

THE E-COMMERCE POTENTIAL FOR HOME-BASED BUSINESSES: A CASE STUDY

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ABSTRACT

In Jakarta, the e-Business adoption has not only captured the interest of large organizations but has also been acknowledged and adopted by small, medium and micro sized enterprises. Mostly, these small and medium e-commerce-adopted companies are called Home-Based Business. The object of this research is a family home-based business which is adopted e-commerce system. The commonly used software development method is System Development Life Cycle (SDLC), and The Unified Modeling Language (UML) is generally accepted as the standard modeling notation for the analysis and design of the object that oriented on software systems. This research concludes that a web-based system can address the need of home-based business to expand the market scope by the internet penetration as one alternative to do the business expansion.

Keyword: e-Commerce, Home-Based Business, Sistem Development Life Cycle.

1. INTRODUCTION

The success of E-business/E-commerce initiatives of brick and mortar organizations primarily depends on the acceptance and adoption of information technology based products and services by customers [1]. The Internet technology has brought major changes to the way business is conducted today. Many terms have been coined to represent the electronic concepts and applications such as e-Business and e-Commerce. These terms are commonly used to represent the transformation of business processes and transactions. In Jakarta, the e-Business adoption has not only captured the interest of large organizations but has also been acknowledged and adopted by small, medium and micro sized enterprises. Implementing e-Business requires significant changes in a company's structure, culture, strategy, procedures and responsibilities. A few terms have been referred closely to HBB (home base business) such as teleworking or telecommuting, Small Office Home Office (SOHO) and electronic cottage [2]. Internet and social media technologies have been catalysts for businesses to permeate and compete in markets on the global scale, reach more customers, create efficiencies, reduce cost of manual operations and pioneer new ways of business transactions [3].

There is no one commonly agreed definition of e-commerce or e-business [4]. Electronic commerce, or e-commerce, refers to economic activity that occurs online. E-commerce includes all types of business activity, such as retail shopping, banking, investing and rentals. Even small businesses that provide personal services [2]. Devendra et. al., (2012) defined that electronic commerce, commonly known as e-commerce or e-commerce, consists of the buying and selling of products or services over electronic system such as internet and other computer network [3].

The object of this research is a store of watch named "Philadelphia Time here in after call as PT" which is located at one of International Trade Center in Jakarta. To clarify the definition of home-based business in this research is a business which ran and influenced a lot by its owner and the employee of the business mostly are the family member.

2. TEORITICAL BACKGROUND

2.1 E-Commerce

Electronic commerce is a powerful concept and process that has fundamentally changed the current of human life. Electronic commerce is one of the main criteria of revolution of Information Technology and communication in the field of economy [5]. E-commerce stands for electronic commerce. E-commerce is improving standard among the business community in worlds, about the opportunities offered by E-commerce. Ecommerce has unleashed yet

another revolution, which is changing the way businesses buy and sell products and services [6]. E-Commerce is emerging as a new way of helping business enterprises to compete in the market and thus contributing to economic success. Basically e-commerce is the buying and selling of goods and services on the internet and on different online networks especially World Wide Web. The development of e-commerce has led to companies moving much of their business efforts to online environments [7]. e-commerce has been noted as a strong tool for sustainable organizational growth. Primary processes that are enhanced in e-commerce transaction network are production processes, customer-focused processes, and internal management processes. Most studies focused on the economic values of e-commerce technology resources that improve organizations operation and effectiveness as well as differentiating its respective products and services [8].

2.2 Information Systems

Information System (I.S.) is basically concerned with data processing into some information. IS works in every system, which provides information for the managerial activities in an organization. A system to convert data from internal and external sources into information and communicate that information in an appropriate form, to managers at all levels in all functions to enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. Others, however, give it more limited scope. They see it as a system collecting and analyzing data and producing reports. Its purpose is to help managers to solve structured problems [9].

2.3 Home-Based Business (HBBs)

HBBs have been defined as, “Any business entity engaged in selling products or services into the market operated by a self-employed person, with or without employees, that uses residential property as a base from which they run their operation”. It also covers businesses conducted in the home and others where the home acts purely as an “administrative base” (Mason, 2008) [24].

Home-Based Business is small in size, but the development of many home-based businesses can contribute a lot for a society and increase the country economic. HBB have some characteristics:

- 1) Manage the working pace by the owner.
- 2) Minimum number of employees to reduce cost.
- 3) A home based business allows you to market your products or services worldwide.
- 4) Any time a sale is made payments are automated and be deposited directly into your bank account.

These characteristics actually can be supported by the e-commerce system. The system can help owner to run the business for 24/7 even worldwide, and the owner control the transactions from the system report.

