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AN E-MARKETING WEB PORTAL FRAMEWORK FOR SMES OF NORTH-EAST INDIA

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Abstract

Small and Medium Enterprise (SMEs) play a significant role in national economies with their contribution in exports, industrial output, production and employment. But most of the SMEs are struggling while doing business operation in India in general and particularly in North-eastern region of India. Primarily these difficulties are in reaching to international market due to location of the market, transportation and distribution issues, space unavailability and poor connectivity etc. These difficulties are overcome with an efficient E-Marketing tool supportive in marketing activities. This paper aims to design an e-marketing framework to connect SMEs with global world via a web-based portal in different marketing activities. The study is mainly based on the SMEs of North East India. For the present study, randomly selected 25 number of offline SMEs of North East India are selected as sample. The study contributes in expanding knowledge of SMEs for getting into E-Marketing web portal with cost effective design and installation of the same.

Keywords: *Portals, E-Marketing Web Portal, Web-based systems, SMEs and India*

1. Introduction

At the present worldwide scenario, small and medium enterprises (SMEs) have not only contributed to GDP for the bulk of countries, but also the biggest employer of almost all countries. The SME sector plays a significant role in employment generation and poverty reduction in developing economies (Hallberg, 2000). In India, small and medium sector is considered as the answer to most of the developmental problems (Todd & Javalgi, 2007; Uma, 2013) and emerged as fastest and largest growing sector of Indian economy. But in spite of SMEs recognition as a dominant part of the economies matrix, these enterprises have failed to increase their business operations and to provide services at different segment of the market because of technological backdrop .This leads to the entry of large business players to drive the small player out of business as large section of the global market remain unsatisfied (Basu & Adak, 2019). It is in this backdrop this study is undertaken to address the issue of technological backdrop especially in E-marketing of SMEs.

The technological backdrop can be overcome through web-based technologies such as online marketing (Mochoge, 2014; Sarkar & DebNath, 2020).Online marketing is a component of Internet Communication Technologies (ICT) and act as a marketing activity which uses internet or web services for communication, promotion and advertising activities focused on business partners and global users irrespective of boundaries (Mohamad & Ismail, 2009; Sarkar & DebNath, 2019).Web services and web based technologies used to build up E-Marketing web portals which provide centralized facilities for searching, extracting, accessing, interpreting and processing of information (Lages.2002; York 2002; Fensel et al. 2002). Web portals defined as the entry points for exchanging information over the internet and technological limitations are naturally overcoming by the portals, thus increasing the marketing communication and information sharing process between SMEs and customers. Web portal has the

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potential to provide common system where data can be stored from different data sources, organizes them and provides with consistent look and feel to the users.

Few researchers (Galloway& Mochrie, 2005; Gabrielli & Balboni, 2010) concluded that most of the SMEs are ignorant of the implementation of web based technology in their business and perceived that implementation of same is complex and costly. Thus the present study primarily focuses in designing an E-marketing web portal framework using open source software which are available free of cost .This framework would help the SMEs as a whole to get into the online marketing with minimum skills, effort and cost.

2. Literature Review

Some of the relevant studies pertaining to importance of E-Marketing and web portal, advantages development and designing of web portal framework have been reviewed thematically on the given heads:

2.1. Importance of Online Marketing and E-Marketing

Several studies (Deeter-Schmelz et. al. 2001; Lin & Hsieh, 2000; Essig & Arnold, 2001; Stockdale & Standing, 2004) mentioned that online marketing and E-Marketing are different in terms of intelligence, interactivity, integration, individualization, personalized interaction, feedback and intermediaries of business. However, both of these, benefits the small firms with increased market potential, cost reduction and business opportunities. There are few theories also addresses the subject of E-Marketing and designing of Web Portal and the most relevant theories are Developing Model of E-Commerce E-Marketing (Meng, 2009), Webdev Design Framework (Sivamuni & Amgoth, 2013),4S Web-Marketing Mix (WMM) model and 4Ws E-Marketing model. In a nutshell, these theories witnessed that E-marketing and web portal are interconnected with each other and useful for organization planning to adopt online medium.

2.2. Advantages of Web Portal and Web based Framework

Few studies (Olsen, Daigle & Cuocco, 2002; Pickett& Hamre, 2002) stated that Web Portal provide useful medium to access the data, share the information and knowledge to the people which in turn helps to improve the productivity, management function, limiting the redundancy and time. These Portals are the means to empower individuals and not constrained by barriers such as physical and demographic (Katz et.al. 2002).

