Analysis Design of Tour Guide Markeplace Information System in Bali

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Abstract – *Bali as a world tourist destination where most Balinese people work in tourism. One of the professions that are mostly occupied by Balinese people in the field of tourism is as a freelance Tour Guide. Most freelance Tour Guides in Bali still use the old ways of marketing such as world of mouth or only use recommendations from person to person. Many freelance Tour Guides in Bali complain that the rise of digital transportation is felt to diminish their marketing area. But now some of the freelance Tour Guides have begun to use their social media as a marketing tool using information technology. The solution that can be developed in order to improve the competitiveness of Bali's local freelance Tour Guide in order to compete in the current digital era is to create a marketplace. With this marketplace, this freelance Tour Guide has a place to promote their products. Besides that, for tourists who want to travel to Bali, it will be easier to find and choose Tour Guides as desired and the criteria of tourists.*

Index Term: *Sistem Informasi, Waterfall, Metode PIECES, Marketplace, Tour Guide*

I. INTRODUCTION

Bali is one of the main destinations for local and even international tourist destinations. That makes the regional income (Pendapatan Asli Daerah/PAD) of the province of Bali mostly from tourism. Most Balinese people work in tourism. One of the professions that are mostly occupied by Balinese people in the field of tourism is as a freelance Tour Guide. The current development of the digital era has resulted in changing patterns in the tourism sector, especially in Bali. The digital age has a positive impact on the rapid flow of information related to tourism in Bali that supports tourism promotion in Bali. But on the other hand, Balinese people who work as freelance Tour Guides tend to run into digital competition due to lack of competence in the field of digital marketing.

The lack of competency in the digital field has resulted in the freelance Tour Guides starting to lose competition with tour guide agents who utilize information technology as their marketing media. Most freelance Tour Guides in Bali still use the old ways of marketing such as world of mouth or only use recommendations from person to person. Many freelance Tour Guides in Bali complain that the rise of digital transportation is felt to diminish their marketing area. But now some of the freelance Tour Guides have begun to use their social media as a marketing tool using information technology.

Information technology influences ways of thinking and behaving, especially in organizations to make decisions. The development of information technology has made a new way of life. This makes IT involvement in an organization a system change that impacts on performance changes [1].

IT-based solutions that can be developed to enhance the competitiveness of Bali's local freelance Tour Guide in order to compete in the current digital era is to create a marketplace. With this marketplace, this freelance Tour Guide has a place to promote themselves. Besides that, for tourists who want to travel to Bali, it will be easier to find and choose Tour Guides as desired and the criteria of tourists. Tourists can choose a freelance Tour Guide that has a good rating and review based on ratings and reviews from travelers who have previously used the services of the tour guide in question. Thus, the existence of a marketplace for freelance tour guides is expected to help ease the exchange of information between freelance tour guides and tourists.

Information is a very important component in various human activities. Various documents and media have been made for human convenience in storing, searching, and disseminating information [2].

This marketplace system for freelance tour guides was built with the System Development Life Cylce (SDLC) method, Waterfall and uses analytical methods to produce an appropriate system according to the expectations of freelance tour guides and tourists. Stages of analysis were carried out using the PIECES method. After that, the system design is based on the SDLC method.

II. STUDY OF LITERATUR

A. Marketplace

A marketplace can be defined as a place where sellers and buyers meet to make transactions. The marketplace has three main functions as follows: bringing together sellers and buyers; facilitate the exchange or transaction of

products, services, and / or information, payment transactions and shipping arrangements; and providing institutional infrastructure such as the legal framework and rules for all activities in traditional markets or e-marketplaces [3].

Service marketplace is a trading environment for all types of services that provide benefits for residents, commuters or the city itself. Service marketplaces are environments that offer the ability to register participants, allow them to make service quotes, to contract and consume services and make payments for consumption of B2B services. Services published in the market can provide access to information or data enhancement functions. Therefore, the service marketplace is an important point for participants to do business and to exchange all types of information or functions and deliver interoperability among participants. Service marketplace is an environment where service operators (eg infrastructure operators for charging, parking, or sharing capabilities) and each service customer can trade business to business services (B2B). At present, various mobility service marketplaces are available but detailed information about design, capability, and application is rare and not easily obtained [4].

