Information system application for hotel department integration:
A case study of Melia Purosani Hotel Yogyakarta

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Abstract: *Tourism industry is a large field including hotel business. Hotel business is classified by its stars from non-star hotel to five-star hotel that has their own regulation to grow their own business. Hotel is divided by a lot of departments such as front office, food and beverage, housekeeping, accounting, sales and marketing, human resources, kitchen, and engineering. To integrate each department, the business needs information system to build connection one and another department. According to case study in Melia Purosani Hotel Yogyakarta, the business is using application and form business intelligence. Melia Purosani Hotel Yogyakarta is one of five-star international chain hotel in Yogyakarta that use system named Oracle Hospitality: Opera which is integrating one and another department. Opera creates convenience and ease the teamwork of each department, therefore the hotel could make guest satisfaction. Business performance management, data governance, business intelligence program, data architecture, data warehouse and lacking, also data integration is provided by Opera, therefore Melia Purosani Hotel Yogyakarta is belong to business intelligence. Business intelligence is required for big and professional business. Hence, a lot of data is protected and integrated one another.*

Keywords: Information system; Business intelligence, Hotel department integration; Melia Purosani.

1. Introduction

Development of tourism in Indonesia is growing up either in regional or national. This condition is directly proportional with the fact that tourism is one of industry sector that generate the largest foreign exchange in Indonesia. According to (Zahrulianingdyah, 2018) Indonesia economy is really possible shifting to service sector like tourism and creative industry. This is also supported by Indonesia natural resources, cultural diversity, and hospitality of society. There are a lot of tourism attraction development to make it domestic or international destination. To fulfill tourist needs, tourism cannot far away with attraction, amenity, and accessibility. According to UU No. 10 Year 2009, attraction is everything that has uniqueness, beauty, and value such as variety of nature beauty, diversity of culture, and human-made for being tourism destination. Accessibility according to Sammeng in (Rossadi & Widayati, 2018) is tools that can give convenience during the trip. Accessibility could be information access, road condition, and parking area access. Furthermore, amenity all of facilities that support tourist to fulfill their needs while around the tourism destination.

Amenity could be restaurant, toilet, worship place, and accommodation. Accommodation is a business that related in hospitality industry. The type of accommodation is various such as villa, guest house, cottage, hostel, lodge, apartment, and hotel. Hotel is one of accommodation that really popular on tourist quest. Hotel business is one of business that generate a lot of revenue and have good future prospects, therefore a lot of hotel business in Indonesia that has various type such as city hotel, resort hotel, motel, residential hotel, downtown hotel, and star-hotel. According to its star, classification of hotel can divided by one-star hotel, two-star hotel, three-star hotel, four-star hotel, and five-star hotel.

Yogyakarta as the region that get a major revenue from tourism industry is certainly having a lot of hotel industry. Hotel in Yogyakarta also classified by its star and has its function. Several hotel is designed to fulfill MICE (Meeting, Incentive, Convention, and Exhibition) needs that has a lot of meeting room. Another one is designed for family trip that has pool, playground, and convenience room for family. According to data from http://bappeda.jogjaprov.go.id/ the number of hotel in Yogyakarta is about 1.833 units (update from government tourism office) that divided by 11 units five-star hotel, 45 units four-star hotel, 69 units three-star hotel, 30 units two-star hotel, 17 units one-star hotel, and 1.661 units non-star hotel. The amount of sold hotel rooms year by year is explained in figure 1 below that tends to fluctuate. In 2018 and 2019 the amount of room hotel that has been sold is 4.653.404 rooms, due to pandemic in 2020 the sale reduce to 2.495.148 rooms sold, and 2021 is about 4.228.518 rooms sold. In the beginning of 2022, there is about 445.151 rooms sold before peak season of Eid-Mubarak.
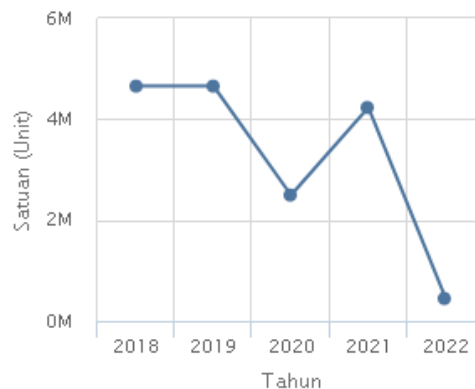

