

iBid: A Competitive Bidding Environment for Multiscale Tailor

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Abstract— Nowadays, various online auction web services are available, allowing people to bid on items to be purchased at a competitive price. The same approach is applicable to allow people to bid on projects on Freelancer website. Here, we present an environment for customers to publish a project online, whereby marketers are able to bid on projects, called the iBid system. The iBid system demonstrates an application of bidding system which is capable of assisting customers find local tailors according to three criteria namely location, type of sewing and cost. Reversed auction mechanism is used where the customer will control the business. The prototyping methodology approach has been used to develop the system running on a PHP server and a MySQL database.

Keywords— Online bidding system, auction system.

I. INTRODUCTION

In this era, various clothing fashion trends have been introduced and it keeps changing over time. Basically, clothes are a basic human necessity which is created to protect and cover our body. People have created various types of clothes and fashion has its role in representing our lifestyle. The type of clothing varies with designs and is applied according to the suitability of time, place, and occasions. Therefore, tailors play an important role in the production of high-quality customised clothing.

Problems however arises as customers usually take a long time to find a good local tailor and it becomes more complicated when the festive season sets in where tailoring services are needed. It is difficult for customers to find tailors who still accept reservations since most tailors have already closed their orders early.

Based on studies, existing tailors use blog and social sites such as Facebook to showcase and promote their services. Their services are usually only known only by communities living close to them, especially those who lives in rural areas which are not as crowded as in the city.

An interesting approach, bidding is seen as one of an excellent selling technique to cater the problem. A customer can make a tailoring service request offer, where tailors will offer the goods with their bidding starting price. Then, other tailors can start offering their bidding price until the bid ends. The bid sessions will expire if the customer has made their tailor selection.

Therefore, in this paper we present an intermediary bidding system for multiscale tailors and customers, called

the iBid system. It is a web-based system which acts as a platform to connect tailors and customers. The challenge to find a good tailoring services before festival and occasions has motivated us to propose and develop the iBid system to assist customers to find and selecting suitable tailors according to the type of clothing, location, and cost of the desired wage.

In the beginning, this system will gather several tailors from every region in the state of Johor and other states. Tailor can upload their sewing photos to be displayed with their own information and update them from time to time. In addition, tailors can bid on an active bulk orders, a premium feature costing at a fee of RM50 per annum which helps the customer to make a selection of prices offered by several accompanying tailors.

Three objectives have been set for the iBid system: i) to gather user requirement for development of a robust bidding system, ii) to design and develop the system based on the gathered requirements, and iii) to test and validate the performance and quality of the developed system.

This paper is managed in sections as follows. Section 2 discusses the literature review where several existing systems is compared and contrast to ensure that the system to be developed is capable of producing a better and more effective system. Section 3 describing the methodology model employed in the development of this system. Section 4 presents and discusses result of the work and Section 5 concludes the work.

II. LITERATURE REVIEW

This section discusses information management system, procedures in auctions, and compares the capabilities of the existing bidding systems with the proposed system.

A. Information Management System

In the present era of technology, the term “system” has been universally and widely adopted to generally describe an information management system. Referring to the Kamus Dewan Fourth Edition [1], the system is defined as a way or method of executing something. The term “management” can be defined as a method or technique for implementing a well-planned task, systematically executed, and has an orderly and specific guidelines [2]. In addition, information management is also defined as the economical, efficiency, and effectiveness of the coordination of production, control, storage, retrieval, and dissemination of information from internal and external sources to enhance organisational performance [3]. In summary, an information management system is a combination of some of the tools which facilitates the collection, dissemination, and conversion of information in an organisation more effectively.

B. Procedures in an Auction

Auction is a mechanism in marketing which involves public agencies, private institutions, and individuals to acquire, sell or assign goods and services [4]. Auction or bid procedures applies bargaining process between both parties; the buyers and sellers [5]. The bidding has many different types: the ascending-bid auction, descending-bid auction, first-price sealed bid auction, second-price sealed bid auction, and reversed auction.