Some authors (Biehl, 2004; Kumari, 2011) mentioned that firm's access different source of information by integrating and developing web technology framework such as web portals into their business operations which act as a single window website across the internet. With web portal framework, firms can reach out to consumer irrespective of boundaries and provide them information about various products or services along with the opportunity for interactive transactions of business (Barnes et.al. 2001). In order to increase competitive advantage, development of web based business model is required in the form of E-Marketing for organizations (Nurainy et.al. 2016). The web portals framework will help many developers to build quality websites (Sivamuni & Amgoth, 2013).

Several authors (Heflin, 2003; Farooq & Mir, 2010) defined Web portal as an application that helps to take information from diverse data sources and presents them in such a unified way to offer other service. Hoffman et al., (1995) developed a structural framework for website and indicated web portal as a medium for of integrated marketing. These portals are entrance points for information management and

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trade over the internet and act as an important tool to share ideas, knowledge acquisition, publish documents and save information used by a society of interest (Lausen et.al. 2001; Jones et.al. 2006). IBM (2000) viewed that web Portals are efficient way to create and manage information via internet and helps to transfer the knowledge through various mode of communication channel and to reach further than the one-sided information exchange available in traditional web sites.

Whereas Web sites are used only for displaying the products of the firm, providing information and only few sites have interaction facility (Liu et.al. 1997).Web sites can also attract or influence and interact with a large number of customers with the help of factors such as customer service, sponsorship and entertainment. Web may be used for market awareness, customer support, sales, advertising and information services (Cappel & Myerscough, 1996; Watsonet.al. 1998).

Maedche et.al. (2002) observed that Web Portal (known as a links page) helps to presents information from different sources in a integrated way and considered as dynamic rather than static web pages i.e. website. It makes network resources (application, databases, etc.) available to end users via a web browser and other devices and provide network enabling services such as e-mail, chat rooms and calendars that interact seamlessly with other applications.

Sudharshan (2001) showed that three separate units should be considered for all Web portals and Web users. These are advertising space, overall appearance and how it communicates and all of these can be analyzed through a Web page. This can be visible through the number of visits to the page and based on the amount of time spent on a particular page. A Web portal can be analyzed to determine how the overall structure of the site influences the corporate communication and marketing strategy. The Web users can be analyzed, so that the reasons of their particular behavior and usage of certain products/services can be discovered.

2.3. Design of E-Marketing Web Portal

Balaraman & Kosalram (2012) observed that business models of today are highly depended upon internet based transaction, online trading platforms and use of web portals. In order to cover maximum segment of their consumer, many small firms have started realizing this need particularly quality web portals framework (Yoo & Donthu, 2001) but very few organizations have the idea and knowledge of building quality web portal framework (Bubevski, 2010).

Krause (2009) stated that there is no existing structured web framework or any process that would help to build quality websites. But in the literature various ways were highlighted to design quality web portals and organization should have focus to build quality web portal framework according to the individual requirement. Few studies (Bernard, 2002; Steven & Cuocco, 2002) indicated that that basic IT skills and foundation of software is required while designing and developing web portal. It is necessary to know the audience requirement, nature of the data and database where data to be stored. Finally, an eye catching website should be designed with features such as design, high speed, completeness, responsiveness and ability of being updated according to the needs of user to make it special from other existing portals (James, 2002).

Wen et.al. (2001) explored the website design strategies and models for E-Commerce and identified the variables such as customer service and relationship, information consistency, cost saving, better customer service, product promotion, timely information, customization of products, competitive advantage and explained some of the website design model such as brand awareness model, cost saving model etc. The fundamental factors for designing and development purpose are: brand, navigation, fulfillment, presentation, up-to-date technology and seals of approval and other important features found to create a

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website for customers are customer service (contact number available, clearly state return policy, possibility of returning a purchase at the nearby store), testimonial and security feature representation such as text and graphic (Ceaparu & Demner et.al. 2002).

Some authors (Pulumbarit et.al. 2014; Ofoegbu et.al. 2014) have developed the web based application using front end software such PHP, Visual Basic, .Net and RDBMS and these applications captured the user and system requirements. Furthermore, the application was evaluated based on the criteria such as maintainability, functionality, usability, reliability and security. It was tested for its performance and security by technical people while the users evaluated the acceptability of the system.

