Application". The author obtained in the research can be a references (Purwanto et al., 2022).

Structured interviews are interviews that have standard components, with the same questions for all respondents. Structured interviews provide a clear and consistent process that can be documented (Niranjanl, n.d.). For secondary data, the data collection technique used is a literature review using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) method. PRISMA is a guide used to assess the quality of systematic reviews. PRISMA can help authors write a high-quality systematic review (PRISMA, n.d.).

Result and Discussion

Strategic Planning

The shown Table V provides data about strategic planning. Currently, private university in Bandung lack a structured room reservation system. The need for streamlined room reservation process, along with a well-designed odoo system that can

accurately record reservation transaction and generate clear reservation report data. To accomplish these objectives, the author suggests a suitable quickstart approach starting with strategic planning.

Table 5. Strategic Planning

Environmental Research	Development	Basic Knowledge
The lack of one-stop solution system, such as a system for recording reservation rooms, in addition recordkeeping is not well-organized	Room Reservation Design to Simplifies Learning Process in University	Enterprise Resource Planning
		Odoo Rental Module
		Figma
		Literature review

Business Need Analysis

Based on the existing business processes in a private university in Bandung. There are several activities such as:

1) *Customer:* Figure 3 illustrates the process for reserving a room. The process begins when a customer applies for a reservation. The university staff then checks the room availability. If the room is available the customer can fill out the reservation form. However, if the room is not available, the process ends.
2) *Staff University and Head of Affairs Private University:* Figure 3 illustrates the process, once the customers have completed the form will submit it to the university staff. The university staff will then forward the form to the head of laboratory affairs at the private university. If the form is approved, the staff will record the room reservation and the process by handing over the keys.

The fragility of the current process was still needed to inquire about the schedule directly at private university and visit the room providers. This causes who want to reserve a room to waste a lot of time and creates uncertainty about whether the room is available.

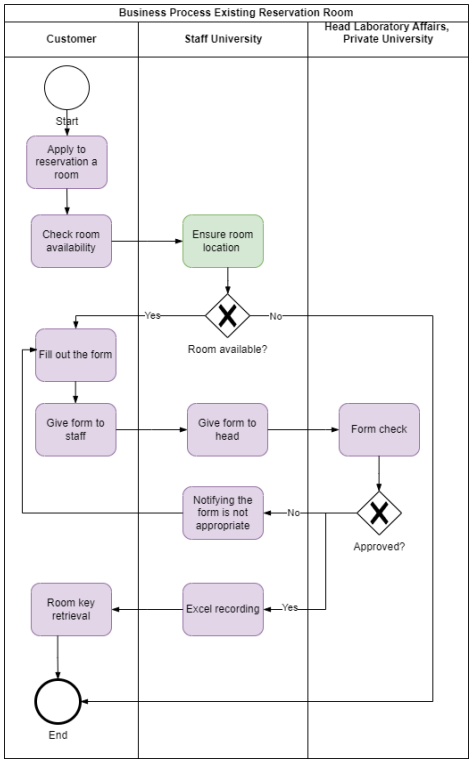

Figure 3. Business Process Existing Reservation Room

Fit GAP Analysis

Table 6 presents comparison is necessary to examine the differences between the existing and proposed business processes.

Table 6. FIT Gap Analysis

Business Process Existing	Business Process Proposed	Requirement	Fulfillment			Solutions
			N	P	F	
Customer, Staff University and Head of Affairs Private University	Reservation Module	A system can record customer names and reservation process.		✓		The system facilitates the process, starting with the create of a quotation, order document, and room pickup.
	Inventory Module	A system can manage rooms, record locations, serial numbers, and availability		✓		The system assists in checking availability and managing the locations within each room.

1) *Reservation Module :* The flowchart shown in figure 4 begins with checking room availability. If a room is available, create a darft quotation to be submitted to the head of laboratory affairs. Upon approval confirm the quotation and create an order document. Validate the order document based on available rooms. If validation is successful, verify the "source location" of the room. Proceed with room pickup.
2) *Inventory Module :* The flowchart shown in figure 4 by ensuring that the recorded rooms are available, have been recorded by location, and have been assigned serial numbers.

