Gikosh.com

It is well recognized that small-medium enterprises (SMEs) are significant to the worldwide

socio-economic development. It is even viewed that SMEs are the backbone of the economy.

SMEs have also contributed significantly in higher growth of employment, output, promotion of

exports, and fostering entrepreneurship [5, 7]. In Indonesia, SMEs have been growing such that

they contribute to 56 percent of GDP and absorb around 97 percent of the manpower [22].

Along with the growth of the Internet, it is noted that since e-commerce was born in 1995 both

the B2C (business to consumer) and B2B (business to business) e-commerce have been growing

exponentially [8]. The proliferation happens not only in the developed countries, but also in

developing countries. The B2C sale in Asia-Pacific region in 2011 was 27.9% of world-wide

sales, and is predicted to grow up to 39.7% by 2016. In China, e-commerce has grown by 120%

per year since 2003. It is also predicted that e-commerce in China, India and Indonesia will grow

the fastest in 2013 [7].

The growth of e-commerce means business opportunities for SMEs. SMEs may develop and

operate small to medium size of B2B, B2C or C2C (consumer to consumer) e-commerce systems.

SMEs may start up new e-commerce business. Those who already run “off-line” business can go

online to access new markets and overcome distances. As going online require management

changes, the SMEs have the advantage of implementing strategic and organizational changes

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much more quickly and at lower cost than large companies [16]. In Indonesia, the SMEs

opportunities to set up e-commerce systems are backed up by this fact: In the last several years

the Internet users have been increasing exponentially. While the number of users in 2012 was 55

million [20], in 2013 it has reached 60-70 million and it is predicted that in 2015 it will be 100

million [24].

As a type of computer-based information system, e-commerce systems include people,

procedures, computer networks, software and database. This research focuses on the software

component, which is website. There are several approaches of software development, such as

water-fall, prototyping, spiral, agile, and so on [2]. Each of these will basically include stages of

requirement, system analysis, design, implementation, testing, deployment and maintenance.

Among these stages, it is recognized that requirement is a complex and risky task [13; 4] such

that broad spectrum of tasks and techniques that lead to an understanding of requirements, which

is called requirements engineering, have been developed [18].

In the context of SMEs who will set up new e-commerce businesses, the required websites that

will be developed should significantly support their success. We find that the eight key elements

of e-commerce business model defined in [8] as the success keys must be resolved at the

requirement stage. Unfortunately, we have not found research results that specifically include

these elements in analyzing requirements of e-commerce websites. Hence, we intend to contribute

in designing a requirement analysis method that resolves these key elements. After studying some

literatures, we find that [18] has discussed broad methods of analyzing requirements. We enhance

the early activities formulated in [18] such that the key elements are resolved accordingly.

Research methods: We first study literatures related to software development, requirement, and e-

commerce website development. We then design the proposed enhanced requirement analysis

method, apply the method to three case studies based on Indonesia environment (the requirements

resulting from the applying the method are then used in developing website prototypes), and

evaluate the method.

This paper is organized as the following: Introduction, literature study (software requirement,

development of e-commerce website and key elements of e-commerce business model), proposed

methods, case studies, method evaluation, and conclusion. In the appendix we include detailed

results of two case studies

Software Documentation

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INTRODUCTION TO SOFTWARE ENGINEERING

DECLARATION

ACKNOWLEDGMENTS

DEDICATION

ABSTRACT

Electronic Commerce, also known as e commerce is a type of industry where buying and selling of a product is conducted over electronic systems such as the internet.

The purpose of this application is to bring knowledge to students about ecommerce and how an interactive ecommerce application can be designed from scratch using javascript for both the client and server side . The server side includes a database , creating session models for joining diffferent user-interface pages, calculating the shipping cost and sales tax , etc. it is responsible for taking information from the database and making it available on the UI by mapping the category or item ID to the respective IDs stored in the database . The client side is responsible for showing the entire user interface, containing the react javascript framework

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**1:Chapter one Background Introduction**

1.1 Introduction

E-commerce has seen developed in the recent period in the area of trade in Iraq

and there is a significant change in the electronic shops. In addition, captured the

new e-commerce in the field of businesspersons and this through the market

orientation of commercial sites in Iraq for continued attraction in the domain of web

browsing sites. Supporting many web broker access first to find information about

technology, news, tutorials and other, so the content of web sites is the backbone of

the existence of this site and its usefulness. Web content provides visitors to the site

and visitor traffic to the site to be one of the two cases, the movement of a petition

and the movement of narrow in terms of content [1]. Broad movement, see the visits

represent and pursue varied content on the pages of the site where the content in this

layer petition targeting of an example of Arab arenas contain content Mono political

and economic and religious and scientific and thus the movement of the visit [2].

