

QUALITY IMPROVEMENT ON RESORT SECURITY AREA, VISION OF MACHINERY TECHNOLOGY AND VLAN AS CONSUMER VALUE TO INCREASE GUEST REVISIT INTENTION

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Abstract—The Resort is a tourist area consisting of tourist attractions, such as hotels, entertainment venues, sales outlets, and other recreational facilities. The facilities of a resort will always be enhanced by service and convenience. This service can be direct to customers by adding facilities and infrastructure to support the resort, such as technology-based support systems to support the transaction process and guarantee guest convenience. In Indonesia, every resort hotel must provide a sense of security and comfort for every guest and employee. For this reason, a strong security and safety system is needed. The regulation requires hotel management to establish a Security Management System (SMP). In it, there are various guidelines, ranging from planning to the process of handling security and safety so that risks for hotel users can be minimized. The problem faced today is how to develop an information system that can be integrated with facilities and infrastructure with the help of computers with the latest security technology and international standards so that local and foreign tourists have a safe and comfortable feeling. This system also functions as a transaction system that integrated with computer networks with additional data security techniques or VLANs. This research aims to solve the problem using a quantitative descriptive method, scientific approach and algorithm method for testing data. The result showed that system VLANs can be added as consumer value-added services to minimized safety issues and gain intention to revisit resort, this results can be seen in the of the prototype system named Igoes Resort.

Keywords—Consumer value added services, Resort, VLAN, Machine vision, Intention to visit.

I. INTRODUCTION

The development of information technology will affect several fields, namely in industry, trade, and tourism. In the field of tourism, information systems are used as a medium for promotional information from a product. The uniqueness and type of accommodation and services are interconnected so that it becomes a tourist area or resort. The discussion about guaranteeing the safety and security of hotel guests is an interesting matter to discuss. The Indonesian Consumers Foundation (YLKI) noted, recently there have been complaints from the public who complained about hotel services in ensuring the safety and safety of their customers. Feickert et al (2006) state in his research that consumer was willing to pay an additional 10 percent above the nightly room rate for the security features tested, although some demographic groups were willing to pay a significantly greater percentage. Consumers were favorable to security cameras and requiring photo identification, and they would support having a first-aid kit in every hotel room. Facilities like this that can add value to a hotel in the consumer minds. Morrison and O' Mahoney (2002) proposed another investigating technique that can improve the nature of administrations offered by the hotel. The assessment method depends on the responsiveness of representatives with regards to taking care of client demands. Hotel industry in Indonesia must considered the latest issue and solved due to fluctuation in number of guest intention to stay or return, in line with research by Worsfold et al (2016) state that guest satisfaction with service and the physical attributes of the hotel differentially impact guest outcomes of intention to return and perceptions of value. Key findings are guest satisfaction with the physical attributes of a hotel is significantly more strongly linked to guests' intention to return than is satisfaction with service received. Of all the factors directly contributing to guests' return

intentions, guest satisfaction with the physical attributes of the hotel was largest in impact. Research by Augsborg (2013) emphasize the importance of adding value in the services industry to affect consumer intention, result show at value-added services positively affect consumers' intention to adopt mobile payments and that this effect is the result of value-added services' positive effect on perceived usefulness, compatibility, and convenience. The world of the tourism industry, especially in the hospitality industry, is in dire need of work security and safety for its employees. Of course, it is very helpful to improve the quality of the hotel and improve services for hotel guests and visitors. To improve safety and comfort, fast and accurate coordination and cooperation are needed. This can be achieved if communication between securities must be smooth and run in real-time. This coordination can be carried out effectively and efficiently. But, most of the security involved in communicating uses only two-way walkie-talkies with all their shortcomings and limitations, it requires a high investment in infrastructure procurement, limited connections between users, to the absence of a centralized management system that can regulate and coordinate everything. With various procedures and rules set by the hotel, it is important for employees to understand and implement workplace safety and security rules in hotels. In this study, the author will design an information system with the addition of network security features. A network security system is a thing that cannot be separated from an information system, where guaranteed accurate data and information is very dependent on reliability and data delivery media, which in this case the network technology that will be implemented is a VLAN (Virtual Local Area Network) network. This VLAN technology can be implemented on Igoes Resort which has a very large tourist area. To cover this area, an information system that is integrated and supported by a reliable network is needed. The information system used is in the form of a hotel reservation system integrated into one server, then the server is integrated with other resorts, namely resort restaurants, and sales outlets.

