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MSc in Web Technologies

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To investigate the scope of Social Network as Marketing Tool

Dissertation

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I hereby certify that this material, which I now submit for assessment of the program of study leading to the award of Master of Science in Learning Technologies is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work

Signed

Date

Student Number x00054745

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Abstract

Social networking sites are growing rapidly. In this project we will discuss about the marketing potential of social networking sites. Research will reflect the finding of marketing tool with the help of existing data in social networking sites and will explore new information that user will never be used on the same social networking site. Users will share their interest in terms of brand, company, life style and social activity etc.

That will provide attractive marketing tool on social network. Research finding shows that most of the social networking are also using these techniques and generating millions of income. That is the reason, they are offering free services to users.

Social networking sites processing of users information and perform analysis that is very important for growth of marketing. This Project will investigate the marketing potential on social network.

1. Introduction

The popularity of Social networking is growing rapidly Every 10th person in the world is connected with any social networking sites Huge numbers of people are attached and they are busy to share their views with their friends, family members Views could be in form of videos, audios, images, blogs and chatting etc Numbers of user's strength are also being exploited by companies and marketing professional (Information Extraction from Social Network for Agro-produce Marketing 2012)

Social networking site can be used effective marketing tools Most of social sites have already marketing element on website In this project we will focus initially on major social networks and investigate its all behavior that how can we use them for marketing? We will research social media and social network in briefly And will compare and scale of social networking sites to each other The project will try to retrieve user's raw data from social networking site and will manipulate it to show other user for research purpose

2. Literature Review

The word media describes the way of communication such as newspaper, radio, television, internet, telephone and social media etc. Now social media is a buzz word. The following section will describe the concept of social media.

2.1 Social Media

Social media is a social instrument of communication. Social media has supersets that have many sub-sets such as social news, blogs, social networking, publishing, photo sharing, audio, video, microblogging, live casting, virtual worlds, gaming, productivity application, aggregators, RSS, Search, Mobile and Interpersonal.

2.1.1 Publish

Publish is a term which is used to pass accurate and authentic results in the form of records, incidents or events to people.

Thousands of years ago all stories, laws, tribe's information were coming orally. Now it is going to be saved in different forms of images, audio, video, email and blogs etc.

2.1.2 Photo sharing

Photo sharing is sharing expression in form of photos or images. Napoleon Bonaparte is credited with having expressed the idea that "A picture is worth a thousand words." Photo sharing is part of social media. People share their photos with each other. People can capture a moment and make remembrance. That is the best way to preserve a moment.

2 1 3 Audio sharing

Comparing audio to different media This is better media than text Don't need to read just listen and make virtual image in mind That is best thing for special people who are deaf

2 1 4 Video sharing

Video sharing is very popular now a day Video is very effective to convey messages, information or to capture moment than other media Video is preferred to choose medium of information in all It is same as reading novel and story or watching novel as a documentary People prefer to use video because of sound and visual Human brain doesn't need to work more on virtual sketches

2 1 5 Microblogging

Martin Ebner (2008, pp 2) from Graz University of Technology mentioned in his literature that "Today maybe the most important and visible field of Web 2.0 technologies are weblogs, shortly called blogs A frequently updated website consisting of data entries arranged in reverse chronological order as Walker described (Walker, 2005) People are writing and discussing about various topics, from private to scientific topics and it seems that each topic is represented within the Blog sphere Amazing growth of Weblogs seems to be the success of three factors Usability, Collaboration and Personality

- It is easy to blog (Usability) No special skills are necessary to create a new contribution
- It makes fun (Collaboration) People connect with each other, discuss topics they are interested in
- It belongs to me (Personality) Contributions are written from a subjective perspective "

So microblogging is based on text but those text shares with people or group of people. For example, Twitter is a professional microblogging site which provides people to share their views, updates any events.

2.1.6 Wiki

Wiki is also a social site in which user creates articles and edit those articles with current changes and update.

2.1.7 Social News

In social news, people interact by voting for articles and commenting on them (Daniel Nations, 2012).

2.2 What is Social Networking?

"Social networking is a concept that has been around much longer than the Internet or even mass communication. People have always been social creatures, our ability to work together in groups, creating value that is greater than the sum of its parts, is one of our greatest assets" (Alfred C. Weaver 2008, Benjamin B. Morrison 2008).

Social networking services enhance communication individually. All society and cultural settings individually using web 2.0 tools for example wikis, blogs and social networking services. Social networking is online services that build relation between people based on interest and activity. Some experts describe the social networking like a network that consists of user profiles with link to other profiles.

"A "friend" recommendation system, based on trust, is the hallmark of social networks" (Marc Beaart, 2012).

2 3. Business on Social Networking

According to Dr Andres Fortino (2007) as mentioned in journal that
“The Business Networking Model integrates business processes into the emerging functionality of social networks called Web 2 0 Its key elements include

- **Professional Networking**
- **Professional Communication**
- **Professional Knowledge Base**
- **Professional Collaboration”**

Those four key elements represent different sub category which make to different to each other Authors divided into four parts according to their properties

Professional Knowledge Base

Document Repository

Shared knowledge

Creation

Expert knowledge base

Professional Collaboration

Distance learning

Virtual work

Problem solving

Product development

Professional Networking

Credentialing

Resume

Mentoring

Search for staff

Professional Communication

E-mail

Internet messaging

Texting

Twitting

To integrate with business module of social networking first have a look how can we categorize all social networking sites What are they different features? How do they differentiate to each other? Dr Andres Fortino (2007) and Aparna Nayak (2007) have studied on these topics and they describe in details about differences in their article In figure 1 2 shows well known site are there and their features

Product	Professional Networking	Social Networking	Resume Uploading	Personal Networking Groups	Mentor/ Apprentice	Number of Registered Users	Global Alexa Page Ranking
LinkedIn	Y	X	Y	Y	Y	43 M	192
Xing	Y	X	X	Y	X	7 M	1814
Ryze	Y	X	X	Y	X	5 M	20,163
Facebook	X	Y	X	Y	X	250 M	1
MySpace	X	Y	X	Y	X	263 M	11
orkut	X	Y	X	Y	X	67 M	112

Fig1 1 (Dr Andres Fortino 2007, Aparna Nayak 2007)

These figures are at that time but now number of registered user varies according to current situation LinkedIn, Xing, Orkut and Ryze are best to fit on Professional networking They have all features needed for any person who are involved in particular profession or they want to do some activity according to their profession Facebook and Myspace are social sites so they don't come in professional network

Let's have a look at professional communication attributes in below figure

Products	Synchronous				
	Unicast		Broadcast		
	File sharing	IM	Video Conf	VOIP	Webcast
Yahoo	✓	✓	✓	✓	X
Google	✓	✓	✓	X	X
Share point	X	✓	X	X	✓
Outlook	X	X	X	X	X
Websphere	✓	✓	X	✓	✓
Twitter	✓	✓	✓	✓	X

Fig 1 2 (Dr Andres Fortino 2007, Aparna Nayak 2007)

Professional communication is based on those who can help in professional activities That can help in business or office work There are many sites which provide those features but some more famous are mentioned above They divide into two parts one is unicast which is involved between two or more than two (Dr Andres Fortino 2007, Aparna Nayak 2007)

And second one is broadcast by individual can broadcast their information or communicate to specified group Typical digital format of professional communications are chat, texting, scrap book/message, instant messages, email, file sharing, videos, photo, posting poll and reviews and news The above article has already been described about social media and their elements and how they do effect on daily life Now we will have a look the role of social networks in marketing

2 4 Marketing on 3W (World Wide Web)

Marketing on 3W (World Wide Web) is not new now. It has great scope. There is a lot of words for Internet marketing for example e-marketing, web marketing and iMarketing. Internet marketing is not just market on internet. Internet marketing has covered a lot of things such as sales, feedback, comments and advertising that makes it more complex and useful. Internet marketing is now becoming a broader mix of components that company can use as means as increasing of sales. No matter that business is online, partly online or offline. But the decision to use internet marketing is up to the company. Now internet marketing nearly needs to every one. Internet marketing is more than marketing and sales. Company can communicate their messages, products and services online.

They can conduct research online such as demographic, preferences and needs of existing and potential customers. Sale goods, services or advertising space are available over the internet (Lorrie Thomas, 2012).

2 4 1 Internet Marketing Components

As Lorne Thomas (2010) mentioned in his book "Online Marketing"

"The growth of the world Wide Web has changed the way we approach marketing. The power of online marketing can be accessed by anyone anywhere as long as they have a device (computer, phone, TV, car console, tablet, etc) with an internet connection. There is no elitism on the web. (Most of the developing world accesses the internet via their phones)

Benefits of web marketing include

- 24/7 availability to information and sales and product support
- World wide visibility
- Direct sales
- Targeted Market
- Competitive advantages
- Saving in costs and human resources
- Immediate tracking to measure, optimize and spend money where it counts”

Internet is not just a website now you can run all media through internet People can watch television, listen to the radio, playing video, images everything Those benefit which has been described by Lorrie Thomas just internet has That could make company service better We will discuss about different components of marketing on web

2 4 2 Banner Ads

Companies can use banner ads in three ways to display their ads They can exchange their ads with other website means with different companies Second is commercial and popular website they provide banner ads and charge some amounts per click There is lot of banner ads network so companies can join them as well

2 4 3 Search Engine Optimization

Search engine optimization takes time to setup But once setup output start to come with time Companies cannot afford to hire an online marketing consultant when they have just started so better method is to read marketing blogs, watch seminars and educate yourself on the SEO process

2 4 4 Paid Search Engine

Search engine provides pay facility search. They want to make search engine valuable and professional. Any companies want to show their result on top so they need to pay certain amount to Search Engine Company.

2 4 5 E-mail marketing

E-mail is a recognized and well known method for marketing. Compare with other form of direct and Internet marketing, email marketing has more advantages and draw back. As Ruth Rettie (2002) is mentioned in journal about Forrester and provides some references about e-mail marketing.

“Email marketing is being increasingly recognized as a cost-effective marketing tool. Forrester (Niall 2000) describes email marketing as one of the most effective online marketing tools because of its high response rate, and expects email marketing to be worth 5 billion US dollars by 2004. eMarketer (2000) estimate that 61% of all medium and large US companies use email marketing on a regular basis.

Jupiter, (Pastore 2001), predicts that spending on digital marketing initiatives such as coupons, promotions and e-mail will surpass that of internet advertising (advertisements placed within website content such as banners, interstitials, rich media, pop ups, etc) ”

Many authors recognize the advantages of marketing. Jackson and DeCornier (1999) recognized that email provide facilities to marketers interaction with costumers in real-time and more power full. With the same line email marketing has disadvantages. If email is too long no one will bothered to read it. Spam mail is also become part of less use. User does not want to open any irrelevant email. So make sure subject is attractive that should not be same as spam email. According to the selective literature email marketing is growing rapidly. If companies analyze the mechanism properly and create market plan so that has big scope in future.

2.4.6 Google Places Optimization

Google places is an online marketing tool. Google places also provide free marketing. That is best for small businesses that don't have a web presence. Mostly internet marketing consist of website. Pages can have business details, hours of operation, a keyword-rich description, and so on. There are also facilities to add images and video.