The global Statistics e-commerce will grow by $ 1.5 trillion in 2017 and growth

rates between 20 and 30 per cent in emerging regions such as Latin America, Africa,

the Middle East and North Africa [3]. The number of Internet users in the Middle

East is 90 million users, e-commerce sales estimated in the Middle East and NorthAfrica by about 17 billion dollars in 2016, up from $ 9 billion since 2013 [4]. In

addition, the value of electronic commerce via smart phones in the Middle east and

north Africa could reach $ 4.9 billion by 2017 [5]. Half of the consumers in the

Middle East almost 47% have paid card, and between 70% to 80% of online

purchases of physical goods in the Middle East are made through payment by those

cards upon receipt, while there are only 30% payment [6]. The Middle East, the

Arab market and Iraq collectively represent only 2.5% of the globe

1.2 Statement of the problem

**System Requirements**

Allow customers to view products from their home

•Allow customers to make purchases and receive products from their home •Customers are able to make payments from credit card

•Product descriptions must be easily maintained and updated by store employees

•Fast distribution of product descriptions so that customers have accurate portrayal of what Doe’s Electronics has to offer

•Inexpensive distribution of product descriptions

•Fast customer ordering system that is as simple as possible

**Information** **Requirements**

•Information needed to created order form

•Product selections

•Customer information

•Billing information (credit card)

•Shipping information (if different from customer) Interfaces Customer accesses the e-Commerce shopping system via Internet. So the Website of Doe’s Electronics, which hosts the e-Commerce shopping system, must be able to be accessed via Internet. The e-Commerce shopping system needs an interface to the Credit Verification Company’s system. If Doe’s Electronics Company uses extra systems to manage its finance or accounting, the e-Commerce shopping system may need interfaces to these systems too.

1.3 Objectives of the study

Ecommerce hosts a platform that lets businesses sell their products or services throughout the world through an electronic medium. Earlier, ecommerce was referred to as Electronic Commerce. As the definition of ecommerce implies, it includes all sorts of businesses that use the internet for data exchange and/ or money exchange. It is successfully running in many sources such as supply chain management, electronic data interchange, mobile commerce, internet marketing, data collection, online transaction, and electronic exchange of funds. The ecommerce platform you choose for creating your online store should be cost-effective and help your business grow as well as evolve with time as required. Ecommerce is a part of our day to day life. Today, technology aids in literally purchasing anything, online!

## **What are the objectives of ecommerce?**

Ecommerce business drives profitable growth with reduction is cost-to-customer, developing customer-reach, and providing a unique customer experience. It has become more than essential for B2B as well as other businesses to make the right use of ecommerce. Now, ecommerce is evolving or better say evolved into digital commerce that implies to the entire business journey from buying to delivery with an online experience.  Below are the few objectives of ecommerce:

### 1.     Reduce management costs

Businesses aim at reducing the costs incurred for the betterment of their revenue. Automating the ecommerce business can help in reducing the management cost significantly. Moreover, the right use of digital marketing can help in reducing the cost spent on driving customers to such an extent that businesses can bring customers for free of cost.

### 2.     Developing business relations

With ecommerce as the primary use, business development can be easily achieved. The direct communication between a company and the customer, the business relationship can be boosted.  Eventually, the ecommerce market shall be expanded.

### 3.     Providing a unique customer experience

Uncountable ecommerce businesses are functioning out there in the market. When a customer searches for a certain product (for instance, shampoo), they will probably click on the first three links that are shown on the Google Search Engine Results Page. All the rest links are either avoided, never seen, or are visited by a few. This itself shows the competition in the ecommerce market. One of the best ways to stand out from the crowd is by providing a unique customer experience. This includes giving a personalized experience to each customer or visitor of your online store, website, or mobile app. Some other pointers to consider are round the clock customer service, immediate responses to the queries rose, engaging with the customers, and so on.

### 4.     Increasing the number of loyal customers

Customers are the core of all business strategies. Therefore, ensuring the great customer experience is of prime importance for the growth of the business. You need to meet your customers where they spend their time. More than 60% of consumers look for purchasing goods and services online. If you meet your customers where they are already active, the chances of them, interacting with your business increases two folds. You can increase the number of loyal customers by giving the best experience to your already existing customers as well as bring in newer customers.