Figure 1. Graphics of Sold Hotel Rooms
Source: http://bappeda.jogjaprov.go.id

Discuss about hotel classification, Yogyakarta has its first five-star hotel from the beginning of hospitality industry. That five-star hotel is Melia Purosani Hotel. It is located in the middle of city, near the main tourism attraction of Yogyakarta, Malioboro. This hotel offers blue lagoon and botanical garden concept to give relaxation even though located in the middle of Yogyakarta. It is classified as five-star hotel due to fulfill the criteria. Melia Purosani Hotel has 280 rooms that divided by 202 deluxe rooms, 34 premium rooms, 34 The Level rooms, 5 junior suites, 4 executive suites, and 1 presidential room. Managing five-star hotel needs one and another department team-work to make guest satisfaction. The

department of Melia Purosani Hotel is divided by a lot of departments such as front office, sales and marketing, food and beverages service, food and beverage product, YHI Wellness, housekeeping, human resource, etc.

Professionalism of five-star hotel is supported by their professional staffs and system. Integrating one and another department to work together and decrease miss-communication and mistake, however increase solidarity and quality of work needs professionalism system. It is related with information system and business intelligence which make integration. Professionalism hotel like Melia Purosani Hotel is using OPERA: Oracle Hospitality, a system to integrate information between one and another department. It makes work is easier and more convenience with technology for the staff, also when it is integrated, it will make clear and one sound information that make guest satisfaction.

2. Literature Review

2.1. Information System for Tourism Business Intelligence

Tourism and hospitality business in industry 4.0 has been improve following the globalization period. Business is changing significantly with the application of information technology. According to (Kahtri, 2019) using information technology is inevitable for matching the competitive environment and catching the changing disruption. Information system has its benefit for tourism business such as manage hotel better than with conventional method, easy to access and use, more arranged, have big data and information, make convenience for its user due to technology advancement, etc. Case study about online based hotel information system well said that information system can be used to report and analyze the effectiveness of internal operation such as registration, guest history, reservation, back-office accounting, guest accounting audit, etc. that thereby bringing various benefits like ample amount of memory, advanced functioning among other, and advanced communication (Jackson et al., 2021).

In hotel, information system is used for guest database, information of guest, and integrated one and another department. The information system is useful for n improve the good feeling of consumers to the hotel, improve the stickiness of consumers, and ensure the possibility of long-term development of the hotel (Yu, 2021). Another tourism business such as restaurant is using information system for business management is due to n loading transaction data and transaction reports that have been carried out, so that it can help the cashier to calculate the total transactions made by consumers, and assist in making data on income and expenditure, so they can calculate profit and loss at a restaurant (Kurniawan, 2019). Nowadays, a lot of tourism destination also use information system. For the example study is in Arabia, Almaimoni et al., (2018) designed design and implement an intelligent platform that will help the tourists to get accurate and relevant information about the tourism places such as location, restaurants and events. The proposed work was designed and implemented using the Unified Modeling Language (UML), Microsoft Access 2010 and Visual Studio programming languages. The proposed tourism system will be able to provide accurate and relevant information to the tourists about tourism places at the Kingdom of

Saudi Arabia, and provide the tourists with recommendations for places to visit based on their preferences.