2.5. The role of social networks in Marketing

Some people believe that marketing on social network has just two ways advertising or viral campaign. By understanding the social network in depth, social network analysis, different category of social sites, their features and functions can be provided better knowledge for effective marketing. Shaun Doyle (Doyle 2007) who is CEO of Cognitive box writes in his article

“In order to create marketing strategies suitable for our customers, we must first understand what the customer is influenced by during the decision-making process. This might be the most important way to learn how and where to correctly invest our marketing efforts. Recent research shows that more than 75 per cent of customers will consult a friend before deciding on the purchase of certain products or services. But the main issue here is whether organizations know how to utilize this fact to their advantage. Doyle (Doyle 2007) ”

That is fact without research or knowing complexity to target market in social media or in any media

Reason

- **A friend’s recommendation (76 per cent)**
- **Previous experience you had with this company (68 per cent)**
- **A recommendation in a newspaper/magazine (22 percent)**
- **Advertisements (15 per cent)**
- **The company’s website (8 per cent)**

(Doyle, 2007)

Benefit of business on social network site is to capture maximum number of people at domestic level and internationally People are using social network every time Social network is based on user profile, like dislike, hobbies, specific field (professional work), friends finding sharing photos and videos

There are some fact and figures which is published by PEW Internet & American Life Project, 2012

Adults who use social networking sites

Total:	51%
18-29 yrs	79%
30-49 yrs	61%
50-64yrs	38%
65 plus	14%

Source PEW Internet & American Life Project, 2012

Let's discuss about market share of social networking sites

Market Share

Facebook (F/B)	55%
Twitter	12%
LinkedIn	7%
Google Plus	8%
MySpace	6%
Others	12%

Source ComScore, 2012

According to ComScore, Facebook has biggest market share And they have better strength of users Let's discuss the three giant social networking sites

2 5 1 Comparison between Social Networking Sites

There are many social networking sites but top most three sites are as follows

- Facebook
- MySpace
- Bebo (Social Networking Websites Review, 2012)

Currently Facebook is the world biggest social networking site which provides the core facilities like finding friends or group, discussion, like or dislike, polling method Facebook also providing marketing tools and add on site There is also particular category for business and companies Facebook also providing "Apps on Facebook" by this integration of an application with social site and run on social site is possible Facebook allows users to run small application, game and which could be played a major role for business promotion and sales Now the strength of Facebook is 750,000,000 (Ebizmba, 2012)

MySpace is also second biggest social networking site which provides music sharing, videos, games, friend finding etc MySpace has also architecture to promote business or companies like Facebook (MySpace com, 2012) Strength of MySpace is 70,500,000 (Ebizmba, 2012)

Last one is Bebo and Bebo has same all features as other top Social network sites have Bebo has also lot of apps It is used mostly in Europe (www.bebo.com, 2012) The number of users is 40,000,000(Social Media Blog, 2012)

2 5 2 Facebook

In the field of social networking sites some companies have increased their users rapidly from last years The author Ho, Hui-Yi has mentioned in his article about social networking companies

According to 2010 a famous internet company had announced the analysis report on the basis of maximum hits Top three globally social networks was Facebook (54 76%), Youtube (15 33%) and Myspace (12 44%)

(Use behaviors and website experiences of Facebook community 2012)

It shows that Facebook still are so far than other social networking sites

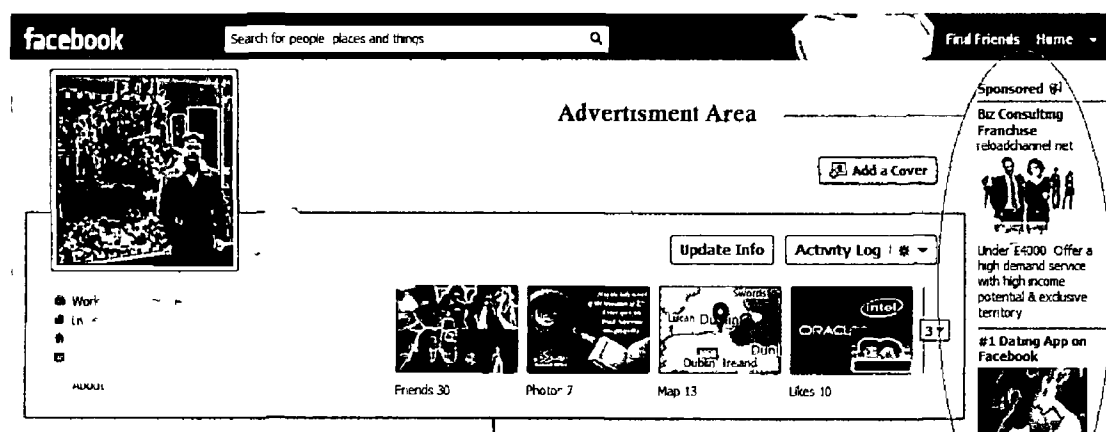
2 5 3 Marketing Factor on Facebook

Millions of users are using those services free in terms of video sharing, audio, picture sharing, comments and lot of other services with their friends. How the Facebook company generating a huge income by the social network? The company will be involved with in business activity and marketing. Mostly all global companies, brands, artists and more well known celebrity are attached with Facebook. They are promoting themselves by social network and gaining a huge popularity all over the world.

“With the progress of Internet in recent years, the global online retail industry is providing extremely great opportunity for future commerce with planned growth, online experiential acts have become a trend for modern people in new marketing times” (J. Chen, 2008)

2 5 4 Facebook Marketing Technique

During the research of social network Facebook one key factor is very popular and strong tool for marketing. Facebook is also used as marketing tool and that is “Facebook Like”. Facebook Like provides the user’s behavior, their interest, their goal. This is a main factor of marketing and provides the mechanism the attraction between products and users.



Source (Facebook,2012)

As above screen shot focusing the marketing strategy of Facebook on the basis of user likes Those advertisements manipulate according to user's profile data, their activity and their likes

3 1 Research Background

Research in past reflects the intention of companies to use social media for marketing their name, brand, products etc and make it valuable and try to target to more customer locally and internationally There are still more space for advertising on social networks Social networking sites are announcing new features in their sites and users are showing their keen interest Statistic report shows more than 75 per cent of customers consult to their friend before deciding to buy any products or services and that figure shows that any services where people will be involved with their community, friends, family members or in any group They can ask for suggestions, get feedback, get comments after use and the main thing is they can trust better on products Reason is not just for communication that users have now choice to read comments of person who are already registered with products Social networking site has capability to keep on same track

3 2 Hypothesis/Research Question and Objectives

Research is based on researchers past work of that how they delivered concept of marketing on internet There are many ways and all techniques have some benefit and drawback as well In this research social networking site is particular area which arise question that "is social networking site providing powerful media for Marketing? Is social media help to increase popularity of product by the friend and through Facebook Like activity?

4. Facebook Application Requirements Analysis

4.1. Introduction – Facebook apps case study

All existing apps on Facebook do not have any application that shows “Like” function and process those like for specific result After bursting studies on Facebook, the real picture appears that there are following categories in Facebook app centre



Source Facebook App Centre, 2012

Most of apps exist in games and entertainment categories and some apps come in rest Required app has to fit in those categories And Maximum number of users should be attached with application and by the help of those data statistical analysis is possible

4.2. Existing Problem

The application needs users who register and use app. The most well known categories are game and entertainment. An application should be attractive and interesting as user point of view. How users will invite their friends?

Normally users keep away from apps due to sharing of personal information and personal activity on social sites. How will they trust on app first time and future as well?

To retrieve top ten pages on Facebook is critical. Now the question arises that how could an app show to user what the rest of people like. How they will be satisfied with other like information?

How to find out users data about brands and pages which exist in our database without pressing Like button on Facebook.

4.3. Project Scope

The main scope of project is to build an app on Facebook (social network site). The new app must be user friendly and fully based on user's interest.

Users should send this app to their friend by Facebook Like. The Facebook app should have the following features:

- To run an application on Facebook and fulfil its authentication requirement for access token
- To show login user's his/her Facebook like in category wise
- To show user like information about rest of people who are using this app
- To provide category based pages for users to explore their interest
- To implement click analysis method on users activity
- To generate graph based data will come from click analysis

4.4. Functional Requirements

4.4.1 Overview

The first main requirement of Facebook app is users must trust on app site They login to app feel free and there should not be any hassle to login Build an app that will discover new interesting area for users That will be based on those data which already exists but users never seen them before

4.4.2 App Sign Up

App sign-up should be hassle free for users By the help of Facebook login users will gain more trust on app Users don't need to remember extra password That will provide better mechanism from user aspect and will enhance features to build an app on Facebook

4.4.3 Facebook Like in category

Basic theme of an application is to fetch user likes and compare with other likes So there is huge amount of likes on Facebook Over 500 million of users exist in Facebook That's difficult to show business page individually Facebook provides categories for like That will make easy search for likes Fig no 1 shows some main category of Facebook

Industrials	School	Beverages
Airports	College	Cars
Companies	Telecommunication	Clothing
Internet/Software	Computer	Furniture
Political party	Mobile	Website

Illustration 1 Facebook Like's categories

4 4 4 Operational Requirements

- App will be run inside Iframe
- App should be hosted on Heroku Cloud
- Provide rich interface to users
- Develop to app using Ruby on Rails

4.5. Use Case Diagrams

4 5 1 Like Guru Use Case

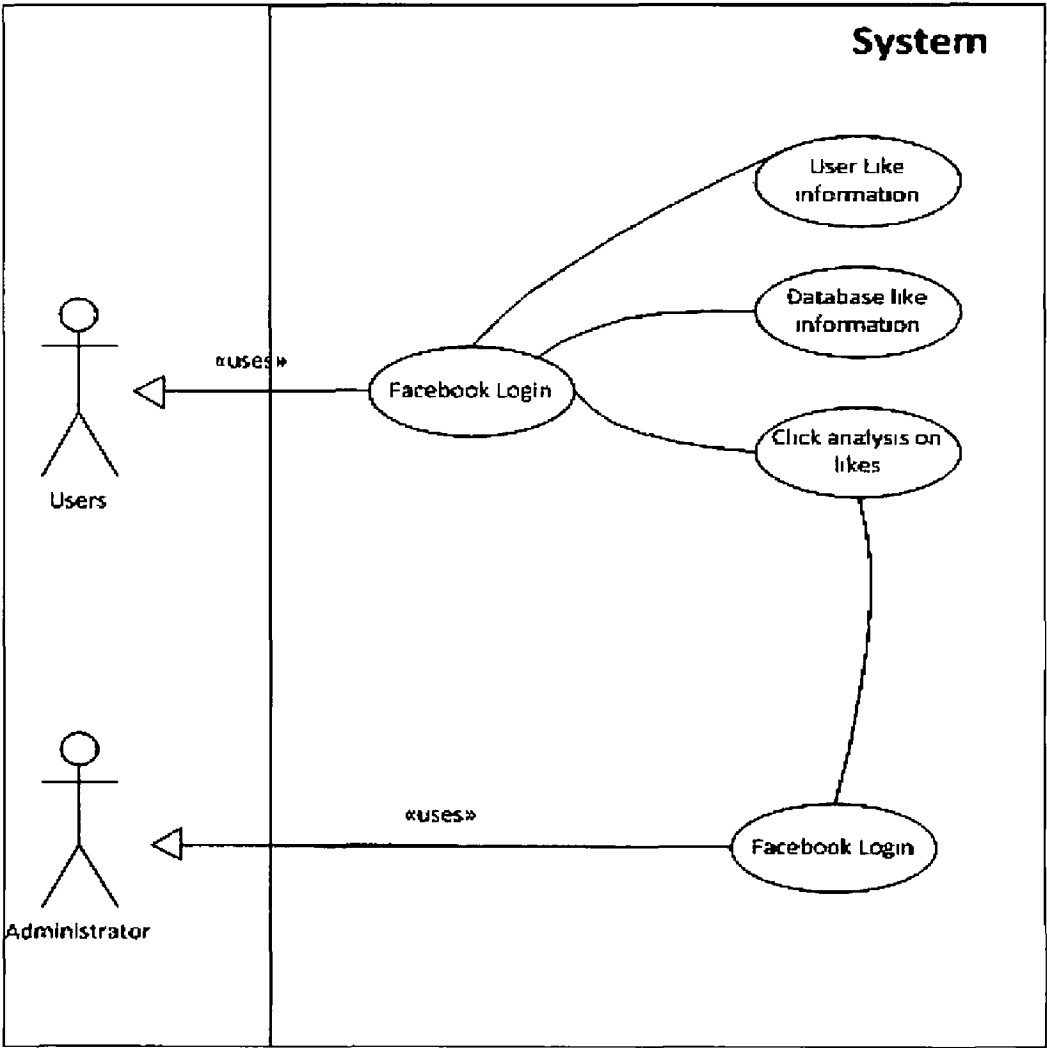


Illustration 2

4.6. Conclusion

Requirement analysis is the features of system or system function used to fulfill system purpose. It focuses on system needs and problem but not on solution. The requirement analysis is based on functional requirement and nonfunctional requirement. The above gathered data from requirement analysis reflects the problems and functionality the business logic in the system. To define method and describe functionality of method “UML Use Case” and “Class diagram” play a vital role. It will be provided help for the function that will be described in chapter 5.