### 5.     Boosting the efficiency of services

With the continually evolving technology, you need to enhance the efficiency of your services. By choosing an online ecommerce platform to create an online store, you can efficiently reduce the cost of managing and selling online. You have various opportunities to boost the efficiency of your service that eventually enhances the revenue earned. By reducing the delivery time, you can witness happy customers getting back to your business two times faster. Another way is to provide your customers with automated services such as status update, invoice creating, chat support, etc. When you update your efficiency of delivering products or services to your customers, you are creating a strong online presence that helps you sell more.

### 6.     Developing relevant target

Developing relevant traffic for an ecommerce business is a common objective. Whether an ecommerce website or an online store, building traffic is one of the most important objectives. However, you should know that not all traffic is useful for your business. If you are successfully creating traffic for your ecommerce site or store, but most of the people in the traffic do not require the products or services you provide, the traffic is not causing any good to your business. For instance, your marketing strategies were attractive enough for teenagers; your business would not be receiving any boost in sales. Therefore, along with boosting your traffic, you need to analyze your traffic. Here comes the need for collecting customer data. Collecting customer data include demographics such as age, location, and gender, customer interests, browsing history, browser history, and so on. By saving these data, you can aim in targeting the relevant market.

### 7.     Making responsive ecommerce website

With the increasing use of smartphones for shopping online, it has become more than mandatory for ecommerce businesses to go mobile. Apart from creating a native mobile app, like the one offered from Builderfly, you need to [create a responsive ecommerce website](https://www.builderfly.com/store/ecommerce-builder). It is one of the major objectives of all leading ecommerce businesses. By responsive, it means to create a website that can be viewed from any devices of varying screen size, equally. Studies say that Google may next rank a website based on its mobile website. It means that any website that has a responsive design would be ranked on top of the website that does not have one. Making your ecommerce website responsive can help you optimize it. A mobile-friendly website earns more traffic than the rest.

### 8.     Increasing sales

The objective of increasing sales will always remain continuous and constant for an ecommerce business. In order to thrive in the ecommerce industry, you need to boost your sales, constantly. All other objectives are zeroed down to make this objective happen. However, you also need to look into your past store analytics and figure out the marketing tactics that have worked well for you to increase sales. Although these objectives could help you in gaining sales, nothing can beat the tried and tested marketing tactics for your business. For instance, the products that are sold the most, ideally the best seller can be used for remarketing and grab more attention. Any marketing strategy you used earlier including the email targeting and traffic boosting tactics must be revisited and worked upon to increase sales. Based on the above-mentioned objectives and the marketing tactics that actually worked for you, you need to design your marketing plan. Only you can decide what is perfect for your business and what is not. Every business is unique, and so is yours!

1.4 Justification of the study

The history of ecommerce longs back to the time when the telephone was invented. Electronic Data Interchange or EDI is believed to be the start of ecommerce. Huge companies have been investing in EDI development since the 60s. However, it did not get considerable acceptance until the 80s. The last few years have reasonably changed the definition of ecommerce. Originally, ecommerce was used for commercial transactions using the electronic medium that includes technologies such as EDI and Electronic Funds Transfer (EFT). These methods were used for commercial transactions, while later, the use of credit cards, ATMs (Automated Teller Machines), phone banking, railway, and airlines joined with the process.

In 1979, Michael Aldrich invented online shopping which eventually became the essential component of ecommerce. During the 90s, ecommerce was introduced to data collection and Enterprise Resource Planning (ERP) system. Also, the World Wide Web (WWW) was invented during this time; introducing the world to an everyday communication system. Although the Internet was popular, security protocols were introduced 5 years later. From the 2000s, ecommerce was started being used as a medium to sell and purchase goods and services.

1.5 Scope and limitations of the study

eCommerce has become one of the most popular mediums of transactions in the recent years. While it does offer quite a lot of benefits to both buyers and sellers, it is not totally free from disadvantages. By having an idea of these limitations, we can address them and come up with a solution.

**Here are the top disadvantages and limitations of eCommerce businesses:**

**1. Security:**

One of the main limitations of eCommerce is security. In most cases, people are hesitant to provide their personal and financial details in spite of advanced data encryption security systems in place. Moreover, there are some websites that do not have the capability and features installed to authenticate transactions. As such, there are instances of [fraudulent activities](https://www.shiprocket.in/blog/ecommerce-online-scamming-fraudsters-countries/). The fear of providing financial information like credit card details hinders the [growth of eCommerce](https://360.shiprocket.in/blog/ecommerce-growth-india-market-research-stats/).