The descending-bid auction is also known as the Dutch auction is an interactive auctions where the seller gradually reduces the price of some high initial values until the first moment when a few bidders accept and pay the current price of the item [5]. On the other hand, the first-price sealed bid auction mechanism work by the way bidders simultaneously offer their prices to sellers until an accepted price is achieved [5]. This is the original theory of any kind of auction where the offer is written and is sealed in an envelope, handed to the seller who will then announce the latest bid price. The highest bidder wins the auction.

The second-price sealed bid auction is also known as Vickrey Auctions, whereby the bidders send bid prices simultaneously to the seller. The highest bidder will win the item and purchase the item based on the price of the second highest bid price [5]. This auction type was named after William Vickrey, the author of the first auction analysis theory [5]. Vickrey won the Nobel Peace Prize in Economics in 1996 through the results of this theory.

The most commonly used auctions are known as forward auctions where the seller will offer the desired product to some potential buyers who will compete with each other for the item. The highest price bidder will win the bid and buy it at the bidding price. In a reversed auction, however, the buyer controls the process. Buyers who are interested in goods offered by some sellers will compete and lower their prices for such consent [6].

The bidding process is usually used by sellers in situations where they preferably offer their goods at a flexible price which depends on the valuation of its buyers [5]. The auction mechanism facilitates the interaction between buyers and sellers in terms of an economic interaction.

C. Comparison With Existing System

A study of the equivalent system is a study that has been made on the existing system that has been implemented [2]. This comparison is done to see the differences between these systems so that the information obtained can help produce a system which better suit the user’s scope. The study identifies the weaknesses and shortcomings of the said systems, considered as new ideas to be used as a guideline for enhancement of the systems that have been developed. Several bidding systems which has been chosen for comparison includes Local Tailor, Trademe, and eBay. Table 1 shows the comparison between existing systems and developed systems.

TABLE I
COMPARISON OF VARIOUS BIDDING SYSTEMS CAPABILITIES

Criteria	Existing Systems			Proposed System
	Local Tailor	Trademe	eBay	iBid
Has Back-end Login	Yes	Yes	Yes	Yes
Support Search Function	Yes	No	No	Yes
Display Tailor Information	Yes	No	No	Yes
Programmed in Language	.NET	C#	PHP	PHP

III. METHODOLOGY

We have selected the prototype modelling methodology as a guideline for developing the iBid system to enable the development of the system to be carried out according to the process or phases that have been designated for a model. Methodology is also defined as a sequence of step-by-step approaches that assist in the development of an end product (information system) [7]. Most methodologies are combined with some development techniques such as direct observations and interviews with current system users [7]. Guidelines for the development of an important system so that the system can be developed systematically. The workflow process of the prototype model is shown in Fig. 1.

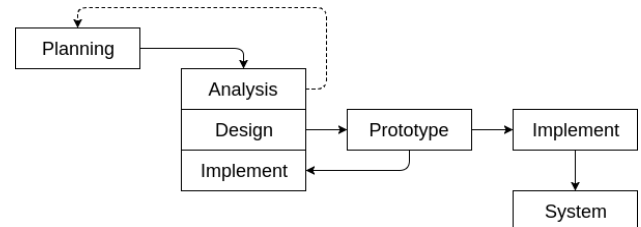


Fig. 1 Prototype Model Methodology

Fig. 1 shows the phase flow chart in the prototype model. The Prototype model contains five phases of system development such as planning phase, analysis phase, design phase, prototype phase, and implementation and testing and

implementation phase. These phases provide an overview of system development steps more systematic and systematic.

A. The Planning Phase

In the planning phase, the development timeline was first arranged, alongside with the available resources. Tangible and intangible cost were determined and considered.

B. Analysis Phase

During this phase, we have predetermined several problems related to sewing business and its potential to be catered by a bidding system. User requirement analysis were gathered. An analysis of system requirements were also done to better understand the needs in the development of a system.