B. Software Engineering

Software Engineering is the most developed field in the world when software provides easier life. Software is an important component especially nowadays. This is because computers are very necessary in the world today because of their extensive use in almost all areas of life, especially in trade, industry, medicine, education, engineering, and agriculture [5].

Software Engineering is something related to the concepts, processes and tools needed to make software. The purpose of Software Engineering is to produce software in accordance with budget estimates, completed in a timely manner and the most important is meeting user needs [6].

Software quality is very dependent on the System Development Life Cycle or SDLC. SDLC is a work instructions rule used by industries or organizations in software development to design, develop, and test software so that it has high quality [5].

System Development Life Cycle (SDLC) is a software planning framework that tells how to develop software. There are several factors involved in choosing an effective software process model [6].

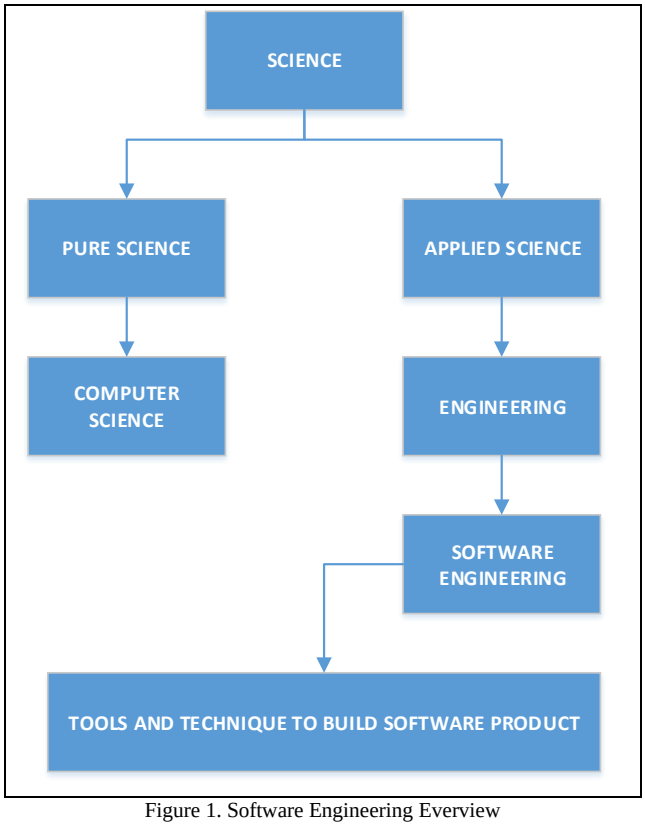


Figure 1. Software Engineering Everview

C. Waterfall Model

Waterfall is the oldest SDLC model and is the best known model. This model is widely used in government projects and large companies. The peculiarity of the waterfall model is the sequential steps [7]. The Waterfall Model, also known as a linear order model, provides a top-down and structured software development approach. Waterfall is very famous for its life cycle definition. The water cycle software life cycle activities are in linear conditions such as: demand, design, construction, integration, testing, maintenance. In the waterfall method there are clear boundaries between various processes, the final stage of the results through verification or review to begin the next phase of work. At the end of each activity must be reviewed and determined as the beginning of the next stage of activity. The activities are independent of each other, do not overlap, and form like a waterfall, so this is the reason why it is called the waterfall model. [8].

The waterfall approach was chosen because of the development process that uses a linear approach so as to enable potential problems to be identified in the initial phase [9]. The Waterfall consists of several phases as shown in the following picture [10]–[12].