5. Application Architecture, Design and Implementation

5.1. Application Architecture

5.1.1. Facebook Application (Like Guru) Architecture

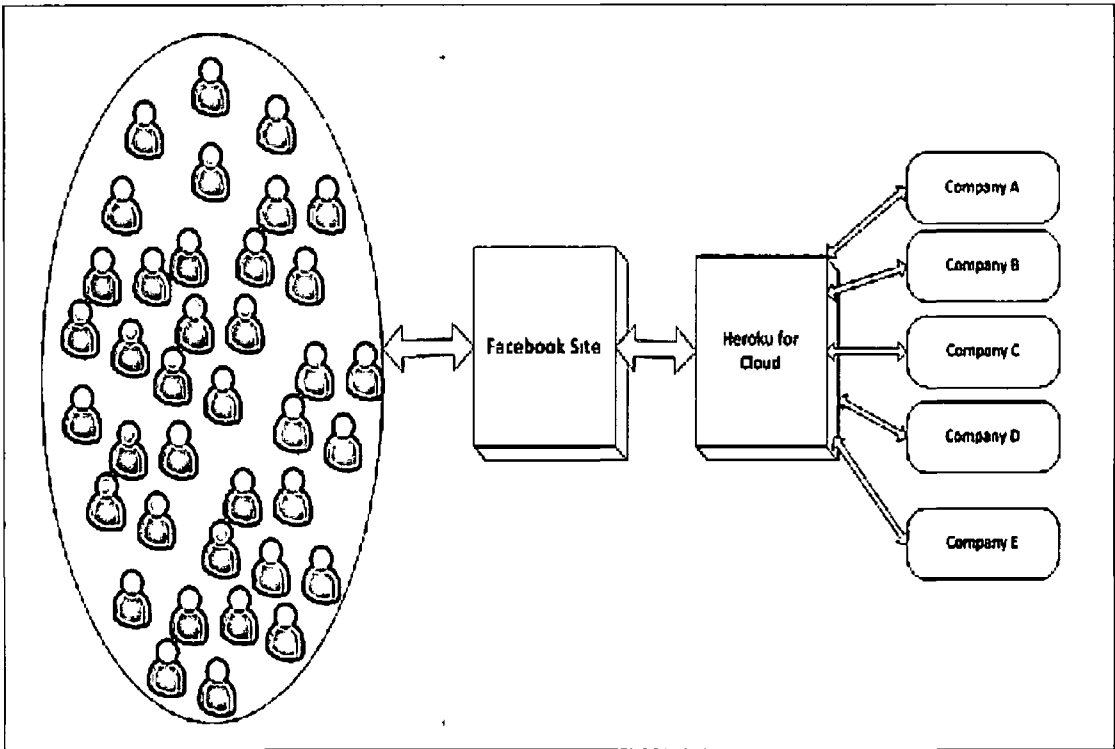


Illustration 3

This is the main concept architecture of an application which is illustrated on illustration no 3. Users will be connected through Facebook app which will be run in iframe with the help of Heroku cloud. As a result of research, the main basic architecture has been created. Diagram shows that how the companies approach customers and how an application will integrate with social site and will provide assistance to companies. Every company will have equal rights to promote their business. This will be depended on company profile, product quality and user likes.

5 1 2. Facebook Application (Like Guru) Data Architecture

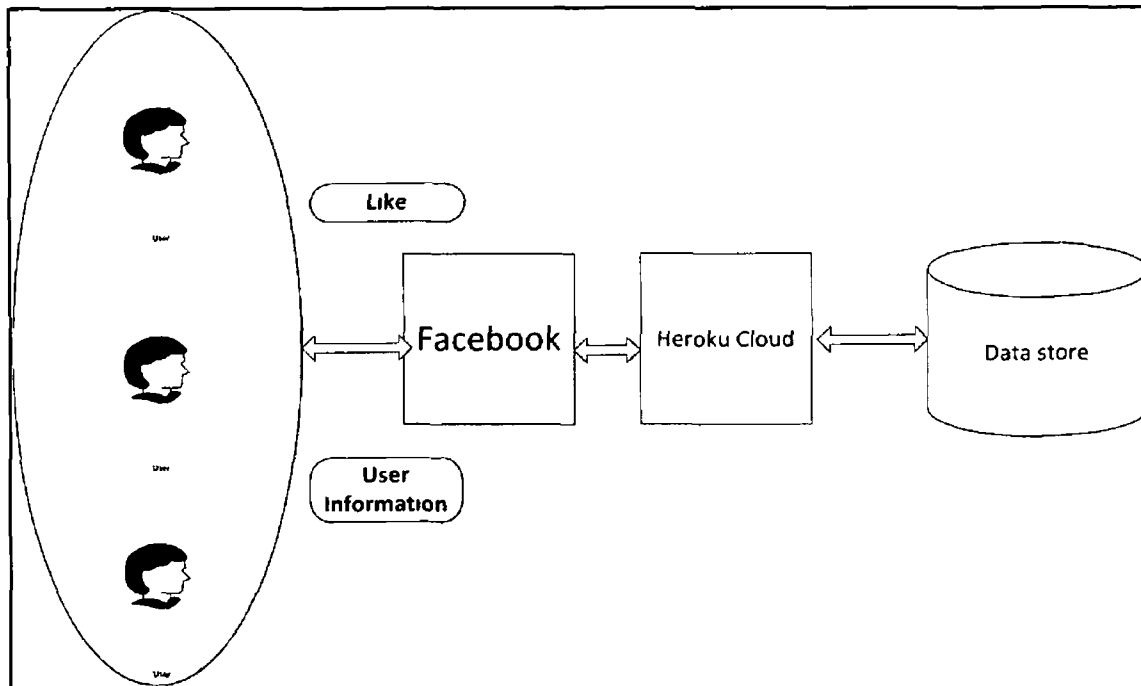


Illustration 4

Illustration no 4 is describing data flow which will be moved through entire system. When users login through Facebook login, their basic information (name and email) will be shared with the application. With the basic information, the application will fetch the user's likes as well.

Social network sites will provide a positive thing if one user likes one page, so the user will be able to tell their friends. That is a good idea to promote any popular pages based on business, retail, company, etc. and a better way to advertise products.

Social network is also the best area to market outside the country, meaning internationally. Because people from different parts of the world can connect to social networking sites. And now social networking sites have the capability to divide the network logically region-wise.

There will be sharing of some data between user and companies on the basis of click analysis by Facebook application. From the user aspect, user will provide name, user email, and by using an application, they will provide their likes and browse more likes from application database and will tell to their friends.

There is no any hidden method by which application loses user trust. In short, every thing should be fair and open.

From Company aspect, they can promote their products, advertise new products, and get user feedback. Companies can get data on daily basis and research on data.

Some basic data of user will be stored in business application's database as it is mentioned above and that will be used by user and companies in future. For example, with those information, companies will send back information to customer.

5 1.3 Application (Like Guru) Architecture on Facebook

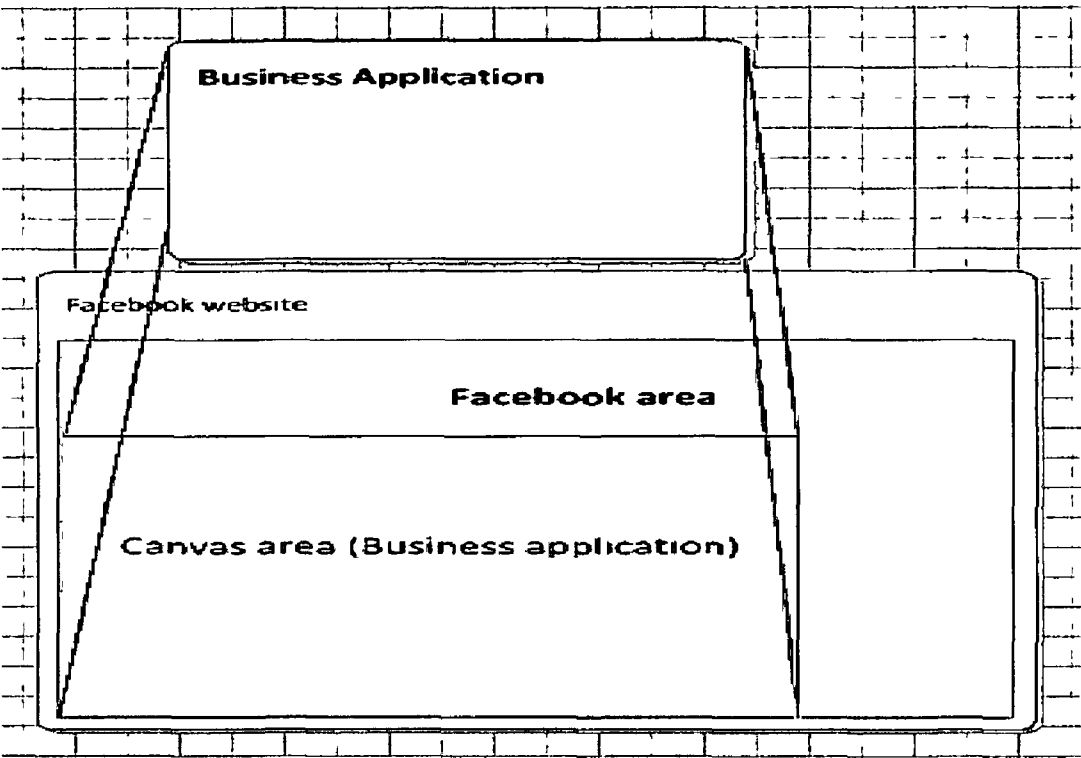


Illustration 4

There was question mark before the start of the research how an application will be run on social network site. Now social network sites are allowing third party to develop an application for their social site. Now there are lots of apps which are being run on social network site to attract new user and for providing more entertainment to user. The above figure shows similar thing and this is an example of apps on Facebook that how an application will be run on Facebook (Social networking site).

Running apps on Facebook has a little bit of a different front end than normal Facebook front end. Apps on Facebook has two parts one is belong to Facebook where all user details are mentioned and user can access their Facebook methods. Second one is called Canvas page and this area is for application which is run on Facebook.

Facebook is now providing iframe techniques to run an application. Facebook do courage iframe for apps. And an application can be connected with Facebook through Facebook API. Facebook Graph API is very popular and provides lot of methods that makes an application live with Facebook.

5.2 Designing

Before to start Facebook app development, there is best technique to analyze development goals. It gives a better thinking approach before implementation. One of the best methods for designing phase is prototype. There are two types of prototyping. One is low fidelity prototype and second one is high fidelity prototype. In low fidelity roughly diagram is created of application. That helps of navigation, creating separate module and provide better understanding of separation. High fidelity are high tech representation of design concept. Hi fidelity prototype provides the feature to user interact with system truly. Here low-fidelity prototyping is going to use.

There are two module (interface) of Facebook application one which is used by administrator or owner which will provide required statistical calculation in form of reports. There are multiple types of reports in details. There will be simple navigation for authorize person in the future. They can make changes easily and this module will be run and accessed from Heroku directly. Second interface describes main user's application.

The application interface is being developed by HTML, CSS and JavaScript. There is no functionality added in prototype. During implementation those templates will be used for coding.