II. LITERATURE REVIEW

Information is a way to collect data and integrate with a system. The system consists of software, hardware, and data. All systems are connected as a whole with communication networks. This system is very much needed for the world of hospitality, one of which is to support the reservation system. With the help of information, it is expected to help provide accurate and accurate information (Susanto,2017). The hotel reservation system itself functions to record customer activities so that the previous manual system can be done automatically. This reservation system can speed up registration or registration even the cancellation system can be done directly (Prabowo, 2017). Computer-assisted reservation system techniques can

now be used and implemented. Technology develops so rapidly that it affects the development of the world of information and communication. The hotel reservation system is greatly helped by the existence of this information technology. This information system can help provide accurate and accurate information about the hotel itself (Lathyf, 2012). VLAN network technology allows technology to be run virtually. Network configuration can be done easily and is flexible. VLAN configuration develops a dynamic network system with the help of control using a switch. Setting a network topology will be useful if the network uses controls to improve the quality of the network connected to several vendors (Fahri, 2017).

An ordinary network topology is built by implementing several different devices, namely switches, routers, and firewalls. Firewall systems are still reliable in managing and managing a network connection. The new idea in VLAN systems is the existence of an SDN (software defined network) feature that functions to simplify a large number of connected computer network control functions (Siamak, 2013)]. The standard VLAN developed today is commonly referred to as VLAN-ID. This standard has a room with a capacity of around 12bits. This capacity is useful and effective if used on a large scale. In the next study, a VLAN was dynamically connected so that it could be used in a facility and public space (Kiyohiko, 2005). VLAN technology is able to divide a network connection and is separated by several different segments or into several subnets, VLAN control can be configured using management software, this system manages a communication path on a network that is physically different from subnetting, the subnet management system will be regulated by switches pre-configured (Ubaidilah, 2011).

Baker and Crompton in Chung-Hslen Lin (2012) explain that Revisit intention is the possibility of tourists to repeat activities or revisit a destination. Songshan (Sam) Huang and Cathy H.C. Hsu (2009) in The journal "Effects of Travel Motivation, Past Experience, Perceived Constraint, and Attitude on Revisit Intention ", arguing that there are fourths impact that can cause intention to visit, namely: 1)Travel Motivation 2) Past Experience 3) Perceived Constraint 4) Attitude. Customer value can be viewed as specialized, monetary, administration and social advantages a client get in return at the cost paid (Anderson and Narus, 1998; 2004) or the apparent quality balanced at the general cost of an item or an administration (Gale, 1994). It is contended that review an incentive as an exchange off among quality and cost is as well shortsighted (Bolton and Drew, 1991; Sweeney and Soutar, 2001). These perspectives recommend that existing quality builds are excessively thin and those different measurements would expand the developer convenience. Holbrook (1994,p.27; 1999,p.5) proposes a progressively nitty gritty a definition for client saw esteem – that it is an

'intuitive relativistic inclination experience'. Regularly, such client esteem alludes to an assessment of some article by some subject and the esteem relies upon the normal for some physical or mental object.

III. METHODS

This research uses the quantitative descriptive method, with a scientific approach for testing data use the algorithm method, design implementation in this research is divided into three stages, namely designing VLAN network connections; machine vision-based security system design and hotel information system design. The three designs will be integrated into one Hotel server.

A. Designing a VLAN-based Igoes Hotel computer network

In the prototype sample named Igoes Hotel resort area, there are several separate computer systems, namely in the area of hotels, offices, restaurants, and outlets. The current condition is that some of these resorts have been connected with computer networks but have not yet been integrated with the central server. The network topology system will be improved by using VLANs that prove effective, do not need to use multiple hubs and computers. The VLAN system will divide the resort area into three security areas, namely VLAN hotels, office VLANs, restaurant VLANs, and outlets. Table 1. Phases of VLAN Distribution. In this research method design implementation is divided into three stages, namely designing VLAN network connections, machine vision-based security system design and hotel information system design. The three designs will be integrated into one Igoes Hotel server.