3. RESEARCH AND FRAMEWORK OF THINKING

Software engineering research is intended to help improve the practice of software development, so research planning should make provisions for the transition. Software engineering research includes, but is not limited to, experimental research. [10].

In this case framework of thinking used SDLC, Software Development Life Cycle is a process used by software industry to design, develop and test high quality software. The SDLC aims to produce a high quality software that meets or exceeds customer expectations, reaches completion within times and cost estimates. The software development life cycle (SDLC) is a framework defining tasks performed at each step in the software development process. SDLC is a process followed for a software project, within a software organization. It consists of a detailed plan describing how to develop, maintain, replace and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process. shown in Figure 1. Framework of Thinking.

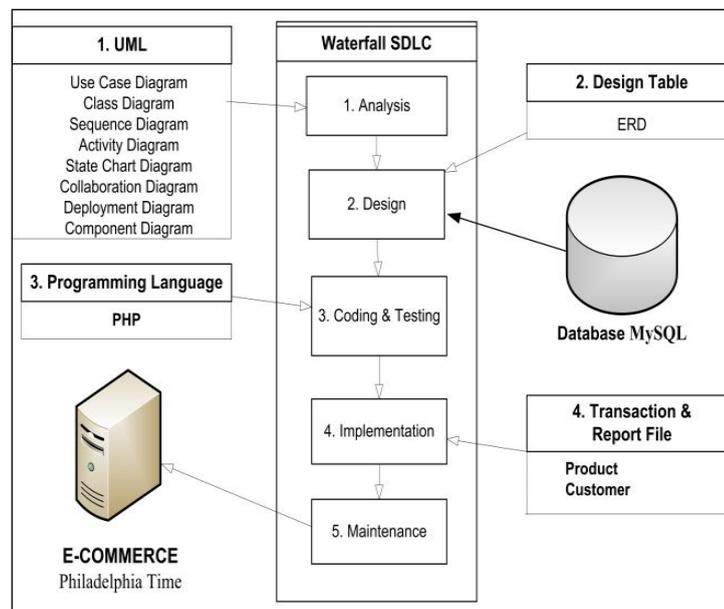


Fig. 1. Framework of Thinking

4. RESULT AND DISCUSSION

The development of a new e-commerce requires several phases, which have a relation on the activities. The activities include analysis, design, coding & testing, implementation and maintenance that sometimes referred to as phases. On the phase have elements that provide the framework for manage the project. Waterfall approach was SDLC first model to be used widely in Software Engineering to ensure success of the project. In "The Waterfall" approach, the whole process of software development is divided into separate phases. Waterfall SDLC model is a sequential software development process in which progress is regarded as flowing increasingly downwards (similar to a waterfall) through a list of phases that must be executed in order to successfully build a computer software. Originally, the Waterfall model was proposed by Winston W. Royce in 1970 to describe a possible software engineering practice [11].

Analysis phases are phase to understand and to keep in all the detail of business needs and the processing requirements of the new system. Tools and technique for analysis is UML. The Unified Modeling Language (UML) is generally accepted as the de facto standard modeling notation for the analysis and design of the object that oriented on software systems [12]. UML is a standardized general purpose modeling language in the field of computer science and software engineering. The standard is managed and was created by the object management group [13]. UML defines thirteen types of diagrams into three categories: Six diagram types represent static application structure; three represent general types of behavior; and four represent different aspects of interactions: Structure Diagrams include the Class Diagram, Object Diagram, Component Diagram, Composite Structure Diagram, Package Diagram, and Deployment Diagram. Behavior Diagrams include the Use Case Diagram, Activity Diagram, and State Machine Diagram [14]. In this case we only show use case diagram. Table 1. Syntax for Use Case Diagram, represent use cases are connected to actors through association relationships, which show with which use cases the actors interact [15, 22]. Use cases help us to understand and clarify the user's requirement for interactions with the system and reveal it most or all the functional requirements of the new system. [16].

Table 1 Syntax For Use Case Diagram

<i>Syntax</i>	<i>Mean</i>	<i>Description</i>
	Use Case	Represents a major piece of system functionality.
	Actor	Is a person or system that derives benefit from and is external to the subject.

Use cases for PT are shown in Figure 2. The system consists of 4 actors. First, the non-member customers who review the product catalogue, when the non-member customers want to do the transaction, they have to register as the members. Second, the members, after reviewing the product catalogue, they can order, do the payment between customer's bank account to the store's bank, then confirm the payment to the administrator. Third, the admin receives the confirmation, and report to the owner.