C. Design Phase

In this phase, both database design and user interface design were considered. Here, the logical and physical design of this developed system is rendered.

For database design, a context diagram, the Data Flow Diagram (DFD), and the Entity Relationship Diagram (ERD) were designed to illustrate the data exchange inter/intra within the database. Data design is an overview created to display the data flow which exists in the developed system.

User interface of the iBid system is designed to be user-friendly, hence facilitates users to interact with the system with ease. The system interface is designed using Brackets software. Algorithm 1 shows the simple pseudocode for processing search for tailor functionality, visualised in Fig. 2 where shows the Tailor Finder page which assists customers to find a local tailor based on their search criteria.

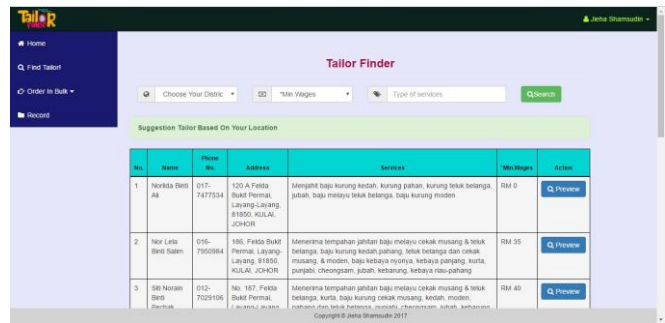


Fig. 2 List of tailors filtered by using search functionality (accessible by customers).



Fig. 3 List of open bids page (accessible by tailors).

Algorithm 1 Search for Tailor Functionality

Input: region, wages, and serviceType

Create SQL query by appending variables input

if SQL query matches data in the database **then**

Display list of tailors with matched input criteria

else

Display ‘No matches is found message’

Display suggested tailor based on popularity

end

Algorithm 2 Open a New Bid

Input: bidRegion, bidDateStart, bidDateEnd, bidName, bidQuantity, bidFabricType, bidNotes, bidSampleImage, bidSizeDetails, and bidStatus

Read bidSampleImage and store in session

Create SQL query by appending variables input

if SQL query is successfully executed **then**

Store the data tuple into database

Display success message

else

Display ‘error opening a new bid’ message

end

Algorithm 2 shows a simple pseudocode representing the process of opening a new bid, while Fig. 3 visualises the page rendering a list of open bid page where tailors can place their bidding price on a project.

D. Prototyping Phase

The result of design phase forms a prototype, compiled and was set up into staging server for prototype testing. The prototype were tested and improved iteratively before a final test is executed.

E. Testing and Implementation Phase

The testing process is important to ensure that all system functions work well and smoothly. A total of 140 customers, 20 tailors, and 5 administrator are involved in the test.

IV. RESULT AND DISCUSSION

A session of User Acceptance Testing (UAT) has been executed with 140 individuals acting as customers, 20 as tailors, and 5 as administrators. The test has aimed to test the robustness of the developed system in handling various tasks. Table 2 summaries the result of the UAT.

TABLE II
SYSTEM TESTING RESULTS

Module/Functionality	Functionality Test Score	Result
User Registration	100%	Pass
Login and Logout	100%	Pass
Tailor Search Module	100%	Pass
Bidding Module	94%	Pass
Bulk Order Module	88%	Pass
Activity Record Module	97%	Pass
Subscription and Payment	94%	Pass
Administrator Module	94%	Pass

V. CONCLUSIONS

Overall it can be concluded that iBid system has succeeded to achieve its three objectives. The system are accessible to everyone online, therefore saves a lot of time and cost to find a good local tailor. Plus, it is helpful for tailors to promote the projects they have completed as their virtual portfolio.

To further improve the system, several updates to the current design may be considered. First, the system may be enhanced by using bootstrap templates and utilizes modern web frameworks such as Laravel for its back-end processing. The system may be upgraded to support multilingual, hence to be more user centric. Additionally, SMS notifications alongside with an option for online payment for all types of transactions shall be considered to establish it as a paperless cloud service.

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