2.2. Hotel Industry

Hotel is one of accommodation that really popular on tourist quest. Hotel business is one of business that generate a lot of revenue and have good future prospects, therefore a lot of hotel business in Indonesia that has various type such as city hotel, resort hotel, motel, residential hotel, downtown hotel, and star-hotel. According to Sufi et al., (2018) based on its star, classification of hotel can divided by:

1) One-star hotel

   One-star hotel is a small hotel that handle directly by its owner. Generally, this hotel is located in busy and crowded place also near from public transportation and entertainment with affordable budget. The criteria of one-star hotel classification is having standard amount of rooms at least 15 rooms with inside bathroom, also wide of the room is about 20 square meters.

2) Two-star hotel

   This type of hotel is usually located in accessible place. The building is presentable, clean, and tidy, also pollution free. Minimum standard of this room is having at least 20 rooms (with minimum standard about 22 square meters), 1 suite room (inside bathroom, having telephone and television as room amenities, having lobby, bar, and sport center).

3) Three-star hotel

   Three-star hotel is usually located in shopping and business center and offer the best service, hospitality, wide room, and lobby with professional hotel staff. This hotel is minimum having 30 rooms (24 square meters), 2 suite rooms (48 square meters), inside bathroom, having recreation and sport center, room is equipped with AC, having restaurant that offer above average of culinary for breakfast, lunch, and dinner, and having valet parking.

4) Four-star Hotel

   Four-star hotel is quite classy hotel with more professional staffs to serve the guest with tourism information around hotel. This hotel usually has quite large building near shopping center, entertainment, and restaurant. The criteria is having standard room at least 50 rooms (24 square meters), 4 suite rooms (48 square meters), lobby (100 square meters), having bar, recreation and sport center, bathroom with water heater, and public toilet.

5) Five-star Hotel

   This type of hotel is the most luxurious with a lot of service facilities. Five-star hotel has its own principle that guest is number one, therefore when guests come, they will be welcomed by staff in front of door, receive welcome drink, and the staff is more professional with a lot of experience and great educational background. The criteria of this type of hotel is having standard room at least 100 rooms (26 square meters), 4 suite rooms (52 square meters), private bathroom, the best quality of bedroom and amenities, having sport center, valet parking, and service room from concierge and waiters.

Hotel usually has department that has many various function for hotel management. According to Manjunantha (2018) hotel department is divided by:

1) Front Office Department

   This department is face of hotel and must has great grooming, attitude, and behavior. Sub-department is front desk, concierge, and door-man.

2) Food and Beverage Service

   F&B service is having responsibility of guest meal. F&B service must has great grooming, attitude, rich of product knowledge, and communication ability.

3) Food and Beverage Production

   Responsible to serve a good quality meal for guest. This department is usually called as kitchen and has several sub-department in kitchen such as main kitchen, butcher, pastry, and EDR (Employee Dining Room) kitchen.

4) House Keeping Department

   This department is responsible to make guest room clean, tidy, fragrance, and convenience for the guest and usually divided this department to three sub-department like public area, room, and VIP room.

5) Sales Marketing Department

   One of back office department which has responsibility to sell rooms, venue, and restaurant. Sales and marketing is like hand of the hotel, they have to get a lot of guest for increase the revenue. In the other hand, they have to make a great-face of company in public. Usually divided this department as sales team, public relation team, reservation team, e-commerce manager, and revenue manager. They have to collaborate with different job-desk and make hotel increase the revenue with promotion and strategy.

6) Accounting Department

   Responsible for hotel financial, hotel expense, guest transfer, staff salary, and everything of money circulation