**2. Lack of Privacy:**

To some extent, the privacy of a customer is compromised in eCommerce. You need to provide your personal details, such as address, telephone number, and so on to the seller. There are still lots of sites that do not have the advanced technology to protect sensitive information. Moreover, there are also sites that illegally collect consumer statistics without permission. This is one reason why people get skeptical while using eCommerce.

**3. Tax Issue:**

In case of different geographical locations, sales tax becomes an issue. Many a time sellers have faced problems in the computation of sales tax. Moreover, physical stores have a risk of losing business if online transactions are exempted from taxation.

**4. Fear:**

 In spite of popularity, there still resides an element of doubt in the mind of people when it comes to online shopping. This is because the customer cannot physically examine the product and is not sure about the features and attributes. This is why a lot of people prefer shopping from physical stores.

**5. Product Suitability:**

 As already mentioned, it is not possible for people to physically examine the product in eCommerce. In many cases, the original product may not match with the picture or specifications in the eCommerce site. This absence of ‘touch and feel’ creates a discouraging effect.

**6. Cultural Obstacles:**

As the process of eCommerce encompasses customers across the globe, the habits, traditions, and culture differ. There may also be linguistic problems and all these may lead to issues between the seller and buyer.

**7. High Labour Cost:**

 In order to get the whole eCommerce and delivery process right, a specialized workforce is required. To get all these in the right shape, companies have to shed a good amount of money and employ a talented pool of people.

**8. Legal Issues:**

A lot of legal compliances and cyber laws that need to be taken care of in an eCommerce business. These regulations may vary from country to country. All these reasons deter businesses from going electronic.

**9. Technical Limitations:**

 eCommerce requires advanced technology platforms for better performance. Some limitations, such as lack of proper domain, network and software issues and so on can affect the seamless performance of an eCommerce site.

**10. Huge Technological Cost:**

 Last but not the least; a lot of money needs to be invested to be built up the technical infrastructure needed to run an eCommerce business. Moreover, they need to be upgraded based to keep abreast with the changing technology.

In order to minimise these limitations, eCommerce business should have a proper business plan and implement them with proper strategies.

1.6 Time Schedule & Budget

There are several economic evaluation methods available to assess an investment. The most widely used methods are Net Present Value (NPV) and Discounted Cash Flow Rate of Return, or Internal Rate of Return (IRR). Even though, NPV approach and IRR approach will normally provide the same decision result, polls of industry indicate that the IRR is the number one economic evaluation decision method use by about two-thirds of industrial companies (Chen 1996). This is due to the fact that some managers prefer a percentage rate of return more than the dollar amount from NPV.

Before calculating NPV and IRR, one should have an understanding of basic finance concept called “Time value of money”. The concept of Time value of money is that a dollar today is worth more than a dollar available at a future date because a dollar today can be invested and earn a return. Someone investing a sum of money today at a given interest rate for a given period of time would expect to have larger sum of money at the future date (Baker and Powell 2005). As different projects may provide benefits at the different time in the future, all costs and benefits of the projects should be viewed in relation to their present value.  
  
Present value is the value of a future cash stream discounted at the appropriate market interest rate, called discount rate. The present value of the future cash flow can be calculated using the following equation:

1.7 System Modules

The ecommerce module fulfills all requirements for operating a standard business-consumer web service. It offers a fully-functional category-based shopping cart system and real-time credit card billing, just as you would find in any large popular ecommerce site. However, this is simply the base of the ecommerce module; it offers a whole host of handy utilities, including (but not limited to):

* Security
* User tracking
* Gift certificates
* Mailing lists
* An auditing system
* Order fulfillment
* Order tracking
* Special offers
* Online reporting
* User-based product rating & professional reviews
* Product association (linking)
* Pre-ordering

Additionally, a large number of settings can be adjusted (e.g., formulae for shipping costs / tax charges / product description information, products displayed on searches) from the administration pages.

The creation of the e-commerce module also prompted the building of the [customer service module,](http://www.arsdigita.com/arsdigita/doc/ecommerce-customer-service)which fits seamlessly together with the ecommerce module and the rest of the ACS. This allows all interactions with customers, and the issues they have raised, to be managed efficiently.