5.2.1 Application's Header



This is an application header which consists of three buttons Homepage, about us and contact us There was no need for more buttons in application menu because each page of an application will be based on previous page “Like Guru” is name of application and project is developed for MSC Dissertation that’s why it is mentioned on header

5.2.2 Application's Footer



Application footer is so simple There is just mark of development and make of year

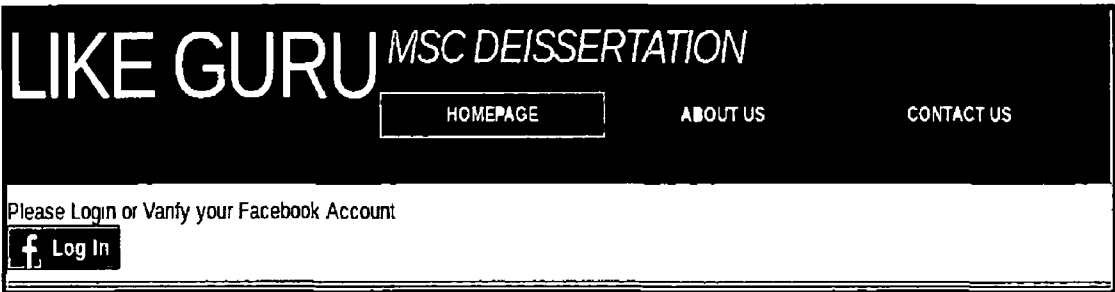
5.2.3 Disclaimer Page

Facebook also provides disclaimer page before to register of app Like Guru will provide its own disclaimer form which will build more trust between users and Facebook application Shared entities and purpose of an app will be mentioned on disclaimer page

5.2.4 Menu Bar

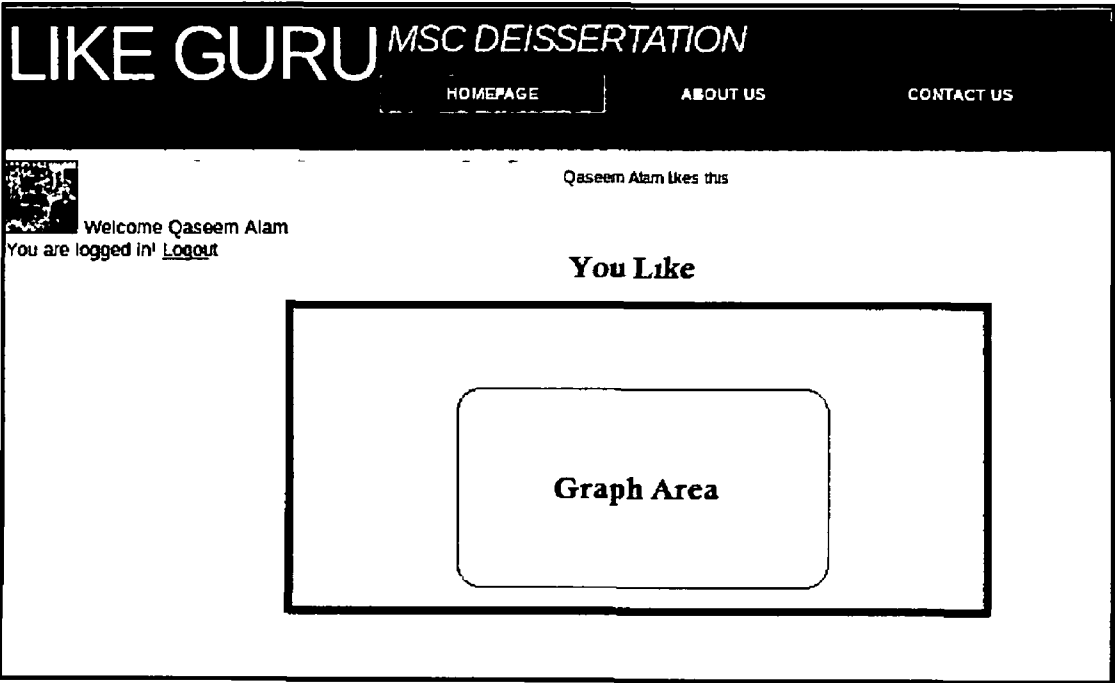


5.2.5 Login Page



“Like Guru” App will have login feature from Facebook login Facebook platform uses OAuth 2 0 for authentication and authorization

5.2.6 Yours Like Page



5.2.7 People Like Page


LIKE GURU

MSC DEISSERTATION

HOMEPAGE

ABOUT US

CONTACT US



Welcome Qaseem Alam
You are logged in! [Logout](#)

Qaseem Alam likes this

People Like

Graph Area

5.3. Technology

The following technologies were used in application development

Operating System

Ubuntu 11 10

Language

Ruby on rails
Java script
HTML, CSS

Framework

Rails 3 1 0

IDE

Gedit

Database

SQLite3
PostgreSQL

Deployment

Heroku

Social networking

Facebook

5 4. Technology decisions

5 4 1 Frameworks

For the development of application there were a lot of options. Now developers have almost all language for web application development. For example ASP (Active Server Pages), ASP NET, CGI, Cold Fusion, JSP/Java, PHP, Perl, Python, Ruby on Rails and Struts.

These languages and frameworks are based on three-tiered application. Every framework and languages have advantages and drawback. In this scenario there was need of effective and quick framework for application development. Because of application is divided into two parts. One part is consisting of database application which fetches the data and push into second module. We need the same framework that can fulfill the requirements and make process to easy.

NET requires a lot of configuration to get your application environment setup. This is time consuming and is used for details application development. This application doesn't need those extra features. Then the best option was Rails. Rails are very popular with Ruby language. Rails is the coolest and easiest development framework now that allows us to develop fully functional web apps.

5.4.2 Rails

As **Michael Hartl** and **Aurelius Prochazka** have written in their book RailsSpace

“Rails applications, as well as Rails itself, are written in Ruby, a dynamic, object-oriented programming language Ruby comes out of the Perl traditions, and “Yukihiro Matz Matsumoto”, the creator of ruby, calls it “a better Perl than Perl” In our experience, most programmers with exposure to both languages agree We’d add that, for web programming, embedded Ruby (ERB) is a better PHP than PHP Being able to tap into the power and elegance of Ruby is a major advantage of Rails ” (**Michael Hartl** and **Aurelius Prochazka**)

The main Rails philosophy includes

- DRY – “Don’t Repeat Yourself”
- Convention over Configuration
- Rest is the best Pattern for web applications

5.4.3 The MVC Architecture

At the core of rails, there are three main components Model, View and controller architecture, just called MVC MVC providing

- Isolation of business logic from the user interface
- Ease of keeping code DRY
- Making it clear where different types of code belong for easier maintenance

Models

A model represents the information (data) of the application and the rules to manipulate that data In the case of Rails, models are primarily used for managing the rules of interactions with a corresponding database table In simple model is area where we define business logic

Views

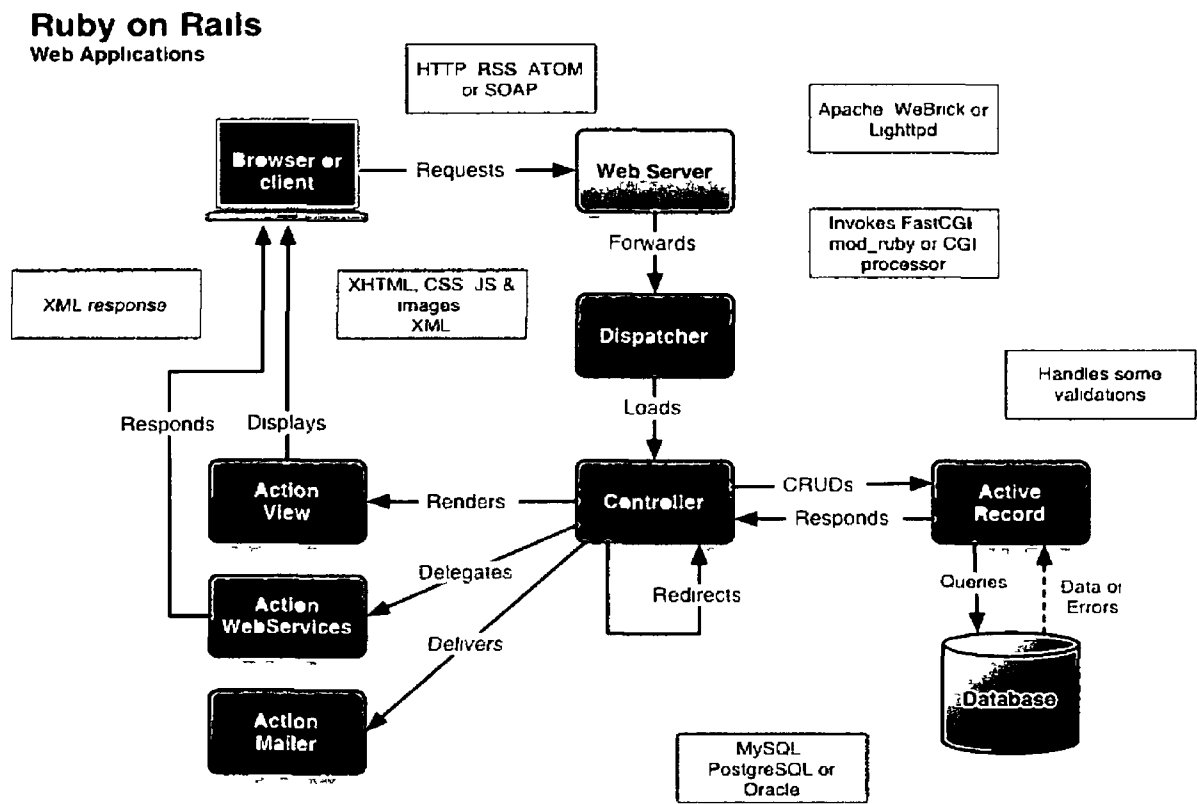
Represent the user interface of your application In Rails, views are often HTML files with embedded Ruby code that perform tasks related solely to the presentation of data Views task is providing data to client browser

Controller

Provide the “glue” between models and views In Rails, Controllers are responsible for all process which is made by browser such as request or send

([http //moodle ncirl ie](http://moodle.ncirl.ie), 2010)

5.4.4 Ruby on Rails architecture with MVC



([http //moodle ncirl ie](http://moodle.ncirl.ie), 2010)

5.4.5 Main components of Rails

- Action Pack
- Action Controller
- Action Dispatch
- Action View
- Action Mailer
- Active Record
- Active Model
- Active Resource
- Active Support
- Railties

(<http://moodle.ncirl.ie>, 2010)

5.4.6 The magic of Rails

Typing one simple command “ rails new app_name “ creates a lot of stuff in system and placed all new folders and files inside the directory called app_name. Rails framework provides all required gems which is used by application using simple command “bundle install”. Rails provides all configuration files, routing, database and help documents. Now a day best recommendation for rails is Rails 3.1.0 which is using for development here.

(<http://moodle.ncirl.ie>, 2010)

5 5 Ruby Language

Ruby is an Object Oriented programming language. Everything in Ruby is considered as an object. It is an interpreted dynamic language. Ruby is highly portable; it is developed mostly on GNU/Linux, but works on many types of UNIX, Mac OS X, Windows, DOS, BeOS, OS/2, Linux, etc. Ruby has also exception handling features like new generation language Java and Python to make application easier to handle errors. Ruby has its own garbage collector for all Objects. According to its creator

"Ruby is simple in appearance, but is very complex inside, just like our human body" (Yukihiro Matsumoto)

Right now most stable version of Ruby is "Ruby 1 9 2" therefore is being used for development

5 5 1 RVM (Ruby Version Manager)

"RVM is a command-line tool which allows you to easily install, manage and work with multiple ruby environments from interpreters to set of gems. With RVM, NO OTHER GEMS than those required are installed. This makes working with multiple complex applications, where each has a long list of gem dependencies, much more efficient. RVM let you easily test gem upgrades, by switching to a new clean set of gems to test with, while leaving your original set intact."

In this development RVM is used because of latest version of rails 3 1 0 with ruby 1 9 2. RVM makes easier installation. And it is easy to manage different gems according to version of rails.

5 5 2 Heroku for cloud application

Heroku is a cloud service for application which can be written in different language. It is a polyglot cloud application platform. Means you don't need to worry about number of servers at all. Writing of programming languages depend on developer choice. It also provides SQL and NoSQL databases, Memcached and many other things. Heroku also supports ruby language and rails framework. This cloud service has latest compatibility of rails version. Development in other well-known language is also possible such as Clojure, JAVA and Python etc.

As per development side Heroku was the best option for integration with Facebook. Because Facebook and Heroku provide official integration. Both companies are working together for integration. They have already provided a lot of features but they are still working on further enhancement.