Moertini et.al. (2014) viewed that E-Marketing Web Portal should be developed to support small and medium enterprises. The proper design, development and implementation of web based technologies embedded with marketing strategies will help firm to market their product and conduct their business effectively. However, none of the theories, model and empirical studies could clearly highlighted the design aspects of the E-marketing and web portal for SMEs in India in general and North East India in particular and therefore, the present paper designed an E-Marketing Web Portal framework for SMEs in North-East of India so as to connect SMEs in a centralized way to increase the operational performance of SMEs.

3. Methodology and Development of E-Marketing Web Portal Framework for SMEs:

Ginsburg (1999) stated that five stage design life cycle can be use to build web portals. This five stage design life cycle can easily be used in web portals for marketing application. The figure1 highlights each stage in detail and also presents the related tool or software to support web portal framework. The present study was based on these five stages design life cycle (fundamental system analysis).

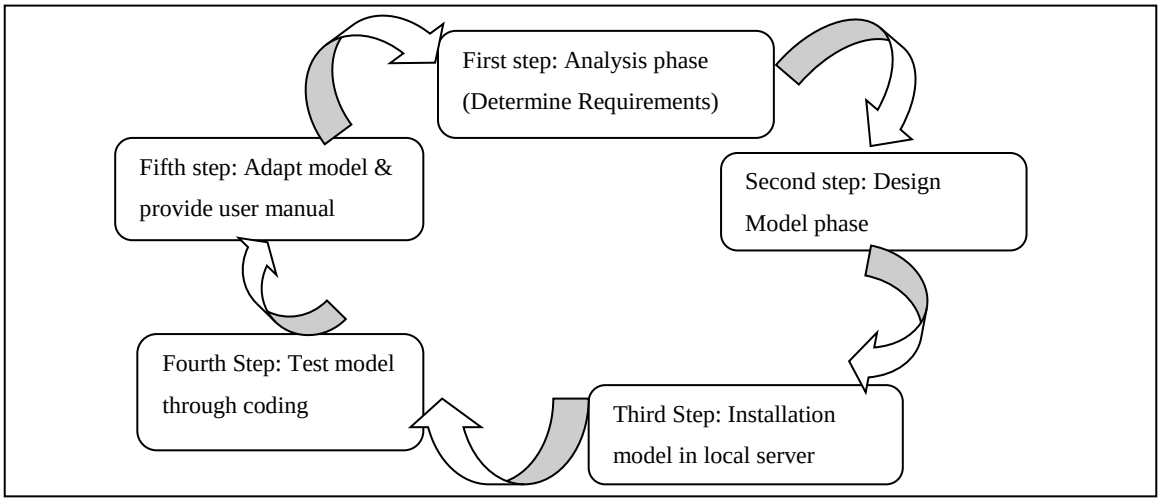

Figure 1: Five stage Design Life Cycle

First step: Analysis Phase (Determine Requirements)

The user requirements analysis is the process of understanding and determining features required for the system. For the present paper, randomly selected 25 number of offline SMEs of Assam are selected as sample for the study. The state Assam is selected purposively from the NER (India) considering it is the largest state in North-east India. The study considered the region of Assam as more number of small and medium enterprises in tea, handloom, handcraft, cane and bamboo, agarbatti making, food processing,

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areca leaf plate making etc, are present in this region. According to the criteria mentioned in Table 1, necessary information's were collected from the 25 number of selected SMES which are used in the development of web portal.

Table1: User requirements analysis

Criteria	**Description**
User requirement	Web portal should capture all the requirement
Simplicity	Web portal should be simple &quick.
Search capability	Web portal should have a user-friendly and clean
Site Map	It should be well organized and intuitive
Links	There should be relevant information links to other social website.
Security Issues	Site should need security area that require user authentication (log-on) for access.

Second step: Design Model Phase

Several researchers (Ju-Pak, 1999; Griffith & Krampf, 1998; Chen & Wells, 1999) mentioned that quality website design is required to deliver relevant and organized information. There are two types of design i.e. layout design and implementation design. The layout design is the first part of a web portal includes template design and that need to be coded. The implementation design of the portal is the actual development of each page in the web portal.