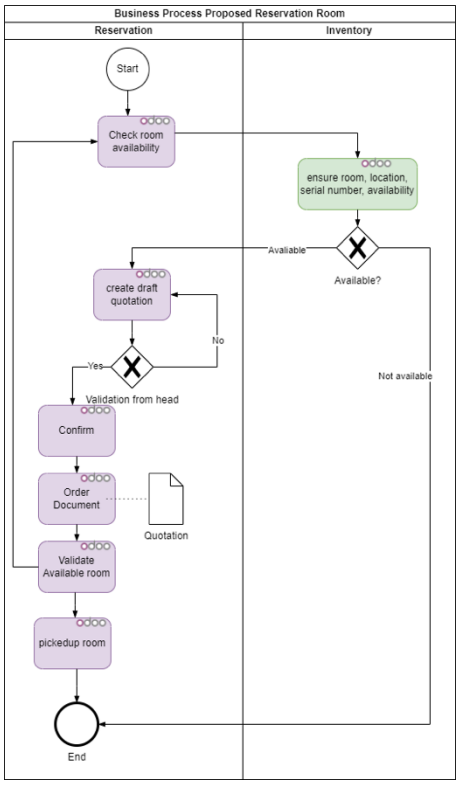

Figure 4. Business Process Proposed Reservation Room

On Boarding

The author is developing an application that enables laboratories to access university services more easily by utilizing a room reservation integration design.

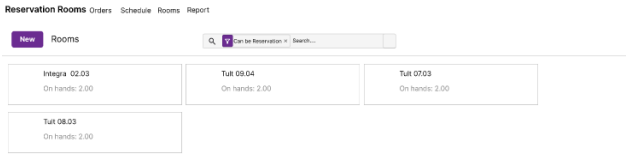

Figure 5. Create a new room

Figure 5 show records a room, where user can make recordings according to the rooms used for practical purposes. Here, one can press the "new" button if they want to create a new room.

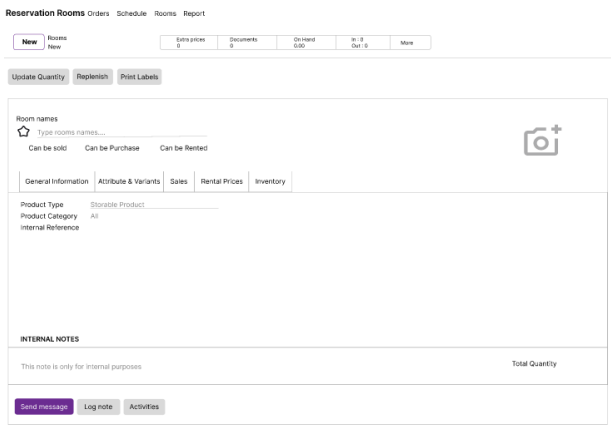

Figure 6. Fill in room detail

Figure 6 show when the users pressing the "new" button, it will direct you to the room page. On this page, you can write down the room name. Then, check the "can be rented" box. Next, fill in the general information, such as product type, where the room is categorized as a storable product. Users can fill in other necessary details like room pictures under the "camera" icon.

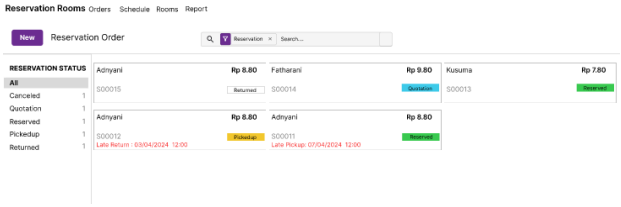

Figure 7. Record reservation order

Figure 7 show record reservation order page, users can click the "new" button to record reservations order. It is noted in the sorting section "reservation," meaning the columns that appear are recorded reservations order.

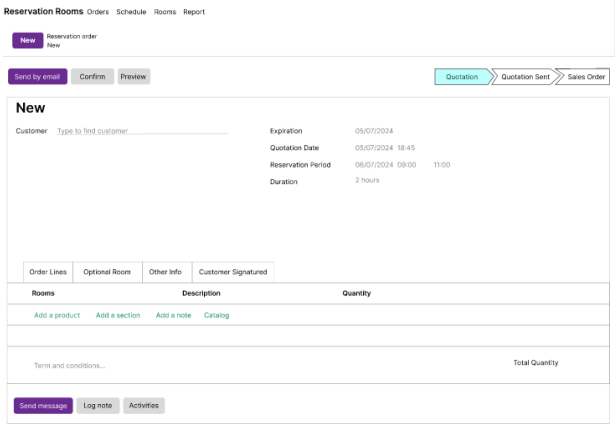

Figure 8. Quotation

Figure 8 show by creating a quotation, this will help you to understand the reservation options available before making a deal. Therefore, it is important to fill in the customer section, then the borrow period, then the duration will be automatically calculated. Then fill in the order lines tab section by entering the room name. By filling in this page, we will create a quotation for the customer. The system can also record the name of the customers involved in reservation rooms. Then it will be sent by clicking the "Send by email" button.