7) Human Resource Department

   Responsible for hotel staff needs, complaint, convenience, and everything about human resource that work for hotel. This department is also a door for worker who want to be employee in hotel. Human resource department is also care for employee psychology, work load, also salary.
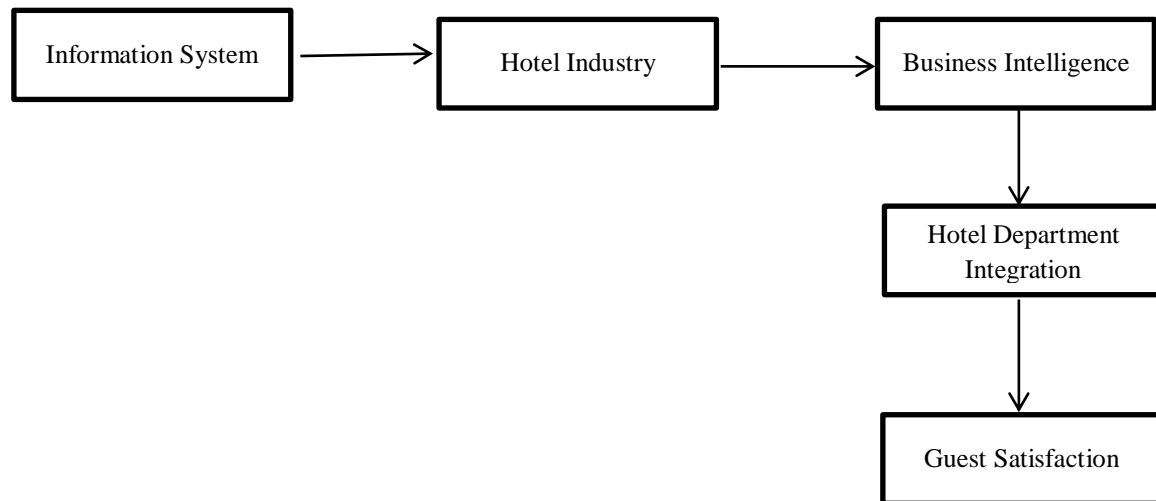
8) Engineering Department

   It has responsibility to take care of machine and tools in hotel. If there is something that need to be repaired such as air conditioner, Wi-Fi, water heater, etc. this department is always ready to help.

9) IT Department

   This department has responsibility to take care of staff's computer and internet connection. IT is also protecting hotel data and must take care about hotel system security.

2.3. Framework

Figure 2. Research Framework

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┌─────────────────────┐      ┌─────────────────┐      ┌─────────────────────┐
│ Information System   │ ───▶ │ Hotel Industry  │ ───▶ │ Business Intelligence│
└─────────────────────┘      └─────────────────┘      └─────────────────────┘
                                                                  │
                                                                  ▼
                                                       ┌─────────────────────┐
                                                       │  Hotel Department    │
                                                       │    Integration       │
                                                       └─────────────────────┘
                                                                  │
                                                                  ▼
                                                       ┌─────────────────────┐
                                                       │  Guest Satisfaction  │
                                                       └─────────────────────┘
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3. Method

The method of this study is using qualitative-descriptive method with the prime data from writer's observation as intern in sales and marketing department in Melia Purosani Hotel for 6 months period from June – December 2021. Second data that support writer is literature review from previous research as a valid knowledge.

4. Result

4.1. OPERA: Oracle Hospitality Application

Oracle Hospitality is a company that brings more than 40 years' experience in providing technology solutions for hospitality industry such as independent hoteliers, global and regional chains, gaming, and cruise lines. Oracle Hospitality provides hardware, software, and service enable customers to act on rich data insights that deliver personalized guest experiences, maximize revenue, and encourage loyalty also royalty. Oracle Hospitality offers flawless operations between operational team and back office which the technology connects event sale, guest rooms, management, and delivering integration that every industry need to create exceptional experiences. This company has more than 40.000 active sites and managing more than 4,8 million hotel rooms which is integrating with 4.000 vendors and having fiscal and legal compliance in 200 countries.

Melia Purosani is one of Oracle Hospitality's customer. Melia Purosani is using Hotel Property Management Software (PMS) with OPERA: Oracle Hospitality application. Each department has their different access that suitable for their job-desk. As sales and marketing department team, the Oracle Hospitality front view is like figure 3 below. At first, staff must fill their username and password to access this software. Due to observation in reservation team, writer is usually access the reservation menu that accessible to make new reservation, change guest reservation, cancel and postponed reservation, update reservation, blocks for group event, check availability room, and view floor plan to view if it is clean or still occupied.