Table 1. Phases of VLAN distribution

Types of VLAN	Information
Hotel VLAN	In designing the network VLAN will be connected to several computers. The computer is usually used for reservation data, both reservations for hotel guests who come and book in advance. A network connection on this hotel VLAN will be connected to the office server so that managers can directly see and transact. Computer hotel staff do not have access rights to the manager's computer, but instead, the right of access is open by the manager's computer.
Office VLAN	In designing this network the system will be integrated with office data and administrative. Managers can view activity data from special computers, but employees do not have access rights to the manager's computer.
Resort and outlet VLAN	The design of this network is connected to an information system and a food sales system in restaurants. This system is integrated with the hotel reservation system.

B. Hotel Security Systems with Machine Vision Techniques

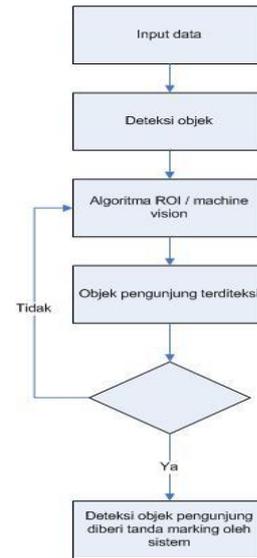


Fig. 1. Stages of machine vision on hotel security cameras

In Figure 1. is the security stage of the resort area that is connected to machine vision technology. The technology can recognize hotel visitor data because data is directly integrated by CCTV camera systems. The stages of the machine vision algorithm are as follows:

- **Object Detection**

Data input is taken directly visually by security cameras or CCTV. The camera system installed in several resort areas will be stored in the database. The next system will record data in and out of hotel guests and vehicles carried.

- **Kalman Filter Algorithm and ROI Technique**

For the process of detecting and tracking moving objects, the author uses the ROI algorithm combined with machine vision. Visitor data will be sorted and converted into binary data, then the data will be matched with the database on the hotel reservation.

- **Object Identification Process**

At the next stage, the visitor object will be detected by the system automatically. Data for every visitor who enters a hotel or resort will be directly integrated, the tracking system will recognize visitors or other hotel guests, so the system can distinguish between visitors and not.

- **Detected Objects**

What is meant by a detected object is an object that can be defined as a moving object that has been eliminated by the system.

- **Objects Given a Sign**

The application of markers on the objects of visitors to this hotel can be useful for 24-hour surveillance. The system is integrated directly with security officers, marking will only be displayed visually by the system.

• **Object Not Detected**

This machine vision system works automatically where the ROI algorithm detects every moving object and distinguishes the object of hotel Igoes Resort visitors or not. This system works for 24 hours and is very effective to use in areas that need extra tight security.

C. *This Stage Explains How the Roi Algorithm Works with Machine Vision*

- ROI (region of interest). The object of the above process, then for the results of the transformation of each ROI obtained from the mathematical equation process below:

$$AV = \sum_{b=1}^n p(b)/n, \quad b=1, 2, \dots, n \tag{1}$$

Formula description:

p (b) is the transformation value from ROI
n is pixel in ROI

Extensive comparison of ROI with the total area of the image, with the following mathematical equations:

$$PL = (\text{Area of ROI}) / (\text{Area of Image})$$

To draw a box in the original video input by providing the source code as below:

```
// sistem Machine vision Igoes Hotel
PtsOffset = int32(repmat([roi(1), roi(2), 0, 0],
[maxNumObj 1]));
```

Fig. 2. ROI source code

Information: In Figure 2. "PtsOffset" for object settings based on variable ROI and repetition of matrix data between objects (1) and ROI objects to (2), then objects will be arranged repeatedly. Elimination using Kalman Filter. The results of the Kalman filter are mean and covariant values if recursive processes are performed, which are to restate the results of the Kalman filter as a value. So that in the Kalman filter tracking algorithm it is stated:

```
Algoritma Pelacakan_kalmanFilter
while (true)
    x_t = A_t x_{t-1} + B_t u_{t-1} + \epsilon_t
    z_t = C_t x_t + \delta_t
    \bar{bel}(x_t) = \int p(x_t | u_t, x_{t-1}) bel(x_{t-1}) dx_{t-1}
    bel(x_t) = \eta p(z_t | x_t) \bar{bel}(x_t)
    Kalman_filter(\mu_{t-1}, \Sigma_{t-1}, u_t, z_t)
endWhile
```

