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PREFACE

Welcome to the International Conference on Cloud Computing and eGovernance (ICCCEG) 2014 in Hotel Duxton, Saigon, Ho Chi Minh City, Vietnam on 18 – 20 June, 2014. If this is your first time to Vietnam, you need to look on more objects which you could never forget in your lifetime. There is much to see and experience. We also hope you join in engaging conversations about e-governance and cloud computing in all sectors of the field. Cloud computing has become a great solution for providing a flexible, on-demand, and dynamically scalable computing infrastructure for many applications. Cloud Computing also presents a significant technology trends, and it is already obvious that it is reshaping information technology processes and the IT marketplace.

This conference provides a unique multidisciplinary forum for Government, Healthcare, Education, and Business professionals to discuss and exchange the latest research, development, applications, issues, and strategies, to explore new technologies, and to identify solutions for today's challenges related to e-learning and distance learning.

With the dramatic growth of cloud computing technologies, platforms and services, this Conference can be the definitive resource for persons working in this field as researchers, scientists, programmers, engineers, and users. The conference is intended for a wide variety of people including academicians, designers, developers, educators, engineers, practitioners, researchers, and graduate students. This conference can also be beneficial for business managers, entrepreneurs, and investors. The conference can have a great potential to be adopted in current and new courses on Cloud Computing.

The concept of cloud computing provides a brand new opportunity for the development of mobile applications since it allows the mobile devices to maintain a very thin layer for user applications and shift the computation and processing overhead to the virtual environment.

However, mobile cloud computing is also facing many challenges such as the dependency on continuous network connections, data sharing applications and collaboration, and security.

Government and industry e-commerce agendas have become more closely linked in recent times and more people are now less tolerant of poor, impersonal service in the public sector as they become aware of the power of the web and experience good service in the private sector. With the advancement of Information and Communication Technologies, electronic government (e-government) has emerged as an effective means of delivering government services to citizens. It is in every government's interest to make their public services more efficient and available in order to gain citizens' trust, which has often eluded many governments and political leaders in modern society. While e-government has already established itself as the primary enabler for transforming the way government services are offered to citizens in developed countries, it is now beginning to show promising results in many developing countries.

We invite you to join us in this inspiring conversation.

Finally, I thank my family, friends, students and colleagues for their constant encouragement and support for making this type of conference.

-- **Kokula Krishna Hari K**
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Keynote : Cloud Computing

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Abstract

Why cloud computing:

Cloud computing can be a cheaper, faster, and greener alternative to an On-premises solution. Without any infrastructure investments, you can get Powerful software and massive computing resources quickly—with lower Up-front costs and fewer management headaches down the road. Cloud-based solutions when evaluating options for new IT deployments whenever a secure, reliable, cost-effective cloud option exists. Shifting your agency into the cloud can be a big decision, with many Considerations. This guide is the first in a series designed to help you Get started. The most important is the right choice: software as a service as a service, infrastructure as a service, and platform as a service or hybrid cloud. While addressing administration goals of scalable, interactive citizen Portals. The cloud can also help your agency increase collaboration across Organizations, deliver volumes of data to citizens in useful ways, and reduce IT costs while helping your agency focus on mission-critical tasks. Plus, the Cloud can help you maintain operational efficiency during times of crisis.

Agriculture Updates by SMS – A Cloud Computing Approach

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Abstract: India is the third largest economy in Asia after Japan and China, as measured in terms of its Gross Domestic Product (GDP) and it is continuing to grow rapidly. About 75% people are living in rural areas and are still dependent on Agriculture. About 43% of India's geographical area is used for agricultural activity. So as a whole in India there is a lot of contribution from the Agriculture Sector, this is our area of Interest here.

This paper discusses everything about providing the SMS updates on various agriculture products as per the user requirements on his GSM and/or GPRS mobile phone. The updates may vary from Pricing, Availability, Stocks, and Need of Various Products on the Market. Basically this will be expected to be helpful for Farmers around the state. Also since it works anywhere there's a mobile signal, it does not need Internet.

Cloud computing is clearly one of today's most enticing technology areas due, at least in part, to its cost-efficiency and flexibility. In this paper we glanced over the variation/category of cloud computing named Data-as-a-Service (DaaS), since we are providing Pricing Details to customer against the Database Queries. And also the Deployment Model we consider is Community Cloud. It's mainly concerned about a specific group of Customers which is in our case The Farmers.

