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Mobile-based In-Room Check-in System for Optimizing Check-in Process at The Sultan Hotel & Residence Jakarta

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***Abstract*— Based on observations of the guest check-in process at The Sultan Hotel & Residence Jakarta, it was found that the length of the check-in process causes a queue of guests at the reception. At this time, the check-in process takes more than 4 minutes on average. It often causes quite long queues and creates inconvenience for guests. Therefore, business process improvement is needed to overcome the problem of the length of the check-in process. In this study, it is proposed to improve the check-in process by implementing a mobile-based "In Room Check-in" system. The system developed is the same as the check-in system that runs at the moment, but has the advantage of being accessible via mobile devices such as smartphones or tablets. With these advantages, the check-in process becomes more effective and flexible. The system is also directly connected to the main hotel system. The results of testing the "In Room Check-in" system showed an increase in the speed of the check-in process up to 3 minutes per guest.**

Keywords—hotel management system, mobile-based system, guest check-in, mobile check-in

I. Introduction

The hospitality business competition in Jakarta is getting tougher. It can be seen from the start of new hotel construction in several parts of Jakarta. Each hotel must strive to continuously improve the quality of its services to attract new customers or retain old customers. The Sultan Hotel & Residence is a five-star hotel in Jakarta that has implemented a hotel management system in its business processes and processes. With the support of the hotel system, the hotel management hopes to produce services for customers quickly and accurately.

In the last 12 months, the number of hotel guests has continued to increase. Figure 1 shows the number of hotel guests staying from October 2018 to September 2019. The graph shows that the highest number of guests was in July 2019, which was 972,028 guests. With a total of 1100 rooms, in the last 12 months, the average guest visiting each month was 619,652 guests. With so many hotel guests, hotel management is demanded to provide the best and innovative services.

The Sultan's hotel management always strives to improve the quality of service for all hotel guests. One effort to find out the quality of hotel services is to provide an opportunity for guests to provide complaints or suggestions to the hotel. Figure 2 shows the number of complaints from hotel guests in 2018. Of all the complaint categories, there are two types of complaints with the highest number of complaints, namely the employee skills and the speed of services. In line with the survey, another study by [1] also concluded that hotel employee skills and speed of service are important thinks in the hospitality business.

Fig. 1. The number of hotel guests in the last 12 months.

Fig. 2. The number of guests complaints in 2018.

One important service in the hospitality business is the guest check-in process [2]. The check-in process is done when the first guest arrives in the hotel according to the order that has been made before The current guest check-in process at The Sultan Hotel & Residence is that guests come to the receptionist, show proof of booking, proof of payment and fill in bio data. The process sometimes requires quite a long time, because they have to fill in quite a lot of forms. Based on trials and observations made, by calculating the time needed in the check-in process, it is found that the average check-in process per guest is 4.13 minutes.

This study optimizes the hotel guest check-in process by developing a mobile-based check-in application. Like most hotels, the check-in process is done at the hotel reception. Figure 3 presents the check-in procedures currently in effect at The Sultan Hotel. When guests come to the hotel, the reception staff will ask and confirm whether guests have booked or not. If you have made a reservation, then guests are asked to fill out the registration form by attaching some data

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and proof of identity. Guests are asked to sign as confirmation. If guests have not made a reservation, the hotel staff will check room availability and inform hotel guests.

Fig. 3. Guest check-in process of The Sultan Hotel

This research attempts to solve the problem of the length of the guest check-in process by implementing a mobile-based "In Room Check-in" system. The check-in feature is one of the basic functional requirements of a computerized hotel management system [2]. With the application of mobile technology, the check-in process can be faster, easier, effective, and flexible.

The development of hotel management systems has been done in a lot of research. Akazue developed a hotel information management system that can do multiple reservations [3]. Ping and Dongxiao also developed a WEB-based Online Hotel Reservation System to improve the efficiency of hotel reservations [4]. In addition to implementing the Hotel Management Information System, Vicky Katsoni from the University of West Attica also recommended implementing an e-CRM system to support a variety of hotel services [5]. In Indonesia, the development of hotel management systems was also carried out by many researchers, such as by Purwati and Hasan who developed the guest administration system for the Hotel Ganesha Purworejo [6], Kusuma et al. developed the android-based Hotel Information System [7], and Akbar designed the hotel information system using the extreme programming (XP) method [8].