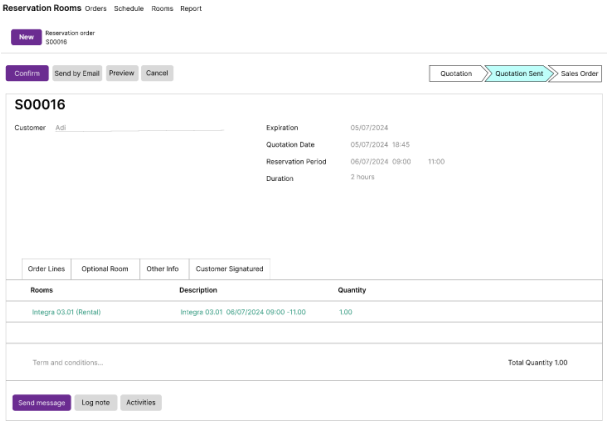

Figure 9. Quotation sent

Figure 9 show quotation sent, when the user clicks the "Send by email" button, it is ensured beforehand that the customer and their email name are specified. Then on the page below, the user can click "Confirm" to approve.

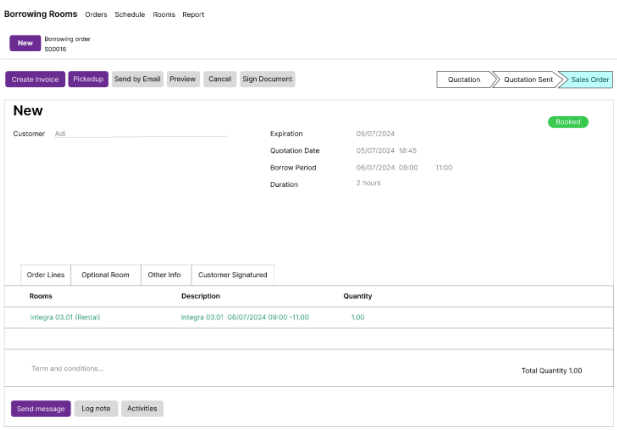

Figure 10. Order Document

Figure 10 show the user has reached the sales order stage. Based on the previous confirmation, this room reservation has already been "booked." When they want to pick up the room key, the user can click "pickedup".

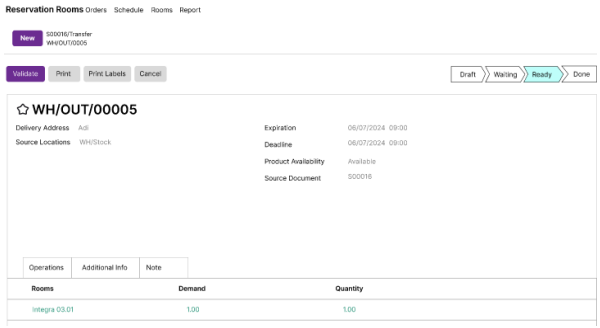

Figure 11. Available product

Figure 11 show the users will be informed that the product will be dispatched, as explained in WH/OUT/00005, and the available product is "Available." Then, users can click the "Validate" button.

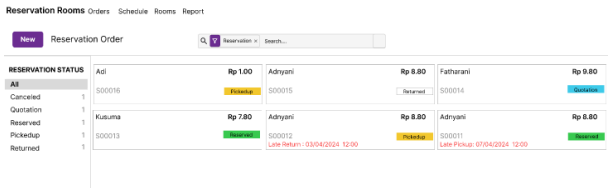

Figure 12. Picked-up

Figure 12 show on S00016 with "Picked-up". The status of S00016 has been changed to “Picked-up”. This signified that the room key has been collected by the customer, and the room is now available for use.

Conclusion

This research focuses on the case private university in Bandung but also considers the needs of users in other developing countries such as Nigeria, the Philippines, Pakistan, and Indonesia. An effective online room reservation system is needed to address various existing problems, such as lack of transparency, real-time information, efficiency, and user friendliness. This research is expected to contribute to the

development of a better room reservation system in educational institutions in developing countries.

BIBLIOGRAPHY

Atkinson, S., & Lee, K. (2018). Design and implementation of a study room reservation system: Lessons from a pilot program using google calendar. *College and Research Libraries*, *79*(7), 916–930. https://doi.org/10.5860/crl.79.7.916

Avenido, M. V. M. A., & de Gracia, R. D. D. (2020). Online Reservation System for The Use of University Facilities for The OVPSA. *Jurnal Ilmu Pendidikan*, *7*(2), 809–820.