Here is a snapshot of Heroku login which can be accessed by command line. Login will be available with email address and password. Limited activity is free in Heroku and that was sufficient for the development of required application.

```
$ heroku login
```

```
Enter your Heroku Credentials
```

```
Email: adam@example.com
```

```
Password:
```

```
Could not find an existing public key.
```

```
Would you like to generate one? (Yn)
```

```
Generating new SSH public key.
```

```
Uploading ssh public key /User/adam/.ssh/id_rsa.pub
```

Sources [http //devcenter heroku com/articles/quickstart](http://devcenter.heroku.com/articles/quickstart)

5 6 1 GIT (Revision control system)

GIT is fast revision control system GIT is used to push or pull code from hosting area where application is stored We also use GIT in Heroku for deploying application There are few commands which are normally used

5 6 2 Git-clone

It is used to download a copy of an existing repository If it doesn't exists in the developing system

```
" git clone git //git heroku com/shark-water-2880 git "
```


5 6 3 Sending Application

To push an application into Heroku using GIT and steps are as follows

```
git init
git add
git commit -m "init"
git push origin master
```

5 6 4 Database

Heroku does not support "SQLite3" with Rails3. Officially Heroku announces PostgreSQL for database. Heroku supports PostgreSQL. There are two versions for different modes. For shared database, it uses PostgreSQL 8.3, and for a dedicated database, it uses PostgreSQL 9. SQLite3 comes by default with Rails installation. So that is easier to use at testing mode. In this application, SQLite3 is used in development mode and PostgreSQL is used in production mode. To make it just change in gemfile configuration and edit line.

```
gem 'sqlite3'
```

Source [http //devcenter heroku com/articles/rails3](http://devcenter.heroku.com/articles/rails3)

Into this

```
group :production do
  gem 'pg'
end
group :development, :test do
  gem 'sqlite3'
end
```

Source [http //devcenter heroku com/articles/rails3](http://devcenter.heroku.com/articles/rails3)

Whenever checking dependencies for local development need to run Bundle command without production

```
$ bundle install --without production
```

Source [http //devcenter heroku com/articles/rails3](http://devcenter.heroku.com/articles/rails3)

5.7 Facebook

Facebook is the biggest social networking site in the world. Over 750 million users are using Facebook. Facebook provides to add other user as a friend, user can create profile, automatic notification, category of user privacy means workplace, close friend, family etc.

Facebook has different products now such as

Facebook Chat

Facebook Connect

Facebook Lite

Facebook Mobile

Facebook News Feed

Facebook Places

Facebook Platform

Facebook Touch

Facebook Zero

This application has to integrate with Facebook. Facebook provides apps where developers run web application or website on canvas. Application would be integrated with Facebook with features. In application to connect with Facebook, is going to use Facebook API (application programming Interface). Facebook APIs provide a lot of features such as Facebook login, sharing, like, find friend nearly all method that developers can integrate in website or web application.

5.8. Implementation

The internal architecture of an application is based on two parts. First one is related with itself and second one is with Facebook integration. Facebook integration was a little bit challenging job because of Facebook Graph API. That provides a lot of functionality but that is new and resources were not enough with Rails3. There were a lot of Facebook gems which provide interface with an application (apps on Facebook) such as Facebookr, Facebookr2, OAuth2 and Koala. Most of gems don't work properly with Rails3.

Koala gem works both version of rails2 and rails3. Koala gem version '1.2.1' is being used in this application for Facebook and Rails '3.1.0'.

For graphs different gems are available in rails. Scruffy and Gruff are well known. Gruff gem is simple and reliable for rails and it is going to use in this application.

Rails provide gem file where any gem can be installed with the require key word or download with "gem install "gem name"

5.8.1 Implementation of the Like Guru

Step 1: Create blank rails application

First create blank application in rails environment Rails framework is command line

```
" Rails new App_Name "
```

This command will create application with all required library

Step 2: Install all required Gems

Rails provide gem file where any gem can be installed with the require key word or downloaded be "gem install "gem name"" Gemfile exists in root path of application folder Instructions are set in this file to install

```
source 'http //rubygems org'
```

```
gem 'rails', '3.1.0'
```

```
# Bundle edge Rails instead
```

```
# gem 'rails',    git => 'git //github com/rails/rails git'
```

```
gem 'sqlite3'
```

```
gem 'koala', '1.2.1'
```

```
gem 'rmagick', '2.13.1', require => 'RMagick'
```

```
gem 'gruff', '0.3.6'
```

```
# Gems used only for assets and not required
```

```
# in production environments by default
```

```
group :assets do
```

```
  gem 'sass-rails', " ~> 3.1.0"
```

```
  gem 'coffee-rails', " ~> 3.1.0"
```

```
  gem 'uglifier'
```

```
end
```

```
gem 'jquery-rails'
```

Step 3: Application Template

Rails has template file in layout folder. It is used to configure design and front end of application. In application two templates are being used to manage CSS and HTML contents and providing same view to each part. Creating different template for different page is also possible in rails. By default name of template page is Application.html.erb

Application.html.erb

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta name="description" content="" />
<meta name="keywords" content="" />
<title> Facestore </title>
<%= stylesheet_link_tag "application" %>
<%= javascript_include_tag "application" %>
<%= csrf_meta_tags %>
</head>
```

5 8 2 Facebook JavaScript SDK

Facebook is providing new JavaScript SDK for login. Login procedure is implemented with the help of JavaScript. Facebook provides its own login tag which name is **<FB Login>**

```
<div class="fb-login-button" onlogin="fbAsyncInit" data-show-faces="true"></div>
```

New JavaScript SDK

```
<script>
    //initializing API
    window.fbAsyncInit = function() {
        FB.init({appId: '299820546737xxxx', status: true, cookie:
true, xfbml: true}),
    },
    (function() {
        var e = document.createElement('script'), e.async = true,
        e.src = document.location.protocol +
        '//connect.facebook.net/en_US/all.js',
        document.getElementById('fb-root').appendChild(e),
    }()),
</script>
```

Function Call

```
<script>
  //your fb login function
  function fblogin() {
    FB login(function(response) {
      //
    }, {perms 'read_stream,publish_stream,offline_access'})),
  }
</script>
```

5 8 3 Facebook connection with Kola gem

Kola gem method is being called from Fbusers controller For Facebook connection there are some keys which are required from Facebook site

```
APP_ID = "2998205467XXXXX"
APP_SECRET = "8cbe4d14bde56c84049296db2XXXXXXXXX"
APP_CODE = "29982054XXXXXXXXX"
SITE_URL = " http //localhost 3000/ "
```

This is initialization part of Fbusers controller where Facebook application Id and secret id has been defined Site url is being used for callback function

def login

```
      session['oauth']    =    Koala Facebook OAuth new(APP_ID,
APP_SECRET,  SITE_URL + 'fcont/callback')
      #Koala Facebook OAuth new(oauth_callback_url)

      # redirect to facebook to get your code
      redirect_to session['oauth'] url_for_oauth_code()
    end
```


This method is included few line of code which creates bridge between JavaScript SDK and Index action Few lines are working on to create session and send to Oauth code to required action

```
def callback
  #get the access token from facebook with your code
  session['access_token'] =
session['oauth'] get_access_token(params[ code])
  redirect_to '/fcont/index'
end
```

5 8 4 Retrieving Facebook user information and like information

Index method is being used to get data from Facebook Index action is playing major role for getting user token access code, fetching user information, likes and store in database It also verifies if token access code is not available with session then redirect to login page

```
def index
  @dat2 = 0
  if session['access_token']

    @face='You are logged in! <a href= SITE_URL +
"fcont/logout">Logout</a>'

    @graph = Koala Facebook GraphAPI new(session["access_token"])
    @result = @graph get_object("me")
    @pict = @graph get_picture("me")
    @likes = @graph get_connections("me","likes")
    @dat2=Fbuser count( all, conditions => ['User_Id LIKE tag',
{ tag => @result["id"]}]])
```

```
if @dat2 == 0
```

```
  @f_User= Fbuser new
```

```
  @f_User User_Id=@result["id"]
```

```
    @f_User User_Name=@result["name"]
```

```
    @f_User User_Email=@result["email"]
```

```
    @f_User Image_Ref=@pict
```

```
  @f_User save
```

```
    @likes each do |like|
```

```
      @f_like= Fblike new
```

```
      @f_like User_Id=@result["id"]
```

```
      @f_like Like_Name=like["name"]
```

```
        @f_like Like_Category=like["category"]
```

```
        @f_like Like_Id=like["id"]
```

```
      @f_like save
```

```
    end
```

```
  end
```

```
else
```

```
  redirect_to '/fbusers/home/'
```

```
end
```

5 8 5 Create Graph using Gruff gem

Gruff gem is using to create graph runtime on the basis of current data

```
def show
```

```
  @graph = Koala::Facebook::GraphAPI.new(session["access_token"])
  @result = @graph.get_object("me")
  @dat2=Fblike.count(conditions => ['User_Id LIKE tag', {tag =>
@result["id"]}], group => Like_Category)
  g = Gruff::Pie.new
  g.title = "Your Facebook Likes"
  @dat2.each do |key|
    g.data(key[0], key[1])
  end
  send_data(g.to_blob,
    disposition => 'inline',
    type => 'image/png',
    filename => "my_graph.png")
end
```

Gruff provides three types of graph. Pie, Line and bar are available in Gruff library

Gruff::Pie.new

Gruff::Line.new

Gruff::Bar.new

5 8 6 Logout Method

```
def logout
  session['oauth'] = nil
  session['access_token'] = nil
  redirect_to '/fcont'
end
```

Logout action is being used to make Oauth and access token object nil or destroy after user logout

5 8 7 Search and llist method

```
def search
  @dat1=Fblike count( conditions => ['User_Id NOT LIKE tag', { tag =>
  @result["id"]}], group => Like_Category)
end
```

```
def llists
  @page = Fblike find( all,
  conditions=>["Like_Category = ? And User_Id NOT LIKE ?", params[ fbcats],
  @result["id"]])
end
```

Both methods are interconnected with each other One is providing likes with specified condition and second one is generating all like list related with particular condition

5 8 8 Method for click analysis

Click analysis method is called from link That has been created for gathering statistical data from users

```
def submitlike
```

```
  @result = Fblike find( all, conditions => ["Like_Id = ?", params[ d1]])
  @result each do |a|
    a inspect
    @fbclick = Fbclickdatum new
    @fbclick Like_Id = a Like_Id
    @fbclick Like_category = a Like_Category
    @fbclick save
  end
  @var1="http //www facebook com/#{params[ d1]}"

  redirect_to @var1

end
```

5 8 9 Create Table for Like Guru

There is power of active record in rails that creating table needs just one line
Any types of database active record provide same class and command

```
" rails generate scaffold table_name field1 data_type field2 data_type "
```

By using scaffold command Rails provide basic CRUD functionality with MVC architecture. There is one example of controller which is created by scaffold command

```
//Edit
def edit
  @fbuser = Fbuser.find(params[:id])
end

//Create
def create
  @fbuser = Fbuser.new(params[:fbuser])
  respond_to do |format|
    @fbuser.save
    format.html { redirect_to @fbuser, notice: 'Fbuser was successfully created' }
    format.json { render json: @fbuser, status: :created, location: @fbuser }
  end
end

//Update
def update
  @fbuser = Fbuser.find(params[:id])
  respond_to do |format|
    @fbuser.update_attributes(params[:fbuser])
    format.html { redirect_to @fbuser, notice: 'Fbuser was successfully updated' }
    format.json { head :ok }
  end
end
```