1. Introduction

Agriculture has always been India's most important economic sector. India is one of the fastest growing economies of the world and is currently the focus of a great deal of international attention. In the mid-1990s, it provides approximately one-third of the GDP (gross domestic product) and employs roughly two-thirds of the population. It is the seventh largest country in the world in terms of its geographical size. Agriculture still provides the bulk of wage goods required by the nonagricultural sector as well as numerous raw materials for industry. If the indirect share of agricultural products in total exports, such as cotton textiles and jute goods, is taken into account, the percentage is much higher. With current population growth by 2025 India may even have caught up with China according to the UN.

In this paper we focus on agriculture and especially on agriculture trade. India has a large and diverse agriculture and is one of the world's leading producers. It is also a major consumer, with an expanding population to feed. For this reason and agricultural trade policy, its presence on the world market has been modest.

The leading forecasting institutions expect that India will play a bigger role in world markets in future. Indian agriculture Contributes to 24% of GDP, Provides food to 1.2 Billion people, Sustains 65% of the population and it helps alleviate poverty, Produces 51 major Crops, Provides Raw Material to Industries and also Contributes to 1/6th of the export earnings. Also we have one of the 12 Bio-diversity centers in the world, with over 46,000 species of plants and 86,000 species of animal. In a number of markets it is expected to consolidate its position among the world's leading importers (vegetable oils) and exporters (rice).

Given the size of Indian agriculture, changes in its balance sheets for key commodities have a potentially large impact on world markets. Agriculture plays an important, though declining role in the economy. Its share in overall GDP fell from 30% in the early nineties, to below 17.5% in 2006. Agriculture will continue to play a central role as Asia pursues the complementary goals of poverty reduction, sustainable food security, environmental conservation, and increasing trade competitiveness.

According to the surveys new technologies, including crop biotechnology, will be essential to meet these challenges. The prospects for their utilization are particularly promising. Plant biotechnology will facilitate the farming of crops with multiple durable resistances to pests and diseases, particularly in the absence of pesticides. This is expected to be very much useful in the countries like India. There is a lot of work going on this field. Some examples like Golden Rice, BT Brinjal, and BT Cotton etc. can be considered. Now a day's various organizations, research Institutes, Universities & Government bodies are working on this.

2. Key Agriculture Sectors

India is among the world's leading producers of paddy rice, wheat, buffalo milk, cow milk and sugar cane. It is either the world leader or the second largest producer in eight out of its top ten products. Some of these are widely traded while others are more specialist products.

Table 1 show the composition of production by value for 2010, when paddy rice was the top sector, followed by buffalo milk and wheat. India is now the largest milk producer in the world and the second largest producer of paddy rice, sugar cane, wheat, cow milk, groundnuts and certain fresh vegetables. But it is also a leading consumer. Although it exports these products the quantities will vary depending on the size of the crop and demand.

Table 1: Major Agriculture Areas of India (FAOSTAT world rank calculated by DG AGRI, 2008)

Commodity	Rank India	Rank World	Product (MT)
Sugar cane	1	2	348188000
Rice, paddy	2	2	148770000
Wheat	3	2	78570200
Buffalo milk	4	1	60900000
Cow milk	5	2	44100000
Potatoes	6	2	34658000
Vegetables	7	2	31402000
Bananas	8	1	26217000
Maize	9	6	19730000
Mangoes, Guavas	10	1	13649400
Onions	11	2	13565000
Millet	12	1	11370000
Coconuts	13	3	10894000
Tomatoes	14	4	10303000
Soybeans	15	5	9910000

India is the largest producer in the world of fresh fruit, anise, fennel, coriander, tropical fresh fruit, jute, pigeon peas, pulses, spices, millets, castor oil seed, sesame seeds, safflower seeds, lemons, limes, cow's milk, dry chilies and peppers, chick peas, cashew nuts, okra, ginger, turmeric guavas, mangoes, goat milk and buffalo milk and meat and Coffee. It also has the world's largest cattle population (281 million). It is the second largest producer of cashews, cabbages, cotton seed and lint, fresh vegetables, garlic, eggplant, goat meat, silk, nutmeg. mace, cardamom, onions, wheat, rice, sugarcane, lentil, dry beans, groundnut, tea, green peas, cauliflowers, potatoes, pumpkins, squashes, gourds and inland fish.