Figure 3. Front View of Oracle Hospitality
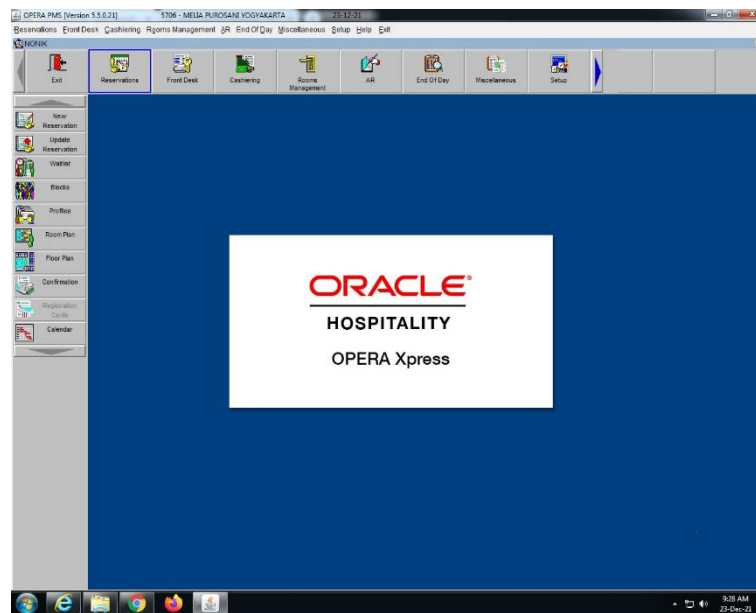
Using Oracle Hospitality is limited by its department. If IT department login their username and password, it will be different from reservation team. IT could access to change policy and limitation of personal user, make a new username and password, determine the expired of username and password, etc. It will be different if front office team open Oracle Hospitality by their username and password, they can check-in the guest, located the guest in their room, update guest payment, etc. Oracle Hospitality is having ability to save guest information and keep being update. It is called data base and every department that relevant could access the guest information as their needs. Personal data guest such as number of credit card is protected by security system. Staff can view a personal data if they need it for working purpose and also having limitation.

4.2. How to Use OPERA: Oracle Hospitality as Integration Application System

Using OPERA: Oracle Hospitality system is different one from another department point of view, however how this software works is almost same from one and another department, what makes different is just a job-desk of each department. This research is using writer point of view as sales marketing department especially in reservation team.

4.2.1. Make Guest Reservation

Making guest reservation is a main job in reservation team. There are several steps to make guest reservation:

1) Login with username and password

As written before, everyone has their username and password which has limitation for the user that adjust from each department. As figure 4 below, writer has been fulfill the name and password to access Oracle Hospitality.

Figure 4. Input Username and Password
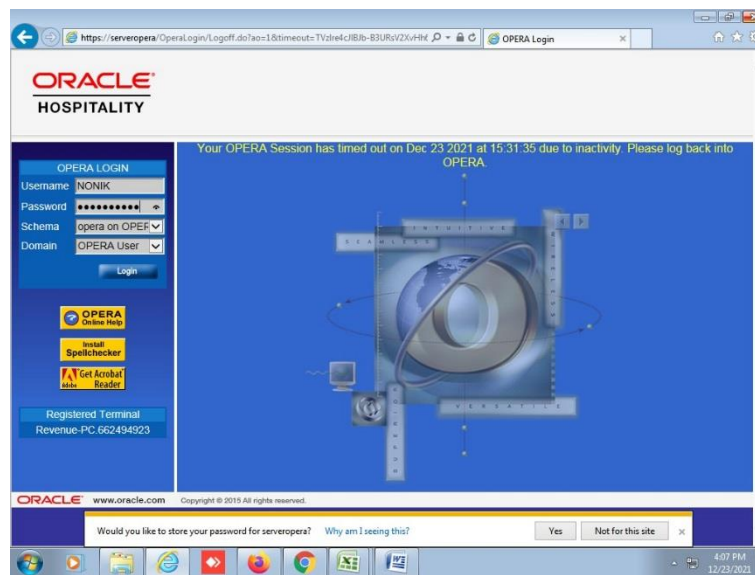
2) Check e-mail inbox for new reservation

Oracle Hospitality is not yet integrated with another system such as Online Travel Agent. To make new reservation either from OTA, conventional travel agent, website, direct booking, or sales booking still use manual mode due to not connected one and another. According to figure 5 below, the email is from Traveloka which is one of online travel agent. The email should be printed as backing-document and that is called correspondence.