```
//Delete
```

```
def destroy
    @fbuser = Fbuser find(params[ :id])
    @fbuser destroy
end
```

5 8.10 Facebook Model

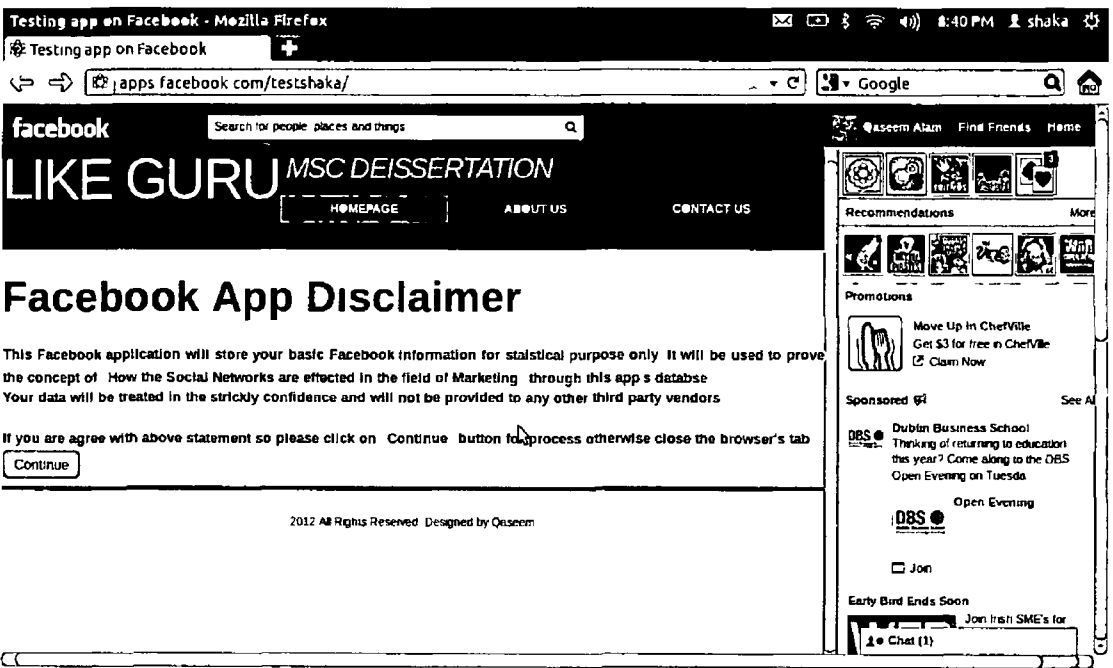
```
class Facebook < ActiveRecord::Base
  #validates :Email, uniqueness => true
  def RegUser(@facebook)
    f_User = Facebook.new
    f_User.user_id = @facebook.id
    f_User.user_name = @facebook.name
    f_User.birth_date = @facebook.dob
    f_User.gender = @facebook.gender
    f_User.email = @facebook.email
    f_User.image_ref = @facebook.image_url
    f_User.save
  end
end
```

Facebook model is providing assistance with database integration. Storing data in database and fetching on user request. Basically it provides business logic and keeps separate from controller and views.

5.9. Screenshots

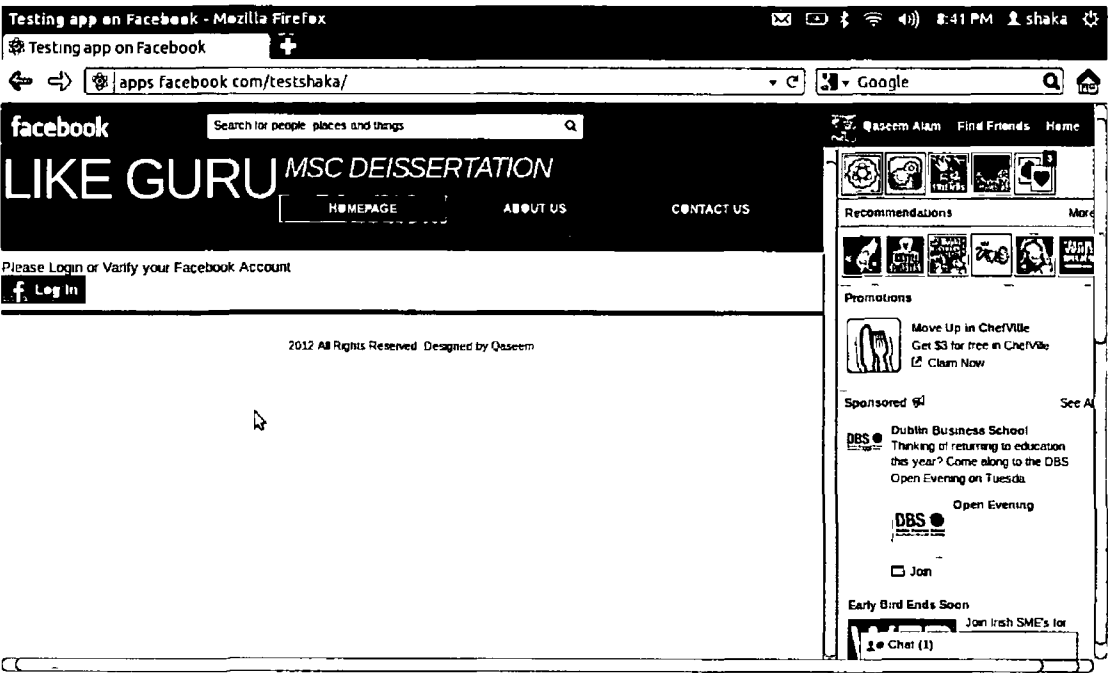
There are two module of application one is Facebook module and second is Administrator This figure is shown that an application is running on Facebook apps area which is called Canvas Page An application is running in iframe so application is separated with Facebook This is home page of application where users need agree with condition then login or verify a Facebook account

5 9 1 Disclaimer Page



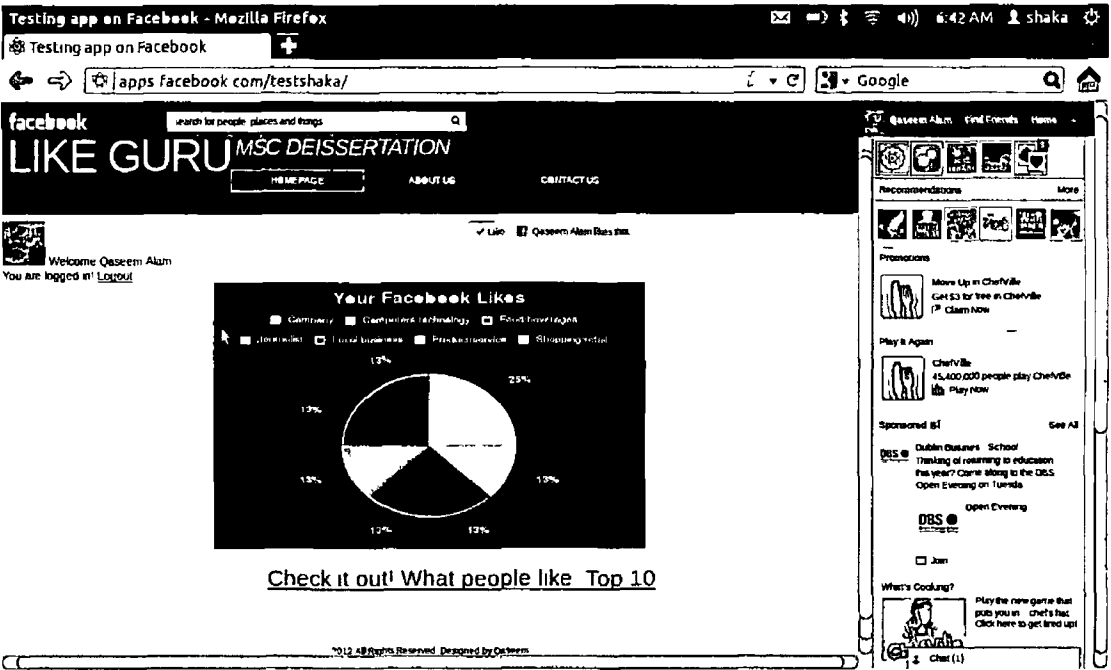
This is the first page that will educate user about term and policy of an application before to use Users should know about what type of data they are going to share with this app

5 9 2 Login Page



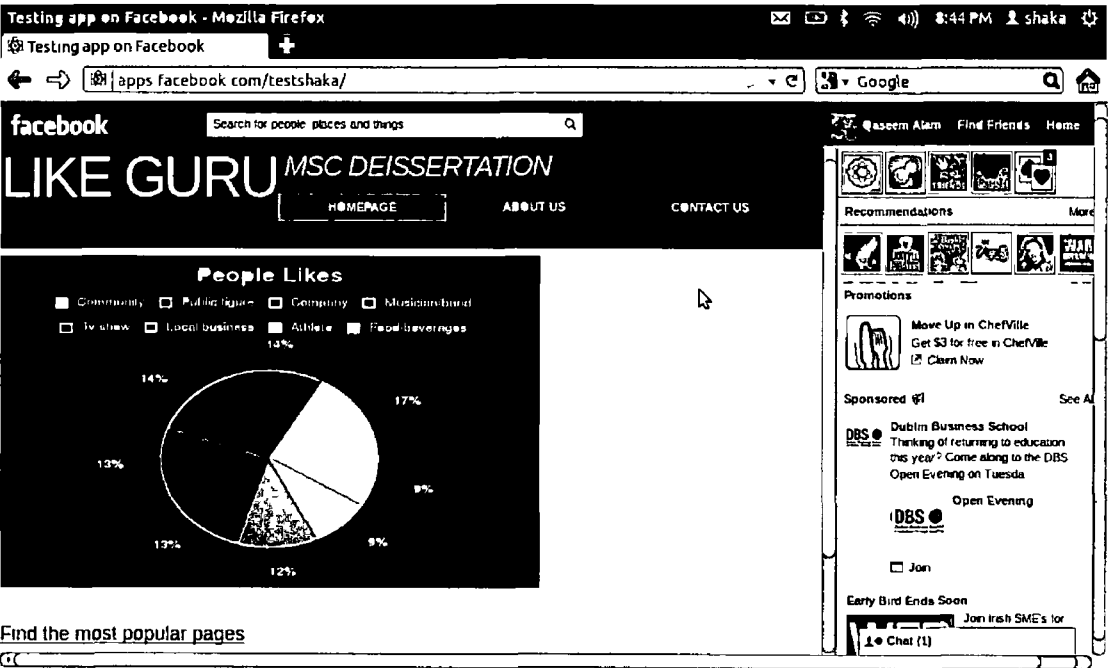
5 9 3 Yours Like Page

After login on Facebook app will move further to process of user data It will retrieve user profile picture, name It will also get all like information from Facebook and will store in database



5 9 4 People Like

First user graph was generated on the basis of user's like Now it will be generated by other people likes which are already stored in database Those graph entities are consisting of top ten like category



5 9 5 Listing of Likes in category

Testing app on Facebook - Mozilla Firefox

Testing app on Facebook

apps.facebook.com/testshaka/

Google

facebook

Search for people, places and things

LIKE GURU

MSC DESSERTATION

HOMEPAGE

ABOUT US

CONTACT US

Facebook Page Category wise

Category	# of Pages
Actor/director	4
Amateur sports team	2
App page	1
Artist	1
Amusement/nightlife	1
Athlete	13
Bar	4
Book	4
Cats	1
Cause	2
Clothing	4
Club	1
Coach	3

Recommendations

More

Play it Again

CherVibe

45,400,000 people play CherVibe

Play Now

Sponsored by

See All

Whip it Good

Master the art of cooking and run the hottest restaurants in town. PLAY NOW

45,400,000 people played CherVibe

Mobileize your website

Create the perfect mobile website in minutes. Free 30 Day Trial

MYHOST IE

145 people like MyHost IE

Our Escapading Franchise

Under £4000 Offer a high demand service with high income potential & exclusive

1 Chat (1)

5.9.6 Page Like Information Category wise

Testing app on Facebook - Mozilla Firefox

Testing app on Facebook

apps.facebook.com/testshaka/

facebook

LIKE GURU

FACEBOOK POPULAR PAGES

Category : Product/service

Thumbnail	Name	Website link	No. of Likes	Facebook Link
	Dropbox	http://dropbox.com/	475895	FB Page
	PlayStation	http://blog.us.playstation.com http://us.playstation.com http://community.us.playstation.com http://twitter.com/playstation http://www.youtube.com/playstation http://www.youtube.com/socialiflog	24360594	FB Page
	DIT Apple on Campus	www.campus.ie/apple	501	FB Page
	I said to my trainer... 'Put on more weights'... He said... 'There are no more'		113834	FB Page
	Down It In One		396	FB Page

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5.9.7 Report of Click Analysis

Fbanalyze - Mozilla Firefox

Fbanalyze

0.0.0.0:3000/reports/repcat

LIKE GURU

NO. OF CLICK PER CATEGORY

People Likes

Category	No. of Clicks
Advertisement	12
Artist	10
Artists	9
Book	6
Comedy	5
Community	4
Shopping	3
Music	2
Music genre	2
Musician/band	1
Product/service	1
To share	1
Website	1

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6. Evaluation and Testing

6.1. Testing

Rails is framework so it provides skeleton of test code at background when rails creates controller and model for an application. Full testing strategies are dependent of four testing phases

- Unit Test
- System Test
- Integration Test
- Validation Test

Rails provides single line command to run above testing phase. Those are as follows

- rake test
- rake test units
- rake test functionals
- rake test integration

Rails provides unit testing facility by default (Guide to Testing Rails Applications 2012)

6 1 1 Unit Testing

This section of the report describes the testing phase of an application. Through all phases of project test was being done by the help of framework. Rails framework provides unit test by default.

At the beginning of creating an application Rails generate three separate modules in database:

- Production
- Development
- Test

On every new single event rails generate code and then test module is updated. The results of model and class unit testing are as follows. Those are created in unit folder which exists in test folder.

6 1 2 Fbusers