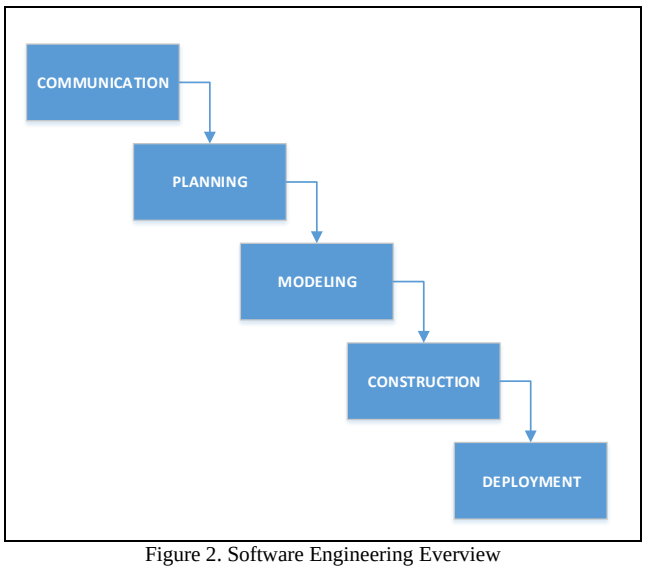


Figure 2. Software Engineering Everview

1. Communication
   Communication is the first step taken in the waterfall process model. In this phase, a user study of the system to be built is carried out. Through this phase, the specifications of user requirements are formulated after defining the specifications of the product to be built. Escalation and module service process questions are important for this phase which must be added additionally to further improve the communication phase. In this phase, communication gaps are a major factor which can be a big problem in the waterfall process model. This can be dealt with effectively by optimally designing policies for communication itself.
2. Planning
   Phase Planning is the most important component in the software development cycle. In this phase, estimation and scheduling play a major role in tracking progress. This estimation is very important to formulate processes and schedules. In the waterfall model, estimates are usually carried out by procedures that depend on ordinary statistics but intelligence estimates can be effectively included. comparative predictions and relative components that are very much needed in the Planning phase.
3. Modeling
   Modeling is the third component of the waterfall model. Prototyping, evaluation of usability, needs analysis and software design are the steps included in the Planning phase. The original phase is related to the mathematical design of the complete process. In the statistical test planning phase can be included as an additional step.
4. Construction
   The construction phase of the waterfall model consists of development and validation are the two main components in the construction phase. Resource management is an important factor in the development cycle. Resource management can be included as an additional component in the waterfall model to get better results.
5. Deployment
   Deployment phase is an important component. In this phase analysis is very important to analyze the strengths and weaknesses of the product to further improve quality.

D. P.I.E.C.E.S Analysis Method

PIECES is a framework used to analyze classifying a problem, opportunities, and directives found in system design. With the PIECES framework, new things can be produced that can be considered in the purpose of developing the system further [13].

The PIECES method has six variables in the framework within it, namely: Performance, Information, Economic, Control, Efficiency, and Service [13], [14].

1. Performance
   Performance analysis is carried out in order to determine whether a system is running well or not in the form of performance. Performance can be measured by the number of findings of the data produced and how quickly a data can be found.
2. Information
   Information analysis is based on data findings that inevitably produce information. Information analysis is used to find out how much and how clear information will be generated for one search.
3. Economic
   Economic analysis is done to find out whether a system is appropriately applied in terms of financial and costs incurred. This economic analysis is important because basically a system is influenced by the amount of costs incurred.
4. Control
   A system needs to be held in control or supervision so that the system runs according to the initial design when it is made. Control analysis is used to determine the extent to which supervision and control is being carried out so that the system runs well.
5. Efficiency
   Efficiency analysis is an analysis when a system needs to be questioned in performance and the reason why the system is made. A system must be able to answer and help a problem, especially in terms of efficient automation. This analysis is done to find out whether a system is efficient or not.
6. Service
   Service is still an important thing and needs to be considered in a system. A system that is implemented

will run well when balanced with good service. Service analysis is used to find out how services are carried out and know the problems that are related to service on a system.

III. METHODOLOGY

The flow of research methodology that is done is starting from conducting literature studies, collecting data through interviews, conducting system analysis using the PIECES method, and designing or designing the system. The following is an overview of the methodological flow of the research conducted.