Figure 5. Email Booking Confirmation from Traveloka
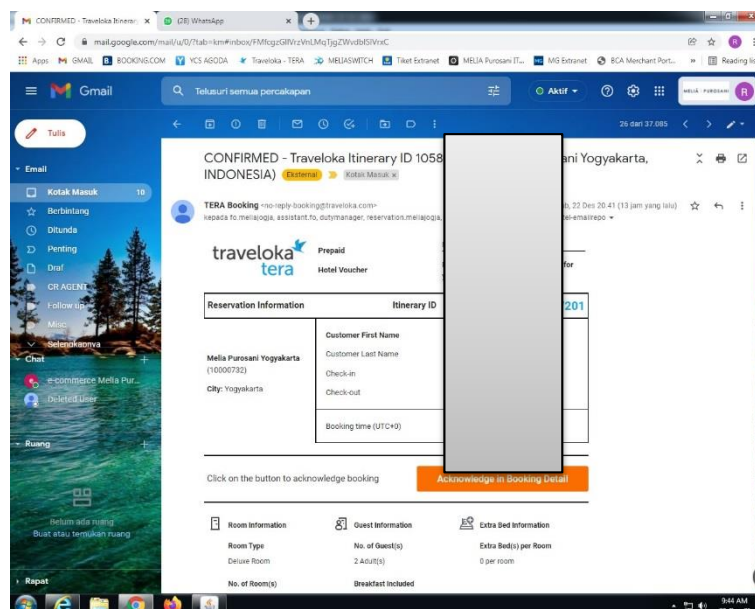
3) Profile Search

After looking at email confirmation, we must make a new reservation, however it is better if we check profile name first before make a new name due to a lot of repeater

guest make reservation again in Melia Purosani Hotel. It is to avoid double guest data. According to figure 6, we can search guest name by their last name. If find the same name as new reservation, crossed-check it first. If he or she is same person, then we can continue using that name, however if another data is not match or there is no name with guest new reservation name, we can move to make a new member guest.

Figure 6. Guest Profile Search

4) Fill the reservation form

To make a new reservation, staff should fill the form with relevant data from guest voucher that has been sent in email. It needs accuracy and must try to have zero-mistake. Based on figure 7 below, the important data is guest name, agent, arrival and departure date, number of guest, room type, rate code to classified price, rate, reservation type, market, source, origin, payment method, special request, and comment to explain how guest pay the room.

Figure 7. Reservation Form

5) Reservation and data saved

After fill the form like figure 8 below, we must save the data, therefore the data could save automatically in software system. Right after reservation team save the new reservation, front office department can access the new reservation to check-in the guest, complete the payment, etc. House-keeping department can prepare guest room need by their request such as deluxe room king bed with pool view and smoking room. It will automatically appear in other department computer, therefore this situation make a great integration between sales and marketing department, front office, and house-keeping.

Figure 8. Filled Reservation

4.2.2. Check and Update Reservation

Besides make a new reservation, reservation team has privilege to update guest reservation such as date of arrival and departure, special request, payment update, etc. that must linear with guest voucher or direct request. Reservation team has limitation to communicate with guest. Usually, team communicate by phone or online messages such as WhatsApp, e-mail, direct message in OTA, etc. Guest often make sure of their reservation by calling reservation team through phone. When they try to make sure, team must stand by with Oracle Hospitality. A thousand data of guest is collected in Oracle Hospitality, however to check concerned guest data, team just need to ask their ID booking number, if there is nothing, then team must ask their last name and booking source. According to figure 9 below, team could fill the blank form in "update reservation" menu. We can choose what data we would like to search. It is not obligated to fill all of form blank, one information data is enough. It also can be checked by front office department.