**If you are a business**

It is worth considering the following points:

* Closed-source ecommerce packages are dangerous:
  + If a closed-source ecommerce package doesn't do exactly what you want, you're out of business.
  + If the company behind a closed-source ecommerce package goes out of business, so will you, unless the package can meet the evolving needs of your business.
  + If the company behind a closed-source ecommerce package adopts a different "business model", you're screwed. The package you have built up your site around is discontinued, along with all customer support. Your end-user license remains in effect, preventing you from altering the software (which would not be an easy task anyway, as the source is not available).
  + If you're even tempted to adopt a commercial ecommerce system from a company other than IBM, Oracle or SAP (three enterprise software vendors that seem likely to be around for awhile), read the iCat story towards the end of <http://photo.net/wtr/using-the-acs>.
* The ArsDigita ecommerce module is open source. Consequently:
  + Thousands of programmers around the world have scrutinized the code.
  + Whilst we have faith in ArsDigita, we're not asking anyone else to. Anyone can continue benefitting from and extending our software.
* This module closely integrates with the rest of the ArsDigita Community System, giving a much clearer portrait of the customer. Valuable information can easily be data-mined out of the ACS to find, for example, "all users who have participated in the discussion forum on at least ten separate occasions but who have not bought anything yet", then spam those folks with gift certificates.
* The rest of the ACS is ready and waiting to offer any of the functionality your community might require: Bulletin Boards, Classifieds, Events, Chat, Bookmarks...even run the rest of your company using the [Intranet module](http://dev.arsdigita.com/arsdigita/doc/intranet).
* The customer service module is perfectly designed for working with the ecommerce module to ensure customers receive the support they need within acceptable times. Ecommerce sites are an online community (see [), just with a different perspective.](http://www.arsdigita.com/asj/using-the-acs)

1.8 Implementation Tools Required

**Chapter 2: Research Methodology**  
2.1 Introduction

Quality attribute scenarios [10] to characterize the ability to modify requirements for a RECWEB.

Table 1.1 shows the basic parts of a quality scenario. The purpose of using this technique

is to define a set of changes and a context in which certain changes will take place.

The first scenario (Figure 1.4) covers content changes during P. In practice, this

scenario is usually only partially satisfied. A large number of content changes must be

made in a short period of time. This overloads content personnel with work during P.

The second scenario (Figure 1.5) covers deployment of enhancements during P. This

5Figure 1.5: Deploying enhancements during P

scenario is very seldom an option unless a high ranking executive demands it. Most re-

sources are dedicated to making content changes and preserving performance and avail-

ability.

In order to achieve these modifiability requirements, design decisions or tactics must

be made that ‘influence the control of a quality attribute response’ [10]. For example,

localizing changes, preventing ripple effect, and deferring binding time are three categories

containing several modifiability tactics. However, these tactics are either already applied

to a RECWEB or just do not satisfy the requirements.

The solution is to automate content changes. This will reduce the human touch points

required during P. Freed resources can be used for enhancements work. The automation is

not just deploying content changes, but the system actually making the content change.

Intelligence can be built into the system to determine, for example, what navigation,

products, and promotions should be deployed in a given seasonal context.

The seasonal calendar is fairly predictable. In other words, Thanksgiving is always the

last Thursday in November and Christmas on December 25. A system can deduce this

knowledge by comparing system time to a seasonal calendar. With this information, the

system can intelligently find content to match the particular season or holiday. In order

6to accomplish the content match, the system must be able to reason with or understand

the data representing the content.

Removing human involvement from the process is not an overnight endeavor. As

previously mentioned, most RECWEB are constructed by customizing a COTS package.

Automating content changes must be achieved within the bounds of the COTS pack-

age. Again, customization of COTS can be challenging. In the previous section, major

patterns and tactics a typical COTS-based RECWEB implements are presented. This

work references those modifiability points and presents a solution within those bounds.

Realistically, any solution would require a phased approach.