1. Study of Literature

   Study of Literature is to study theories related to system analysis, especially using the PIECES method and system design design using the watrerfall method.

2. Interview

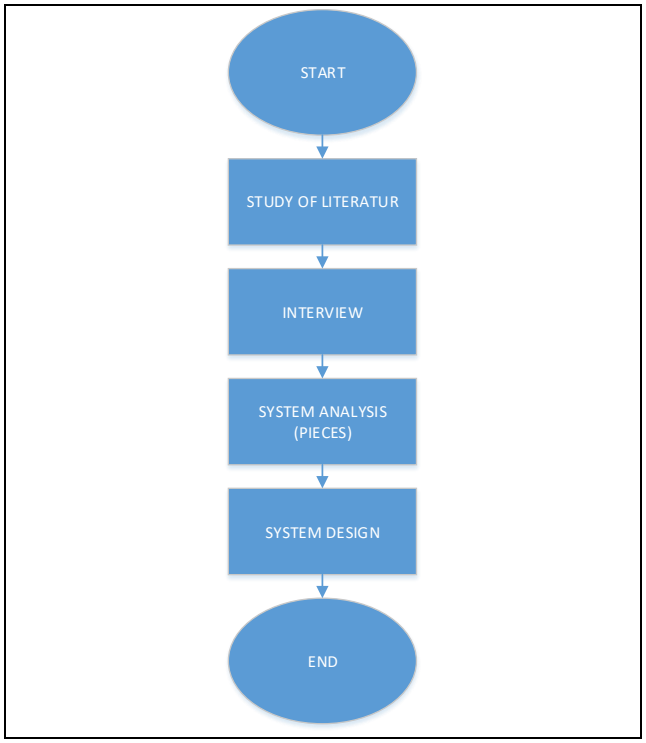
   Interviews were conducted to explore data related to the conditions experienced by freelance tour guides and tourist guide tour seekers in Bali.

3. System Analysis

   Perform system analysis using the PIECES method based on the results of interviews in the field.

4. System Design

   Design the system based on the results of the analysis that has been done before.



Gambar 3. Alur Penelitian

III. IMPLEMENTATION

Implementation consists of system analysis and system design design.

A. System Analysis

System analysis was carried out using the PIECES method based on the results of interviews with sample tour guides in Bali.

TABLE 1
PIECES SYSTEM ANALYSIS

No.	Analysis	Result
1	Performance	The system carried out by the freelance tour guide is still very manual, so that there are many errors in the information exchange process. Manual processes such as booking only through telephone communication, most payments are still cash, there is no recording of transactions.
2	Information	Tour package information or tour guide services are not well distributed to the public, especially to tourists who want to travel to Bali. Many tourists do not know the information about freelance tour guides, so there are not many options available to tourists.
3	Economic	The manual process used causes a decrease in income due to not being able to compete with the rise of online transportation that is currently developing.
	Control	Control of customer data will be difficult if the system is still manual. This is because there is no record of transactions in a database.
5	Efficiency	Operationally, a manual system causes bad efficiency, such as the booking process and payment takes a long time.
6	Service	Service to customers will seem unprofessional because no system has been implemented.

B. System Design

This tour guide marketplace system is designed to have several features such as the general description of the following system:

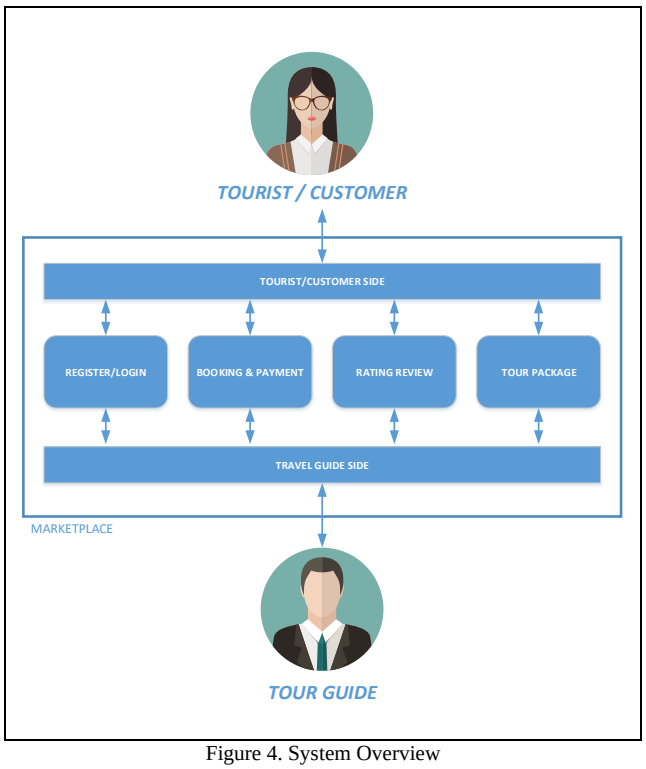


Figure 4. System Overview

1. Login/Register
   The Tour Guide has an account to be able to promote its services through the marketplace. Likewise, tourists who want to use the services of a tour guide can also have an account to process the transaction.
2. Tour Package
   Tour guides can make tour packages that later can be selected by customers. The tour package contains information about tour itineraries.
3. Rating dan Review
   Every tourist who has used the services of a tour guide can give a rating and review of the services provided. This rating and review is the main part that can be used as a reference by every tourist who wants to use the tour guide service to be able to choose the tour guide that suits them.
4. Booking online
   Tourists can book online through the system by first choosing a tour guide, then selecting packages and dates. The online booking feature will be integrated with the system on the tour guide side. Online bookings allow the booking process to be carried out quickly.
5. Online Payment
   Payments for transactions made can be through an online system with several types of payment options.