Figure 9. Update Reservation Menu
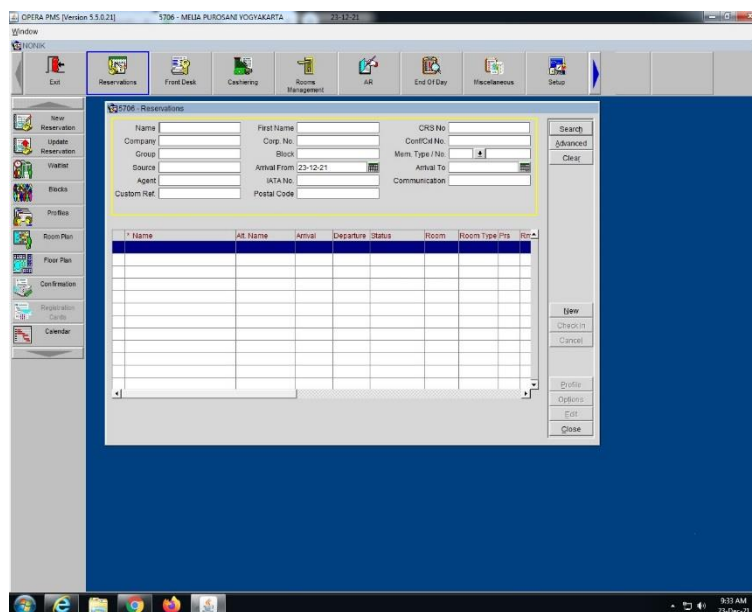
4.3. Advantages and Disadvantages of OPERA: Oracle Hospitality

System is made to make convenience between the user and industry, however every system technology has their advantages and disadvantages. Oracle Hospitality also has advantages and disadvantages itself.

4.3.1. Advantages

The advantages of Oracle Hospitality is definitely making each department integrated by using business intelligence which can be guest information data base. The second advantage is collecting guest data and can share information based on department needs and limitation. Using this software also decrease human-error due to information system is able to save the data automatically. It made work also easier and more arranged than using conventional method.

4.3.2. Disadvantages

Disadvantages of this system comes from unconnected data from Online Travel Agent and Melia Purosani website with Oracle Hospitality software. Suddenly, while working the system is suddenly error and cannot access anything. Then, when a guest booked more than one room, we have to make reservation corresponding to the number of booked rooms, it cannot reserved straight as the number of rooms in one click only.

5. Discussion

Melia Purosani Hotel is a professional five-star hotel that used business intelligence for their integration. Without an information system, hotel would have difficulty to integrate one and another department. They will use conventional system which is not practical for professional hotel. Oracle Hospitality is positively giving business movement in industry 4.0 era.

Oracle Hospitality is one of various software that has been used in many properties of hospitality industry. Restaurant is one of properties that used Oracle for their big data information system. According to Gendrong et al., (2018) using big data from software is an expert problem solvers as professionalism hospitality industry. The business of hospitality is inherently about solving problems. The advent of big data affords hospitality professionals a means to help solve problems without causing additional problems from using that information. In this restaurant case, they use one of Oracle product named Point of Sale (POS) system as technology for business intelligence that is essential to restaurant operations composed of hardware, software, and cloud service. POS system is essential for operators wishing to provide exceptional customer experience, controlling cost, and increasing revenue. Therefore, it has advantages by cloud technology such as enhanced guest experiences from rewards and loyalty programs, secure system, reduced IT complexity and cost, and faster innovation. According this case study, Oracle helps much for working convenience.

The users of Opera most of all is properties which has big name, international chain, and star-hotel. Hence, there are a lot of small properties which still use conventional method to manage their business. If Opera is applied from small business or properties, the business might grow up becomes a big company. If there is a small business that use Oracle Hospitality, it will be very interesting to be written in another case study.