However, from the many research and development of hotel information systems, no one has specifically tried to improve the guest check-in process. Generally, try to optimize hotel room bookings and administration. In this study, the application developed aims to improve check-in services for hotel guests. Therefore, a mobile-based "In Room Check-in" system was developed for The Sultan Hotel & Residence. The method of analysis and system design in this study uses UML and the prototype software development method.

II. Methodology

In this study, we develop mobile-based in-room check-in systems for optimizing guest check-in process. In carrying out research, a structured research framework is needed so that the research objectives can be adequately achieved. The research framework, as seen in Figure 4, becomes a reference in conducting research.

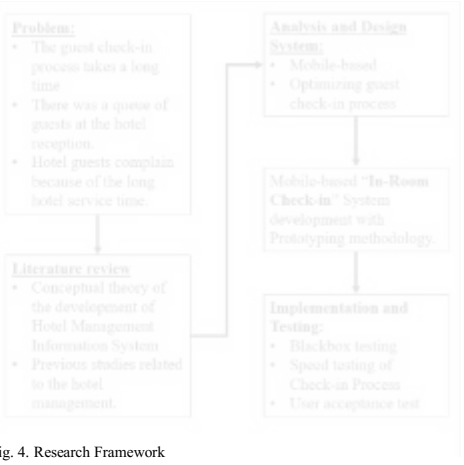

Fig. 4. Research Framework

The research framework begins by identifying the problems of the existing check-in process, which are then used as the basis for preparing the problem formulation and research objectives. The method used in identifying problems is interviews and observations directly in the research subjects. Furthermore, a literature study was conducted to find state of the art from related research. Based on the results of library studies and functional requirements analysis, a mobile-based application is designed by applying UML modelling.

In this study, we also carry out a series of tests to measure the quality of research. First of all, testing of "in-room check-in" application to determine the quality of the software in functionality. Testing functionality is done using the Blackbox method. Next, we tested the speed of the guest check-in process to see if mobile-based check-in was better than the previous system. Testing is done by applying the application and recording the check-in time for each guest. Finally, we also do perceptional testing with questionnaire instruments. The test involved several respondents randomly selected from hotel guests.

III. Result and Discussion

A. Mobile-based In-Room Check-in Application

The main objective of this research is to optimize the hotel guest check-in process by developing a mobile-based guest check-in application. At present, The Sultan hotel has a hotel management system that can be accessed on the local hotel network. The check-in process also utilizes an information system, but accessibility is still limited at the reception desk. This research has developed a mobile-based system to speed up the process of guest check-in and provide comfort for hotel guests. The developed system is connected to the hotel management system that has been applied before. The proposed in-room check-in application connectivity utilizes the hotel's wireless network. Figure 5 presents the system architecture of the proposed in-room check-in system.

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Fig. 5. The system architecture of the In-Room Check-in application

(a) (b)

Fig. 6. The example display of mobile-based in-room check-in application, (a) login form, and (b) hotel guest search feature.

Figure 6 presents an example display of the in-room check-in application. To be able to access the application, the user must first connect to the hotel's wireless network. Users can log into the system through mobile devices such as smartphones or tablets. This system is more flexible because users can check-in anywhere as long as they are connected to the hotel network. Users can see a list of guests who have already booked a room. Users can also search guests through the system by entering their name or another identity.

Meanwhile, Figure 7 presents the guest check-in process through the mobile application. Users must confirm guest data. Users can also complete and correct guest data that is not appropriate, directly in the application. If all data is correct, the user can confirm the guest check-in process by clicking the "Check-in" button. After the user confirms the check-in process, guests are required to sign directly on their tablet or smartphone. The signature is proof of guest agreement with the terms and conditions of the hotel. To ensure that the guest's identity is correct, users capture guest identity cards such as KTP, passport, or driving license.