- **Object Tracking:** To provide the final results of this object detection system by providing the source code as below:

```
// sistem pemberian tanda marking pada objek
pos = [10 300 roi(3)+25 roi(4)+25];
hAbandonedObjects = vision.VideoPlayer('Name', 'Abandoned Objects', 'Position', pos);
pos(1) = 46+roi(3); % move the next viewer to the right
hAllObjects = vision.VideoPlayer('Name', 'All Objects', 'Position', pos);
pos = [80+2*roi(3) 300 roi(3)-roi(1)+25 roi(4)-roi(2)+25];
hThresholdDisplay = vision.VideoPlayer('Name', 'Threshold', 'Position', pos);
```

Fig. 3. Machine vision

Information: In Figure 3. "post" the setting of boundary objects detected by the ROI technique "hAbandonedObjects" immovable objects are not counted or not detected and will be considered as background. "Post (1)" moves a moving object in one frame at the same time. "HThresholdDisplay" displays the video player of a pre-set object using the variable threshold name and position of the object.

D. *Reservation Information System Designing System*

In designing information systems, using the programming language PHP and MySQL as the database, this information system is connected directly to the server and integrated directly with the data on the server, the system divides the data into several levels, namely the level of the reservation officer, admin and manager.

- **Management site page**

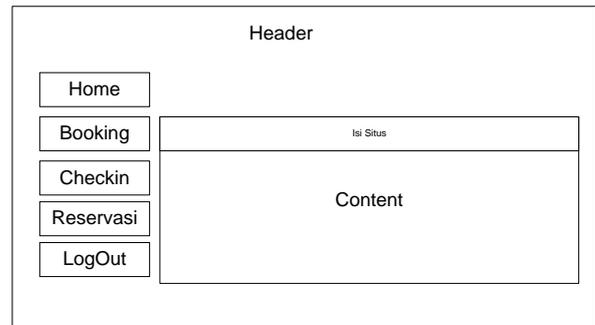


Fig. 4. Site management

Information: In Figure 4. above is the design of information systems for the user level, on the display several menus appear, namely the home menu, booking or reservation.

- **The front page of room types lists**

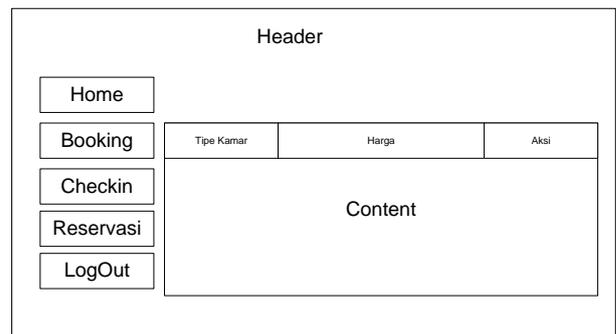


Fig. 5. Room type

Information: In the view of Figure 5. above is the display of the reservation menu and online booking, where on this menu the user can see the menus and facilities available.

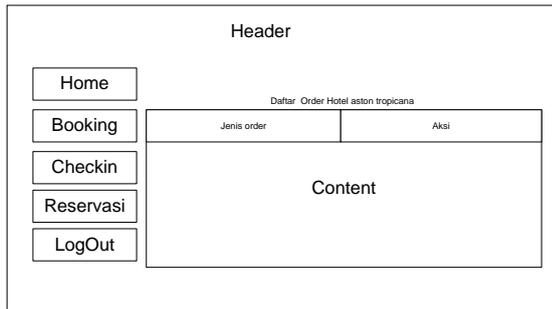


Fig. 6. Room type

Information: In Figure 6. above is the content of the check-in menu where the user can see the room data and the empty reservation facilities.

IV. RESULTS & DISCUSSION

A. System Testing in VLAN Topology

In implementing this system integrated network design and configuration process are carried out. Implementation stages are in VLAN configuration, information systems and tracking systems with machine vision.