2.2 Methodology for Literature Review

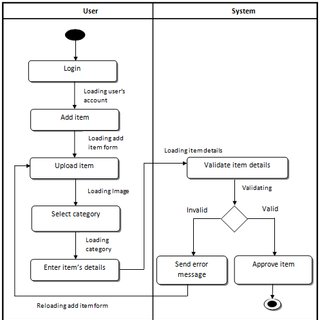
In this study, a narrative literature review regarding culture and e-commerce website design has been introduced. Cultural aspect and e-commerce website design will play a significant role for successful global e-commerce sites in the future. Future success of businesses will rely on e-commerce. To compete in the global e-commerce marketplace, local businesses need to focus on designing culturally friendly e-commerce websites. To the best of my knowledge, there has been insignificant research conducted on correlations between culture and e-commerce website design. The research shows that there are correlations between e-commerce, culture, and website design. The result of the study indicates that cultural aspects influence e-commerce website design. This study aims to deliver a reference source for information systems and information technology researchers interested in culture and e-commerce website design, and will show less focused research areas in addition to future directions  
2.3 Methodology for requirement specification, data collection and analysis techniques

Along with the growth of the Internet, the trend shows that e-commerce have been growing significantly in the last several years. This means business opportunities for small-medium enterprises (SMEs), which are recognized as the backbone of the economy. SMEs may develop and run small to medium size of particular e-commerce websites as the solution of specific business opportunities. Certainly, the websites should be developed accordingly to support business success. In developing the websites, key elements of e-commerce business model that are necessary to ensure the success should be resolved at the requirement stage of the development. In this paper, we propose an enhancement of requirement analysis method found in literatures such that it includes activities to resolve the key elements. The method has been applied in three case studies based on Indonesia situations and we conclude that it is suitable to be adopted by SMEs.

2.4 Methodology for system Analysis & Design

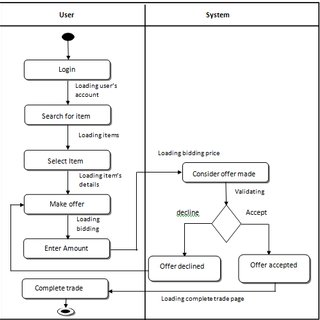
2.5 Methodology for System implementation

Considerable numbers of people are limited to selling and buying their products in the brick-and-mortar market, otherwise known as physical market due to insufficient indigenous e-commerce systems, thereby facing the problems of distance to market, insecurity, traffic, choice and pricing. The purpose of this project is to create a platform that will bring sellers and buyers to interact and do business together. The research was carried out to develop a system that will provide the most convenient and shortest way to make an online trading, otherwise known as e-commerce. An investigation was carried out, and the system was analyzed, design using UML tools, then implemented using PHP, jQuery, MYSQL, CSS and HTML 5 on local host server (XAMPP).It was observed that with e-commerce system, people can post or make offer for items at any time. Keywords: E-commerce, Electronic, Commerce ATM, POS and C2C.



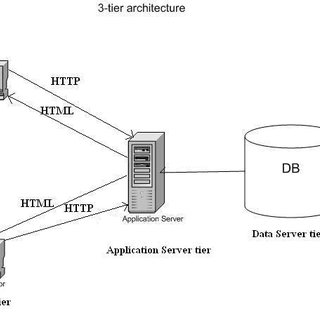
[Activity diagram for add item](https://www.researchgate.net/figure/Activity-diagram-for-add-item_fig3_323535611)

[…](https://www.researchgate.net/figure/Activity-diagram-for-add-item_fig3_323535611)



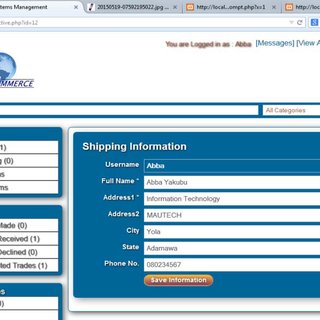
[Activity Diagram for Buy Item](https://www.researchgate.net/figure/Activity-Diagram-for-Buy-Item_fig4_323535611)

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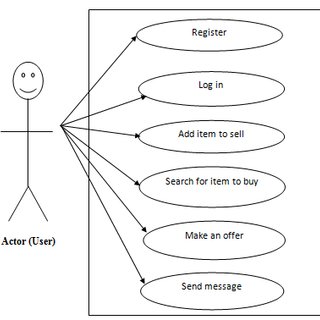
[Three-Tier Architecture](https://www.researchgate.net/figure/Three-Tier-Architecture_fig1_323535611)

[…](https://www.researchgate.net/figure/Three-Tier-Architecture_fig1_323535611)



[Shipping information form](https://www.researchgate.net/figure/Shipping-information-form_fig5_323535611)

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[User Use Case](https://www.researchgate.net/figure/User-Use-Case_fig2_323535611)

2.6 Methodology for system testing  
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