6.   Conclusion

The conclusion of this study is using information system as a tool for business intelligence is one of technology advancement in industry 4.0. Melia Purosani Hotel is one of hospitality industry which applied Oracle Hospitality as software system to integrate one and another department. It is limited by each department needs, utilization from one and another department is different. The example of this case is when reservation team from sales marketing department can make a new reservation towards Oracle Hospitality, however accounting department can only access for hotel financial without knowing of today's hotel occupation and cannot make a new reservation. In the other hand, reservation team cannot get in to hotel financial report. For the future research, it will be more interesting if small business or properties start to use business intelligence for their business development. The research will be determine whether this system is applicable for small business or not.

Oracle Hospitality is a big data for guest information that will be displayed as each department need. This is very beneficial for hotel staffs who may need information about the guest either it is about special request, identify card, personal credit card, payment, etc. Then the system is easy to learn and use. Responsibility of each staff is emphasized through this system due to every alteration will showing their username. However, every system has its shortcomings, through this system, especially from reservation team side, if guest booked more than one room, staff must input as much as booked room. In the future, this system can improve for more than one room reservation, therefore it will make user more convenience.

7. Limitation & suggestion for the future

According to this study, writer has some point of view about Oracle Hospitality system that can be improve for the future application. Oracle Hospitality is easy to learn and use by millennial or young worker, however for older people, it might take times for learning the system. Therefore, every properties that will use this system should have training from company staff. Oracle Hospitality cannot input same guest with more than one room booking. User must input as much as room booked and it will take times. It will be more convenience if the company update the system. System is frequently error in office hours. It will be better if there is update or repair for system in mid-night, therefore does not disturb the work.

References

Almaimoni, H., Altuwaijri, N., Asiry, F., Aldossary, S., Alsmadi, M., Al-Marashdeh, I., & Alrajhi, D. (2018). Developing and implementing web-based online destination information management system for tourism. *International Journal of Applied Engineering Research, 13*(10), 7541-7550.

Gendron, J., Gendron, B., & Weisel, E. (2018). hospitality, big data, and restaurateurs: Does simulation have a seat at the table?. *In Proceedings of the MODSIM world conference, Norfolk, VA,* 24-26.

Jackson, G., Israel, M., & Terkura, T. (2021). Online-based hotel information system. *ScienceOpen Preprints.*

Khatri, I. (2019). Information technology in tourism & hospitality industry: A review of ten years' publications. *Journal of Tourism and Hospitality Education, 9*, 74-87.

Kurniawan, B., Zulfikar, M. F., & Valentina, T. (2019. Developing restaurant information system to support decision making. In *Journal of Physics: Conference Series*. 1402, (6). IOP Publishing.

Manjunatha, B., Srinivas, T. R., & Ramachandra, C. G. (2018). Implementation of total productive maintenance (TPM) to increase overall equipment efficiency of an hotel industry. In *MATEC Web of Conferences*. 144, 05004. EDP Sciences.

Rossadi, L. N., & Widayati, E. (2018). Pengaruh aksesibilitas, amenitas, dan atraksi wisata terhadap minat kunjungan wisatawan ke Wahana Air Balong Waterpark Bantul Daerah Istimewa Yogyakarta. *Journal of Tourism and Economic, 1*(2).

Sufi, T., & Singh, S. P. (2018). Hotel classification systems: A case study. *Prabandhan: Indian Journal of Management, 11*(1), 52-64.

Yu, Y. (2021). Design and Implementation of Hotel Network Management Information System in the Era of Big Data. In *Journal of Physics: Conference Series*. 1881, 2, 022068. IOP Publishing.

Zahrulianingdyah, A. (2018). Kuliner sebagai pendukung industri pariwisata berbasis kearifan lokal. *TEKNOBUGA: Jurnal Teknologi Busana dan Boga*, 6(1), 1-9.