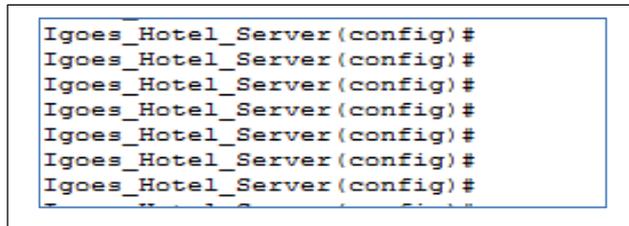


Fig. 7. **Figure 7.** Server configuration

In Figure 7. above the connected configuration script on switch 1 is connected to the router. In this switch, the configuration is done in configuration mode by registering several VLANs according to the sequence number. VLAN 20 with the name Resort Igoes, VLAN 150 with the office name VLAN 50 with the name VLAN Restaurants and Outlets.

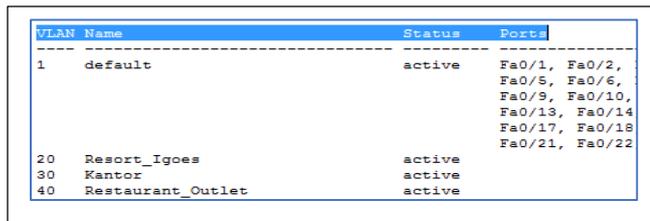


Fig. 8. Configuring VLAN topology

In Figure 8. the VLAN stressing script looks at the VLAN status. The VLAN is data, mgt, a voice which has been configured with active status with the Fa0 / 24 port.

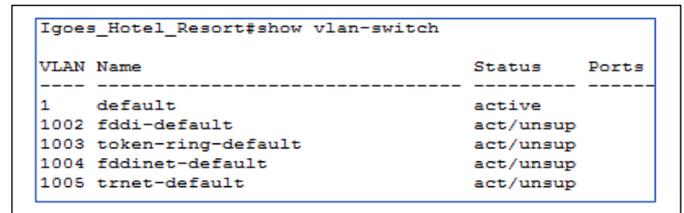


Fig. 9. Configuring topology at Igoes Resort server

In Figure 9. the script trunking on the switch configures int fa0 / 2, the switch port mode trunk functions to trunk between switches. In the router configuration script that is using hostname Igoes Resort, lookup IP domain and set to console mode 0. Set the router password to Cisco then log in using the password that was created.

B. Information System Testing

In testing the system this time a reservation information system was made that was integrated with the server. The system is divided into three parts for user level, admin level, and administrator level.

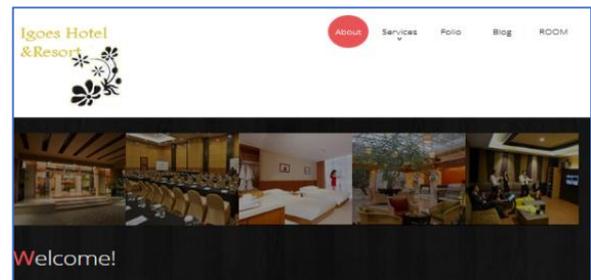


Fig. 10. Implementation of the reservation system

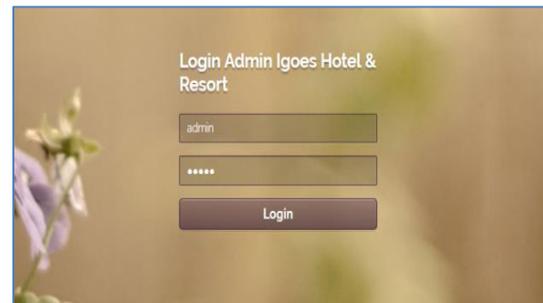


Fig. 11. Admin login implementation

V. CONCLUSION

The implementation of improving the quality of security at the Igoes Hotel resort area uses its supporting network, which uses machine vision technology and VLAN can be easily implemented. The system is integrated into one server. Activities from the three resort locations can be monitored directly and centrally on the computer manager. The ease of reservation information system is easily accessed by users, both those who will come to Igoes Hotel directly or booking first. Data security connection on the computer network connection is guaranteed to use and has a fast and efficient data access system. The VLAN topology system will reduce the use of devices that are not needed

so that the network connection becomes fast. The implementation of machine vision is used to recognize the identity of visitors. The identity is taken according to the reservation data stored in the database. This data system is integrated with the resort security system so that visitors to the resort or not can be identified. Suggestions for further research are adding database capacity. Network connections must be maintained and re-checked so that the data server can run and be integrated with other servers.

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