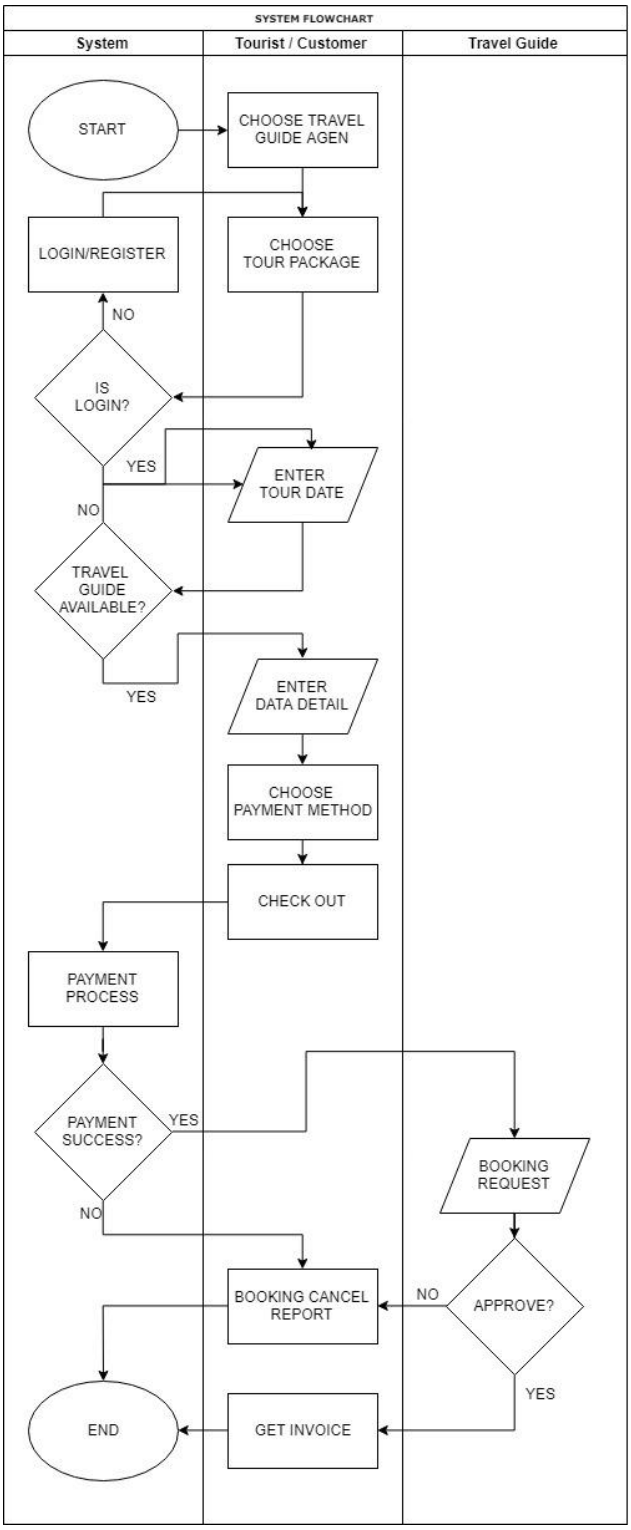


Figure 5. System Flowchart

The system flowchart will describe the process that occurs in the information system of the marketlace tour guide. First, tourist or customers can visit the marketplace system through a web browser. Next, the tourist / customer can choose the desired tour guide. The selection of tour guides

is based on the rating, review and tout package presented. After choosing a tour guide agent, the next step is to choose a tour package that has been prepared by the tour guide agent. If the tourist / customer is not logged in, the system will direct the tourist / customer first. But if the tourist / customer doesn't have an account, then the tourist / customer can register first. After logging in, the tourist / customer can continue the transaction by entering the tour date. The system will check on that date whether there is a tour guide agent in ready status. If there is no one ready, then the system gives recommendations to the tourist / customer to choose a tour guide or another tour date. But if on that date there is a tour guide agent with status ready then the transaction will continue. The next tourist / customer must fill in the details of the data such as the place where it was picked up, the number of people, additional requests, and others. After that, the tourist / customer chooses the available payment method. After choosing the payment method, the tourist / customer can checkout the transaction. The system will wait for the payment process according to the payment method chosen by tourist / customer. After the payment is verified, the system will send a booking request to the tour guide. Then the tour guide will process the booking. Tout guides can reject bookings by giving reasons, of course with consideration of customer satisfaction and reviews to be given. However, if the tour guide receives a booking request, the system will provide an invoice to the tourist / customer and tour. In addition to providing tourist / customer invoices and tours, the system will provide detailed tour data carried out such as pick-up, itinerary, number of people, and others.

IV. RESULT

System design design refers to the analysis that has been carried out using the PIECES method. With the development of the marketplace tour guide system, the results obtained are as follows.

TABLE 2
PIECES SISTEM ANALYSIS

No.	Analysis	Result
1	Performance	Manual processes such as booking, payment, recording of transactions can be accommodated through the developed marketplace system. So that processes such as bookings, transactions, etc. can be done quickly and minimize errors.
2	Information	According to the analysis it was found that information on tour guides and tour packages was not maximally widely known, especially for tourists who wanted to travel to Bali. With the marketplace tour guide, it can be a meeting place and information exchange between tour guides and tourists. So that information exchange becomes faster and more precise.
3	Economic	Based on the analysis it was found that the manual process resulted in a decrease in tour guide income because it could not compete with the online transportation that is currently developing. With this marketplace tour guide system, it is a solution to be able to compete in the digital era.
4	Control	Based on the analysis it was found that control of any information relating to customers and transactions cannot be controlled because it is still very manual. So with the marketplace tour guide system, it will give control of recording every information that occurs on the system.
5	Efficiency	Based on the analysis it was found that the transaction process was long. This can be improved through the booking system and online payments so as to speed up the transaction process.
6	Service	With the marketplace tour guide system, services to customers are better and more professional.

IV. CONCLUSION

Based on the research conducted, it was concluded that according to the analysis carried out, it was necessary to have an information system container for tour guides to be able to manage all information exchanges that occurred in the tour guide system. With the marketplace tour guide information system, processes such as booking, scheduling, payment, etc. can be accommodated properly.

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