The design framework or process maps adopted for the study is shown in Figure 2 to depict the flow from server to client required for the site.

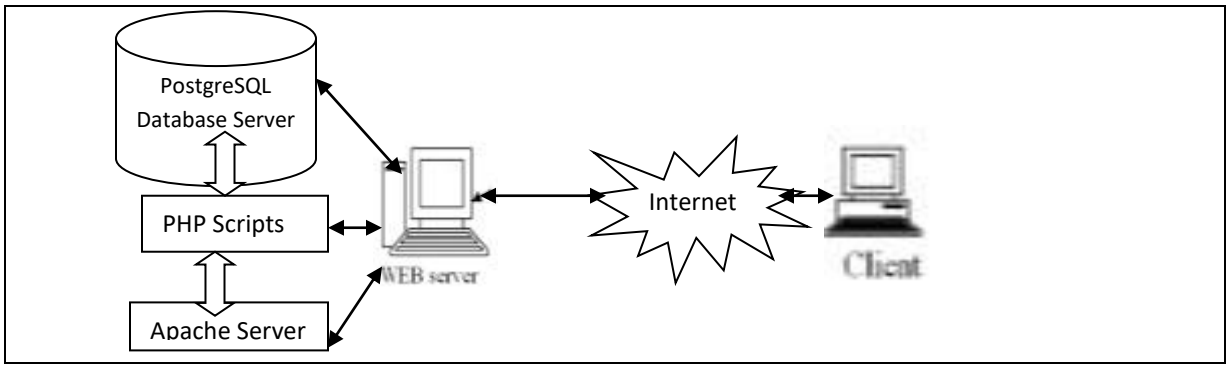

Figure 2: Web Portal Design framework

Third Step: Implement/Installation phase

The Implement phase involves the actual deployment and development of the web portal. In order to develop the web portal, https server along with database server must be installed (Katz, 2002) and under

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this section, a brief description of installation procedure, environment setup and configuration of http server, front end software (PHP) and RDBMS (PostgreSQL) are illustrated in below:

(a)RDBMS Database:

RDBMS named as Relational Database Management System is defined as a digital database management system based on the relational model of data (Codd, 1970). It helps to create a structured database that stores data in row and column format that allow to access values, run queries within the database (Gerald, 2004). Recently, many popular RDBMS are available such as Oracle Database, MySQL, Microsoft SQL Server, IBM DB2 and PostgreSQL which manage the database internally. Among these most popular open source RDBMS is PostgreSQL and this justifies the reason for using in the study. Being an open source RDBMS, this software can be downloaded free of cost. In addition this software is user friendly and contains all necessary security features for a database. The first step is the installation of the RDBMS and creation of database inside the RDBMS which is discussed below:

RDBMS Database (PostgreSQL) Installation procedure:

The PostgreSQL installation procedure as shown figure 3 is discussed below:

i. PostgreSQL is downloaded from website.www. postgresql.org

ii. Then extract the Zip file and put in the C drive of the computer.

iii. The .exe file needs to be run present in the Zip folder of PostgreSQL

iv. After successful installation, the user can access the database.

(b)Web Server

HTTP server is defined as applications which act as a medium between server and client and can access files stored on a different physical server. It is used to exchange information between a server and a browser. It uses TCP or IP to make a connection between the server and the browser where the information sent between the server and browser by either response or request messages. The objective of the web server is to pulls content on request and delivers it. In the present study, Apache HTTP is used because it is an open-source HTTP server for Windows operating systems and provides efficient, secure and extensible server. The installation of Apache Web Server Installation as shown below:

Web (Apache HTTP) Server Installation Procedure:

The apache server installation procedure is discussed below:

i. Apache HTTP downloaded from website httpd.apache.org.

ii. Then extract the Zip file and put in the c drive of the computer

iii. Configure Apache with the text file httpd.conf present in the Apache folder

iv. Apache installation is tested by opening command window with a syntax:

cd/Apache24/bin and httpd –t

v. After successful installation of Apache, a web browser named local host can be open through the following url :

https://localhost:9090/index.php

where 9090 is the port where **Apache HTTP server is installed**

(c) Installation of Front End software (PHP):

PHP is a client side scripting language and used for scripting web based application (Lerdorf, 1994). It is known as hyper text preprocessor and widely used because of open source. The installation of PHP is discussed below:

PHP Installation Procedure:

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The PHP installation procedure is discussed below:

i. PHP is downloaded from website www.php.in.
ii. Then extract the Zip file and put in the c drive of the computer.
iii. The .exe file need to be run present in the Zip folder of PHP
iv. After successful installation, the user can use the PHP page.