(a) (b)

Fig. 7. Check-in process via a mobile-based application, (a) guest data confirmation, and (b) guest signature on the mobile application.

B. Speed Testing of Check-in Process with the Proposed System

To find out the speed of the guest Check-in process using the "In-Room Check-in" application that has been developed, a quotation test was conducted on December 9-14th, 2018, on 100 hotel guests. The Frontdesk Agent handling the check-in process, and other officers record the time of the check-in process. This is so that the length of the check-in process is more accurate.

TABLE I. THE COMPARISON OF THE CHECK-IN PROCESS TIME

Check-in Process	With Existing System (s)	With Proposed In-Room Check-in (s)
Max5.0	3.5	
Min	4.0	3.0
Average	4.13	3.09

See Table 1 for the comparison of the check-in process with existing system and with the proposed system. Based on the results of recording the speed of the check-in process using the proposed system, an average check-in process of 3.09 minutes was generated. Thus an increase in the speed of the check-in process from the original 4.13 minutes to 3.09 minutes per guest.

C. User Acceptance Test and Guest Satisfaction Test

In this study, perceptional testing of the proposed system is carried out with two scenarios. First, testing the system acceptance. The respondents involved in the first test were ten application users. The test was carried out with a questionnaire instrument consisting of 8 questions. The test results show that the level of user acceptance of the system is 88.75%. Thus it can be concluded that the system can be well received and ready to be applied at The Sultan Hotel.

The second test was conducted to determine the level of guest satisfaction with in-room check-in services. Testing is done using a questionnaire. The instrument consists of 10 questions with 1-5 Likert scale (1=Very Unsatisfied, 5=Very Satisfied). The test was carried out on 100 respondents chosen randomly from hotel guests.

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Fig. 8. The testing instrument of the guest satisfaction level with in-room check-in services.

TABLE II. TEST RESULTS OF GUEST SATISFACTION LEVEL FOR IN-ROOM CHECK-IN SERVICES.

Aspects	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very Satisfied
Reception staff courtesy	0	0	3	7	80
Handling Check-in process	0	0	0	30	60
Speed of check-in process	0	0	1	3	86
Length of Queueing	0	0	0	10	80
Informing new check-in system	0	0	5	20	65
Mobile check-in system	0	0	2	11	78
Helpfull	0	0	4	25	61
Acceptable with new check-in system	0	0	4	16	70
Enjoy with new check-in system	0	0	0	10	80
Applied soon the system new check-in	0	0	2	6	82
Total	**0**	**0**	**21**	**138**	**742**

Table 2 shows the test result of the guest satisfaction level for new check-in system. Based on the test results, it can be concluded that 82.44% of respondents claimed to be very satisfied with the implementation of the new check-in system. Also, in the aspect of the speed of the check-in process, as many as 95.56% of respondents were very satisfied. This proves that the application of "in-room check-in" can optimize the speed of the check-in process at The Sultan Hotel.

The testing instrument also provides an opportunity for respondents to provide comments on the implementation of the in-room check-in system. One businessman from Semarang who became a respondent commented: "The check-in process was very pleasant, without having to queue in front of the receptionist, but directly in the room. The process speed test was okay. I just had a comfortable check-in process. With In-room check-in, Sultan hotel services are getting better."

IV. CONCLUSION

First of all, the results of testing the Mobile-based In-Room Check-in system showed an increase in the speed of the check-in process up to 3 minutes per guest. The test also shows that the level of user acceptance of the system is 88.75%. Next, based on guest satisfaction testing, can be concluded that 82.44% of respondents claimed to be very satisfied with the implementation of the new check-in system. Finally, the Mobile-based In-Room Check-in system is ready to implement and improve the quality services of The Sultan Hotel.

One of the disadvantages of in-room check-in is that it still requires the role of hotel staff to help guests check-in. Therefore, in subsequent studies, an in-room check-in system can be developed so that it can be accessed independently by hotel guests. However, data security issues must also be considered. We recommend implementing an encrypted web service, as proposed in [9], so that data security is more guaranteed.

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