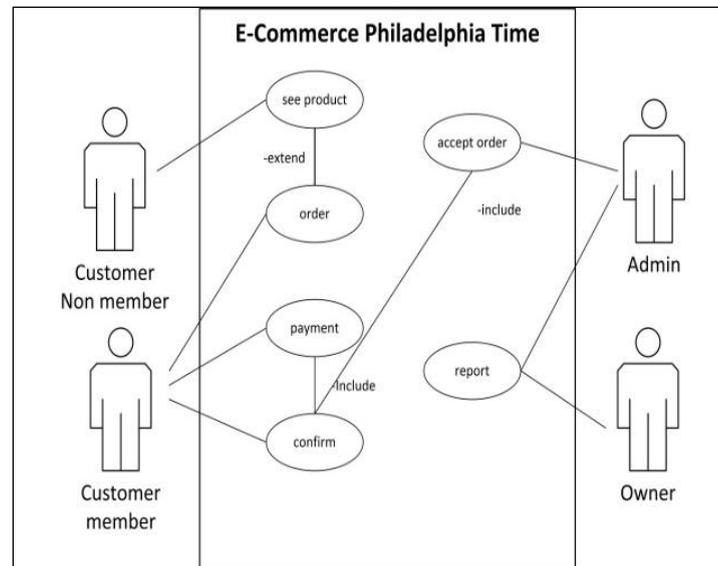


Fig. 2. Use Cases E-Commerce PT

Design phases are creating the system solution based on the defined requirements and decisions that made up during analysis. In this phase we create master file and design ERD. The Entity-Relationship Diagram (ERD) has been widely used in structured analysis and conceptual modeling. The ER approach is easy to understand, powerful to model real-world problems and readily translated into a database schema. The ERD views that the real world consists of a collection of business entities, the relationships between them and the attributes used to describe them. The typical semantic constructs of the ER model and its variations we consider in this article include the following features: (1) An entity type represents a distinguishable object type, (2) A relationship type represents an association between or among several entities, An attribute is a property that is used to describe an entity or a relationship, (3) A cardinality constraint specifies the number of relationship instances in which an entity can participate, (4) A participation constraint specifies whether an entity instance can exist without participating in a relationship with another entity and (5) Generalization/specialization specifies superclass and subclass relationship between entity types [17]. See Figure 3. Entity Relationship Diagram.

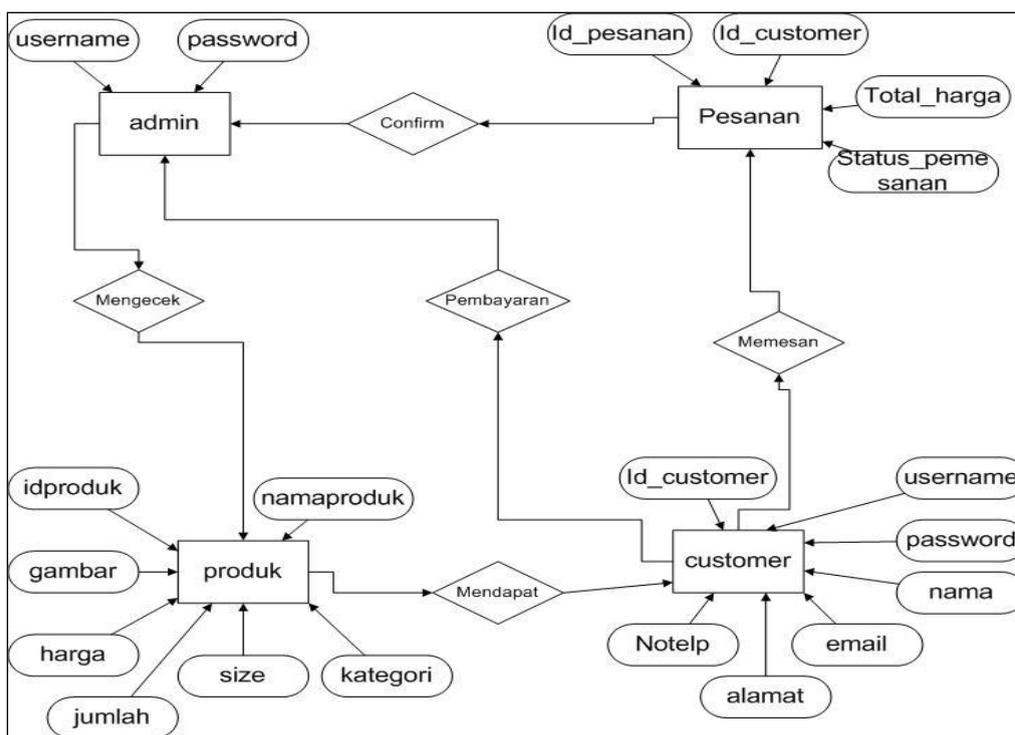


Fig. 3. Entity Relationship Diagram

Coding phases are receiving the design of the system documents, the work done is divided in to modules/units and actual coding is started. In this phase Software Design Document (SDD) is converted into code by using some programming language. It is the logical phase of the Software Development Life Cycle. The output of this phase is program code [23]. Since, in this phase the code is produced so it is the main focus for the developer. This is the longest phase of the software development life cycle. In this case programming language with PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page, but it now stands for the recursive acronym PHP: Hypertext Preprocessor. [18].