Fourth Step: Coding and Testing Phase

Coding: After installation necessary coding is done with PHP for creating of web pages.

In the present study two php files are created and coded; a) login.php b) index.php. These pages are shown in figure fig 3 and fig 4.

Login Page:

The front end coding is done in the PHP page with the help of html and css. The coding of the username and password in the PHP page is shown below:

```
<form action="form4.php" method="POST">
        Username:<input type="text" name="name" />
      Password:<input type="text" name="password" />
<input type="submit" name="submit"  />
if(isset($_REQUEST['submit']))
 {
 $con="host=localhost dbname=postgres user=postgres password=postgres";
$db=pg_connect($con) or die('connection failed');
$sql="select * from EPORTAL where USERNAME='".$_REQUEST['name']."' and
NOTICE='".$_REQUEST['password']."'" ;
    $run=@pg_query($db,$sql);
     $row=pg_fetch_assoc($run);
     if($run)
     {
       $_SESSION['USERNAME']=$row['USERNAME'];
     $_SESSION['NOTICE']=$row['NOTICE'];
            echo "<script type='text/javascript'> alert('Login Successful!!') </script>";
          }
```

It contained username and password field where the owner of SMEs need to enter username and password as shown in fig 3.

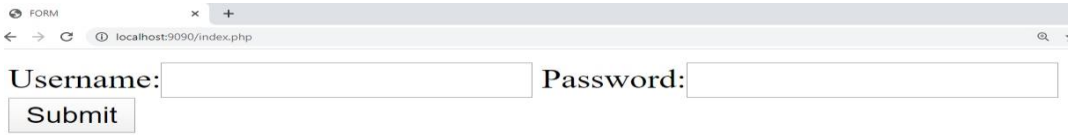

Figure 5: Login Page of E-marketing web portal Framework

Web portal Page:

Following lines are coded for this page:

```
if(isset($_POST['submit']))
     {
            if(isset($_POST['name']))
```


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```
{
        $y=$_POST['name'];
  echo $y;
$con="host=localhost dbname=postgres user=postgres password=postgres";
$db=pg_connect($con) or die('connection failed');
 $sq2="select CCODE from EPORTAL where
USERNAME='".$_POST['name']."' ;
  $run2=@pg_query($db,$sq2);
 $row1=pg_fetch_assoc($run2);
echo"hello,".$row1['CCODE'];
}
```

After login the user is redirected to the main web portal page of particular SME. This page contains information about the enterprise, product information with their images and contact details as shown in fig 6. However, the interaction facility with customer not added in this study.

Figure 6: Web portal page of terracotta enterprise

Finally, developed pages are tested. Testing is the essential phase which considers all the improvements and defect that need to be corrected and analyzed. Finally, it was done to check whether the web portal is functioning properly and all the user requirements have been covered or not. Then web portal was deployed in the local server which might be deploying over the internet in future research. The web portal needs continuous and constant monitoring to measure the performance of the web portal. The coding is tested line by line by using echo function in the PHP page.

Fifth step: Adapt model & user manual phase

Finally, it is the phase where the web portal is adapted by ensuring all the process have been implemented and provide user manual for the end user. User manual is a communication document to give direction to the people of using a particular portal (E-Marketing Web Portal). In the present study, this manual assists SMEs on how to use E-Marketing Web portal.

4. Conclusion

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The portal brings SMEs to a platform which provides user friendly system for increasing the productivity, saving time and cost. This portal can be available on web with vibrant features to open a new horizon. This research represented a starting point for SMEs to adopt online marketing and web-based knowledge system is greatly needed to overcome geographical limitations. A web portal framework serves as a guide for sustaining SMEs in a long term and has the potential to transfer valuable information, and provide innovative activities.

The portal developed for this study has many limitations as it is just the beginning of a long term E-Marketing research. Therefore, future research and designing should focus in addressing these limitations and must be integrated with other model in terms of administrative systems, intellectual capital, functional requirements, and stakeholder interests. The framework may be further developed to meets quality standards of the consumer and can be a benchmark throughout the world.

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