```
require 'test_helper'

class FbuserTest < ActiveSupport::TestCase
  # test "the truth" do
  #   assert true
  # end
end
```

6 1 3 Fbclick

```
require 'test_helper'
class FblikeTest < ActiveSupport::TestCase
  # test "the truth" do
  #   assert true
  # end
end
```

6 1 4 Fbclickdatum

```
require 'test_helper'
class FbclickdatumTest < ActiveSupport::TestCase
  # test "the truth" do
  #   assert true
  # end
end
```


6.2 Evaluation

Evaluation is the process to achieve main objective ensuring a truly independent, excellent and professional evaluation for the application. There are three basic types of evaluations that target different goals:

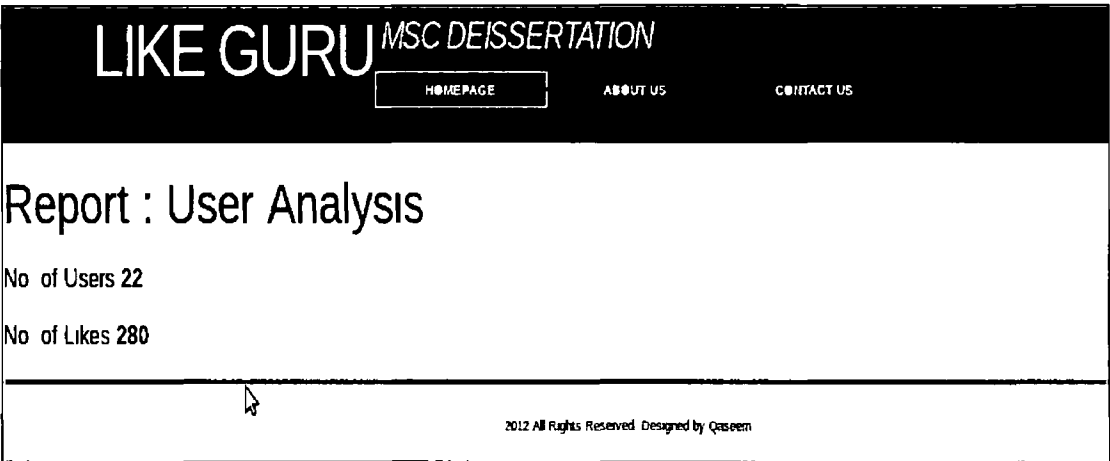
- **Formative/developmental evaluation**
- **Process evaluation**
- **Impact/outcome evaluation**

Two evaluation types (**Formative** and **Process**) are used for application. Formative evaluation is used for user evaluation phase. And User can judge better of application interface, process and application navigation before to live running. The characteristic of Formative evaluation is to make sure that an application is well-formed and well-developed. There are different ways to achieve formative evaluation result such as surveys, focus groups, expert assessments etc. Second evaluation is process evaluation. The main purpose of this phase is to examine the course and context of a program. This doesn't focus high level outcomes.

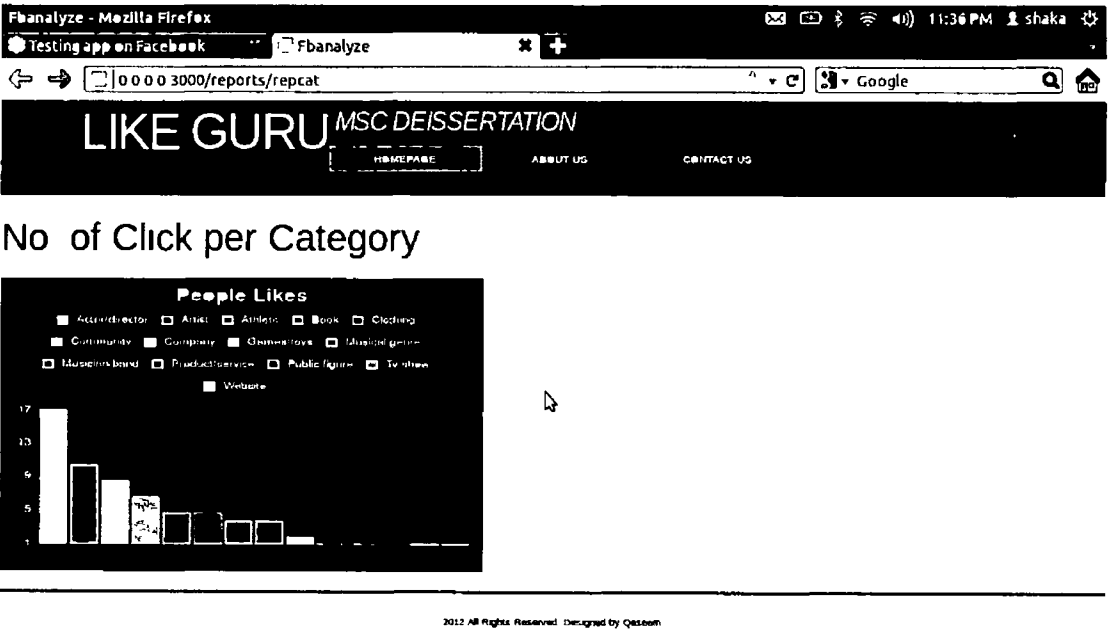
6 2 1 Impact/Outcome evaluation

Like Guru App is live on Facebook. And users are connected with app through Facebook. User information is being recorded in database. Critical phase of Facebook likes are being processed by click analysis. By the help of click analysis data will generate outcome of desire question. It will provide data whether the goal of research question is achieved or not.

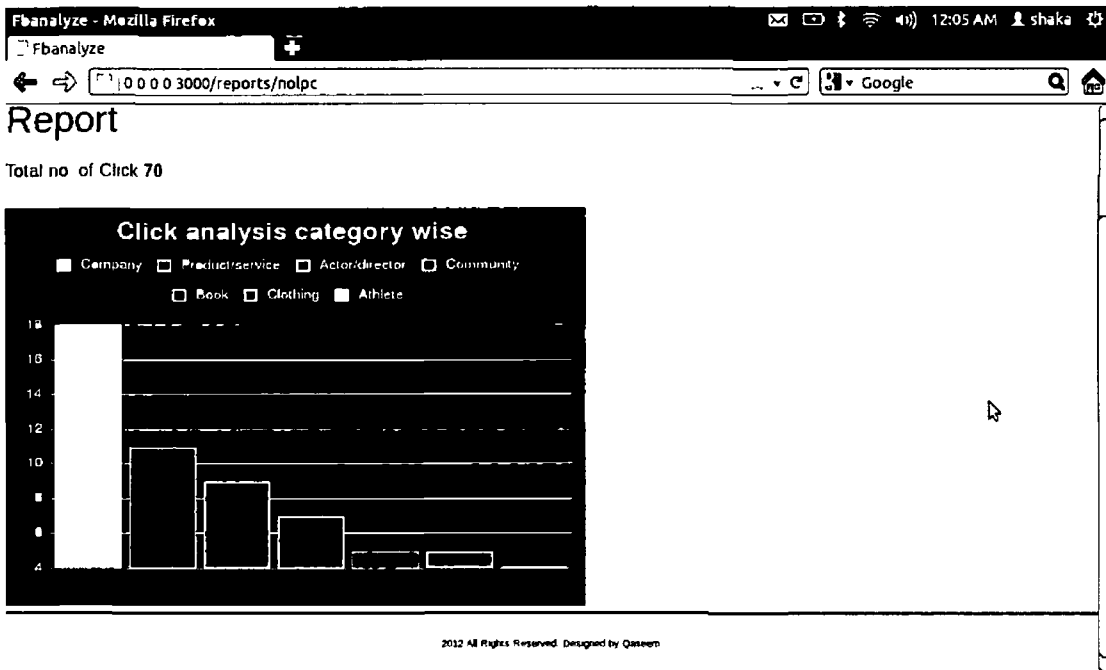
Now the third and last one is **Impact/Outcome evaluation** that helps to provide answer of Key question on evidence Like Guru is gathering data through click analysis Like Guru has administrator module for reporting which will describe data in graph format