Phases Testing: After the code is developed it is tested against the requirements to make sure that the product is actually solved the needs addressed and gathered it during the requirements phase. During this phase all types of functional testing like unit testing, integration testing, system testing, acceptance testing are done as well as non-functional testing are also done [19]. Black-box testing, also called behavioral testing, focuses on the functional requirements of the software. Black-box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program [20]. Software testing is a process, or a series of processes, designed to make sure computer code does what it was designed to do and, conversely, that it does not do anything unintended. Software should be predictable and consistent, presenting no surprises to users. Create a set of test data for the program data the program must handle correctly to be considered a successful program [25].

Table 2. Black Box Testing E-Commerce PT

Test Case	Test Steps	Results
Login user : Admin	Choose Menu Login	Home Register Product Add Product Configuration Report
Login user : Register Product	Admin must login first	Product Name Category

<i>Test Case</i>	<i>Test Steps</i>	<i>Results</i>
		Size Quantity Price Figure
Login user : Customer	Customer has account	Home Add Product Payment
Payment	Customer must login first	How to Payment Category Size Quantity Price

Implementation phases are the phase that provides users with the documentation and training requirement to use the system effectively. Data Conversion will only occur once, but user documentation will be required. Deployment of the product will be carried out, on the hardware that is going to be used in production (on live systems). Deployment itself requires careful planning. Once the product is deployed, initial data will be populated, user training will happen. Phases implementation include are reporting and transaction file. Reporting files are the Sales Report and Payment Report. On the other hand, the transaction files are Inventory Table and The Member Table.

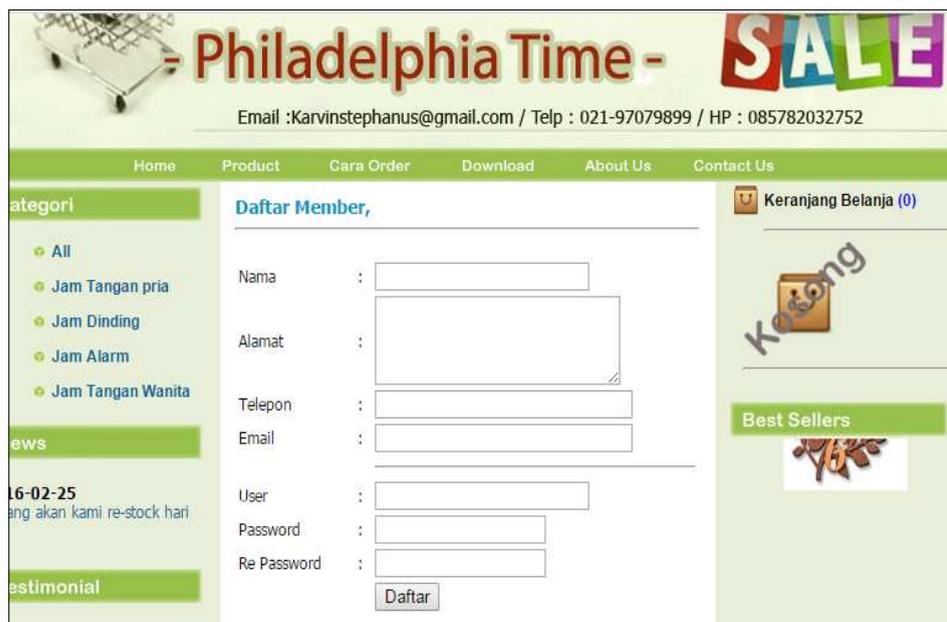


Fig. 4. Screen Shoot

The next step, when the customers start using the developed system then the actual problems comes up and needs to be solved from time to time, this process is known as maintenance [19]. After the warranty period, the software enters the maintenance phase.. During the maintenance phase, because of some untested scenarios, the software may give errors or logical problems. This has to be fixed [21].

5. CONCLUSIONS

ITC is a marketplace which is consists of a lot of store offer the same kind of products. This mean the competition is heavily strong. This study addressed the need of home-based business to expand the market scope by the internet penetration as one alternative to do the business expansion rather than the physical expansion. The

system is an online catalogue to market the products, especially for the loyal customer which has trust relation to store.

The limitation of home-based business is usually cannot fulfill the bank requirement to build the business relationship with financial industry, so the system is not reliable to build the link to financial institution for payment. Mostly, the home-based business use manual bank transfer for payment. Except, the home-based business are able to meet the financial institution requirement, so the payment system will be the next enhancement.

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