Băjenaru, L., Marinescu, I. A., Dobre, C., Drăghici, R., Herghelegiu, A. M., & Rusu, A. (2020). Identifying the Needs of Older People for Personalized Assistive Solutions in Romanian Healthcare System. *Studies in Informatics and Control*, *29*(3), 363–372. https://doi.org/10.24846/V29I3Y202009

Brien, J. A. O., & Marakas, G. M. (2007). *Management Information System* (Tenth Edit).

Kantami, M. F., Fauziah, & Nathasia, N. D. (2019). *Room Loan Information System At Website-Based National University*. *3*(2), 10–19. http://iocscience.org/ejournal/index.php/mantik/article/view/882/595

Kemal, A., Yanuar, A., Yunan, U., & Septo, K. (2022). *Designing and ERP System : A Sustainability Approach*. *6*(August), 498–505.

Lie, K., Melvin, M., Owen, O., Halim, R. S., & Franciska, S. (2023). Sistem ERP Berbasis Odoo Dalam Upaya Meningkatkan Kinerja Manajemen Rantai Pasok Pada PT. Sat Nusapersada Tbk. *Widya Balina*, *8*(1), 598–603. https://doi.org/10.53958/wb.v8i1.237

Magnusson, A. (2016). *A Framework for Selecting an ERP Open Source System: A Case Study*.

Mahendra yana, A. A. G., Arya Sasmita, G. M., & Hary Susila, A. A. N. (2022). Penerapan Enterprise Resource Planning (ERP) Menggunakan Odoo 14 (Studi Kasus: Usaha Garmen Pada Club Ink Bali). *JITTER : Jurnal Ilmiah Teknologi Dan Komputer*, *3*(3), 1290. https://doi.org/10.24843/jtrti.2022.v03.i03.p04

Nawaz, M. A., Ghani, U., Nazar, T., Zeeshan, S., Shah, H., & Ashraf, Z. (2023). *Institutional Information Management and Automation System*. *23*(8).

Niranjanl, D. R. K. (n.d.). *Structured Interviews*. https://typeset.io/papers/structured-interviews-1jvsxzuy

Novita, A. (2023). Implementasi Enterprise Resource Planning (ERP) Berbasis Odoo pada Modul Inventory. *Qualitative Research of Bussiness and Social Sciences*, *1*(1), 30–40. https://journal.upy.ac.id/index.php/qrobss https://doi.org/10.31316/crobss. .v1i1.5570

Odoo. (2016). *Odoo*. Web Made with Odoo.

Pajk, D., & Kovačič, A. (2013). Fit Gap Analysis – The Role of Business Process Reference Models. *Economic and Business Review*, *15*(4). https://doi.org/10.15458/2335-4216.1192

PRISMA. (n.d.). *PRISMA*. Retrieved May 11, 2024, from https://guides.lib.unc.edu/systematic-reviews/write#:~:text=The Preferred Reporting Items for,results%2C discussion%2C and funding.

Purwanto, H., Asmara, M. A., Nugraha, R. W., Shiddieq, D. F., & Shidiq, A. P. (2022). Implementasi Customer Relationship Management Sistem Informasi Lapangan Futsal Menggunakan Aplikasi Odoo. *Jutisi: Jurnal Ilmiah Teknik Informatika Dan Sistem Informasi*, *11*(3), 929–940. http://ojs.stmik-banjarbaru.ac.id/index.php/jutisi/article/view/1205

Ramadhani, A., Tri, Y., & Azizah, F. (2019). Penerapan Enterprise Resource Planning pada Perusahaan. *Mbic*, 279–291.

Shettima, M., Jato, A. S., Mohammed, A., & Umar Tijjani Ali, I. M. (2018). Design And Implementation Of An Online Student Room Availability System. *Proceedings - 2nd International Conference on Data Science and Business Analytics, ICDSBA 2018*, *July 2019*, 259–262. https://doi.org/10.1109/ICDSBA.2018.00054

Suminten. (2019). *Implementasi Enterprise Resource Planning (ERP) Pada Usaha Pithik Sambel Ndesso Berbasis Odoo*. *6*(1).

Wahyu, Y. (2023). *Implementasi Sistem ERP (Enterprise Resource Planning) Untuk Menentukan Tarif Biaya Perjalanan Pada Bisnis Travel*. http://digilib.repository.unusida.ac.id/id/eprint/229/

Withers, R. (n.d.). *Implementing an Open Source Room Reservation System*.