Report 1



Report 2



Report 3

6 3 Analysis

Like Guru's Report 1 data shows 22 users are registered in the system and all of them have 280 likes. Like Guru app started to generate different likes for users and gathering user interest information through click analysis.

Report 2 generates all clicked data according to Facebook category. There are assorted categories in Facebook. That's why report 3 is rendering data of top 7 categories. It shows 22 users have accessed 70 Facebook pages. It means that

6 3 1 Data 1

Total no of Users	22	No of likes	280
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Each user	1	Average likes	13
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6 3 2 Data 2

Total no of Users	22	Total no of Pages visit	70
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Each User	1	Average Page	3
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6.4 Conclusion

Evaluation phase has been done by the help of live data which was received from Guru Like app on Facebook Overall evaluation part of an application is satisfactory 22 users have 280 like pages and each has 13 like pages and it shows that those pages has already moved between user’s friends because of Facebook Like Guru Like app could be more successful and provide massive response with the help of rich graphic scheme By the help of some entertainment activity on app can provide better result of marketing

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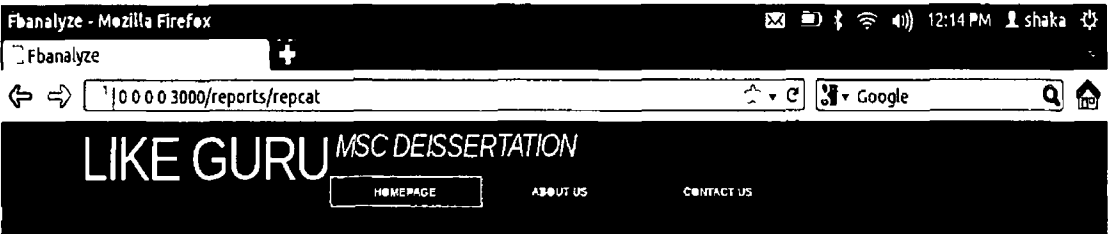
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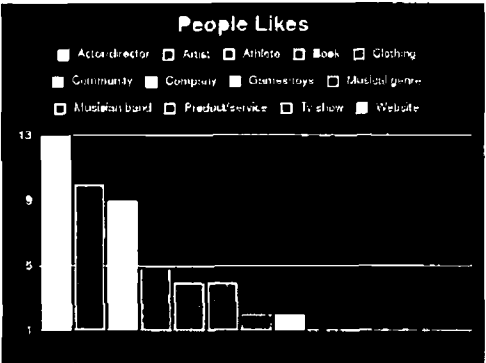
Appendices:

Appendix A (Like Guru Report)

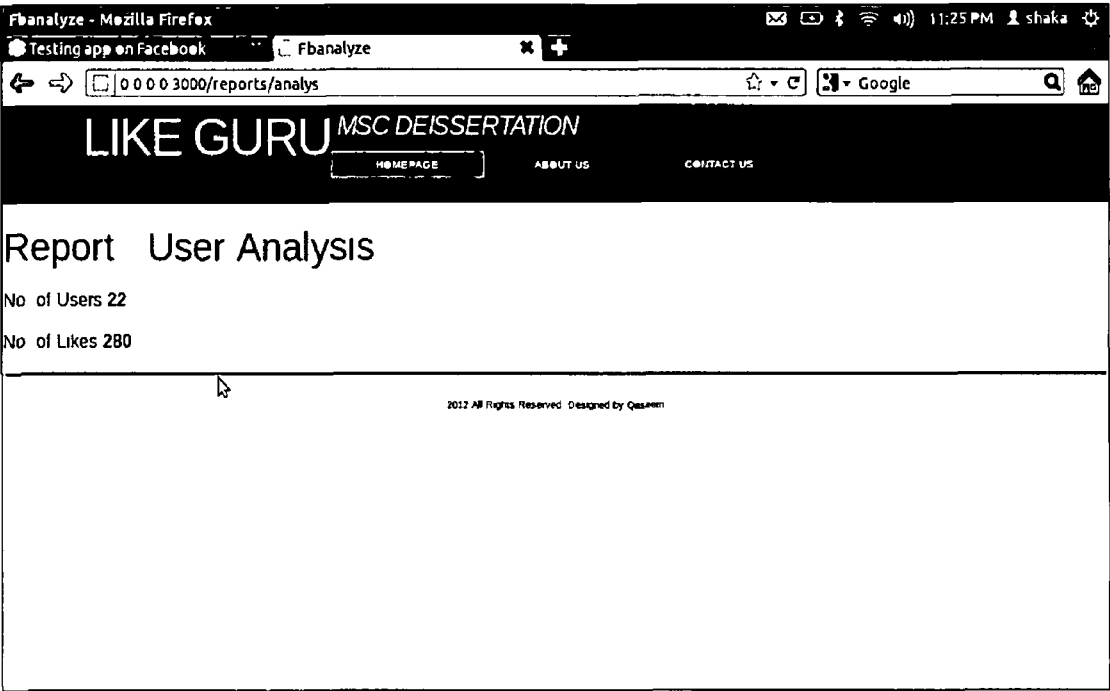
Report 1



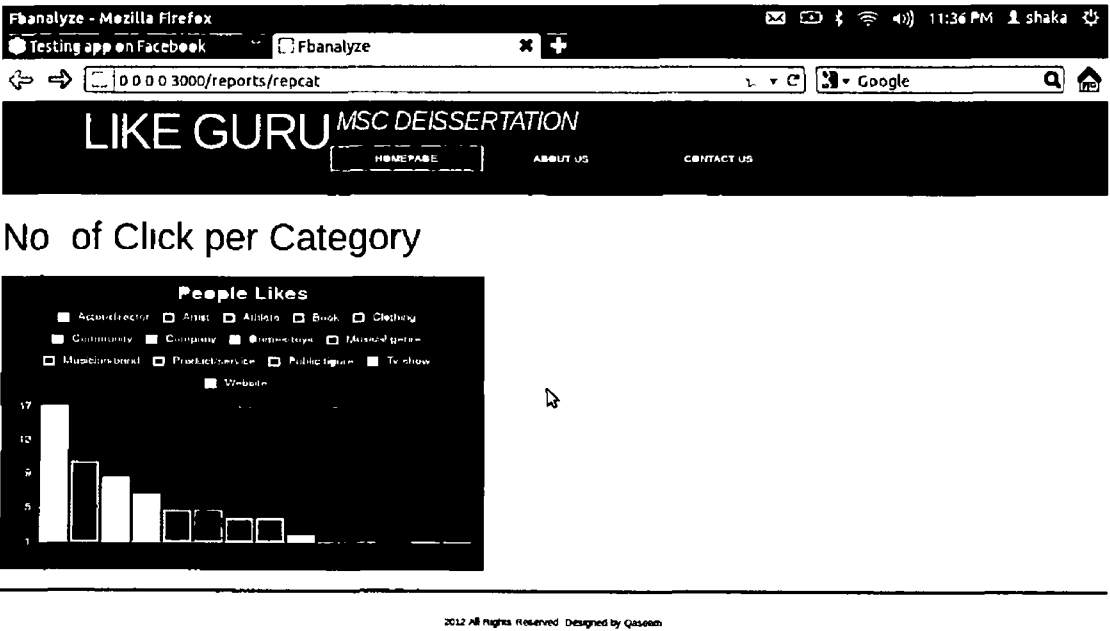
No of Click per Category



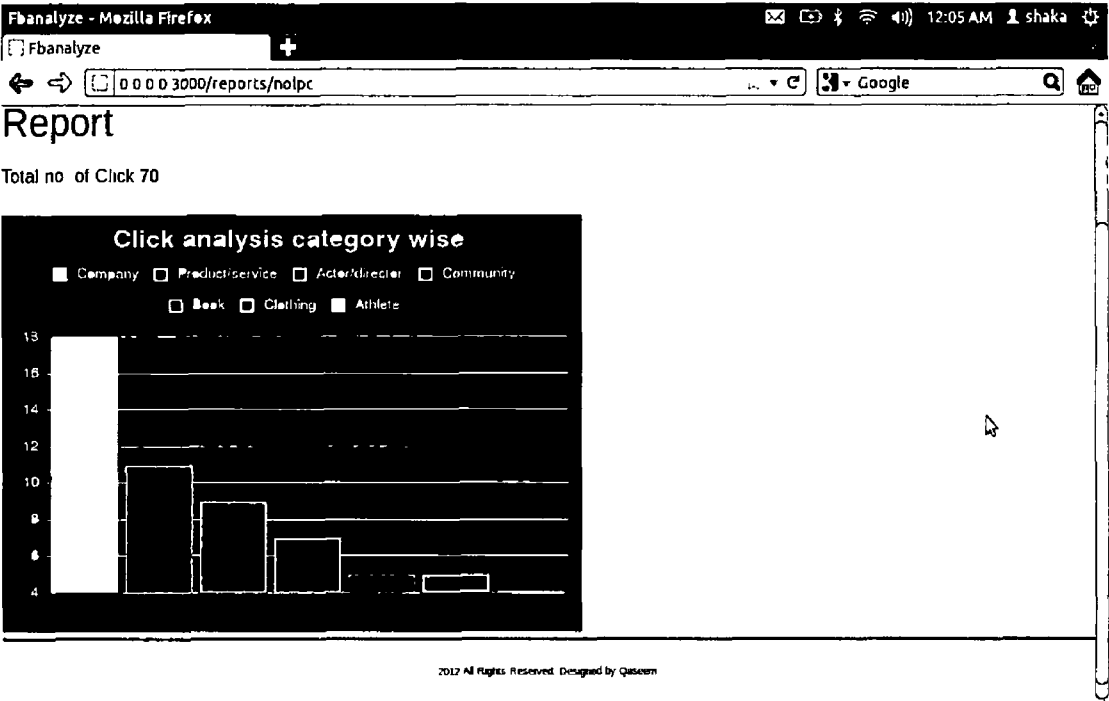
Report 2



Report 3



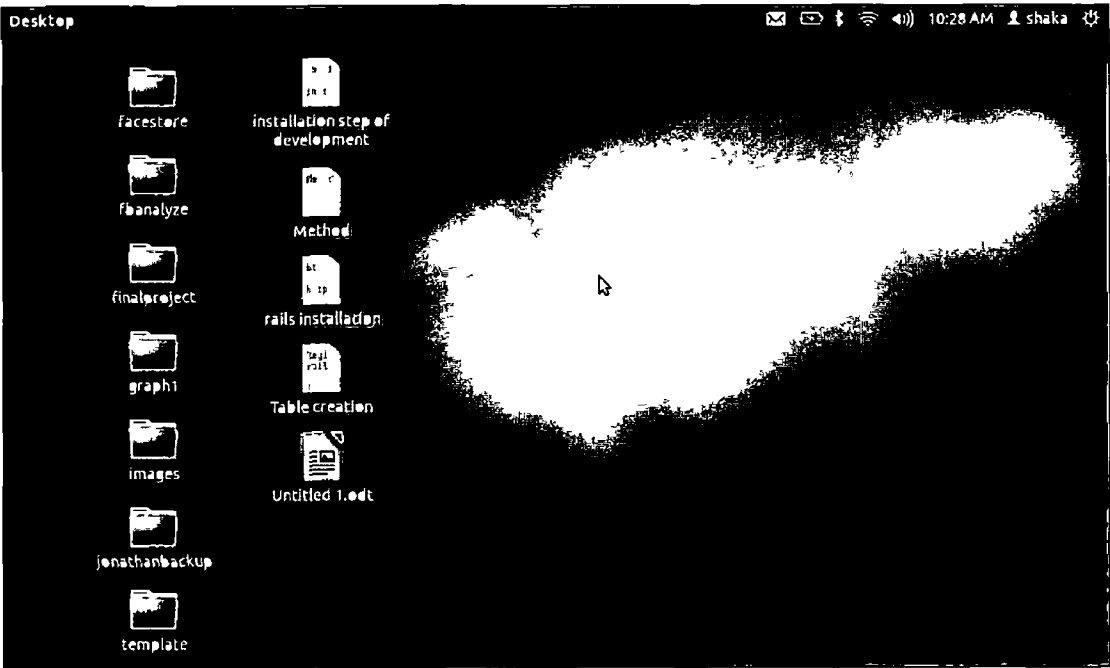
Report 4



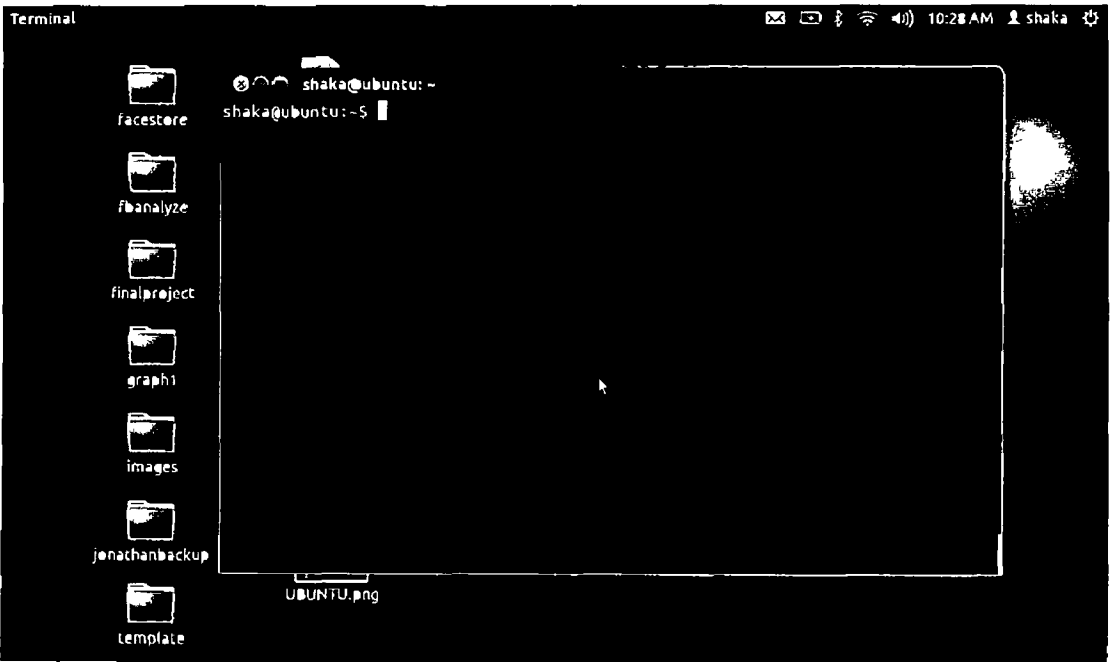
Appendix B

Development Environment

Operating System Ubuntu was used in the whole development



For rails commands, Terminal was better choice in Ubuntu environments



Facebook App setting