The required level of investment for the development of marketing, storage and cold storage infrastructure is estimated to be huge. The government has not been able to implement various schemes to raise investment in marketing infrastructure. Among these schemes are Construction of Rural Go downs, Market Research and Information Network, and Development Strengthening of Agricultural Marketing Infrastructure, Grading and Standardization.

Reforms introduced in India in the early 1990s have greatly increased overall trade flows. However it has consistently run a trade deficit unlike China and Brazil (US$35 billion in 2004-2005). The EU (27) ranks as India's largest trading partner accounting for about 21% of total Indian trade in 2008, ahead of the United States and China. Meanwhile India is the EU's tenth largest trading partner accounting for 1.8% of total trade. In 2005 its trade deficit with the EU was about €2 billion.

Price policy for agricultural commodities constitutes an important element of overall agricultural economic policy. Minimum Support Prices (MSPs) for important cereals, pulses, oilseeds, and other commercial crops, namely, cotton, jute and sugarcane, are fixed by the Government every year on the basis of the recommendations made by the Commission for Agricultural Costs and Prices (CACP). The list of 25 crops for which MSPs are recommended by CACP and announced by the Government is at Statement I annexed to this Note.

In India Agriculture continues to be a sore point. Agriculture sector needs protection from so many latest invasions. There is a need To Protect this sector from so many alien invasions. Yes, there is now the prospect or the threat of both food inflation and also uncertainty about food production targets. This is nothing new of course. The effectiveness of price policy in boosting production and productivity of agriculture in tune with domestic as well as external demand cannot be assessed in the absence of regular data on area, production and yield of different crops.

3. Challenges in the Agriculture Sector

It is clear that India's agricultural sector has made huge strides in developing its potential. The Green Revolution (1968) & Even Green Revolution (1996) massively increased the production of vital food grains and introduced technological innovations into agriculture.

Some of the difficulties faced are:

- Overregulation of agriculture has increased costs, price risks and uncertainty.
- Government intervenes in labor, land, and credit markets. India has inadequate infrastructure and services.
- The irrigation infrastructure is deteriorating and it's almost inadequate in nature.
- The overuse of water is currently being covered by over pumping aquifers, but as these are falling by foot of groundwater each year, this is a limited resource.
- Illiteracy, general socio-economic backwardness, slow progress in implementing land reforms and inadequate or inefficient finance and marketing services for farm produce.
- The average size of land holdings is very small (less than 20,000 m^2) and is subject to fragmentation, due to land ceiling acts and in some cases, family disputes.

- Inconsistent government policy. Agricultural subsidies and taxes often changed without notice for short term political ends.
- Adoption of modern agricultural practices and use of technology is inadequate, hampered by ignorance of such practices, high costs and impracticality in the case of small land holdings.

The above mentioned challenges are considered during the development of the new system. Our motto is to provide solutions to some of these challenges/difficulties. Some government organizations like "Indian Council of Agricultural Research (ICAR)" which is an autonomous organization & the "Department of Agricultural Research and Education (DARE)", Ministry of Agriculture are also providing many contributions and sanctions on various improvements in the Agriculture Field. So, our system is also focus on the actual needs by these organizations to improve the Agriculture Research Activities.

4. Objectives of the Project

Now let us consider the major objectives of the project, which are designed after the study of the Agriculture challenges present in India especially in Karnataka state. The issue chosen to solve here is "Adoption of modern agricultural practices and use of technology".

Our Project Objectives are:

- Analysis of activities and assessment of causes from agriculture sites, and plan strategies to collect and distribute them.
- Design and development of software tools for selected machines, their testing and standardization and popularization in rural areas.
- Collection and compilation of anthropometric data on Agricultural workers for design of stable working system and work spaces.
- Studies on man-machine-environment interaction and interfaces under different work situations for improvement in the design of agricultural and allied equipment.
- Provide easy-to-use interface for both Farmers and Agencies of concern.
- Updates on market status of various products as per the user choice on Daily or Weekly basis.
- Design and maintenance of a Backend Database of all the products whose control is given for the dealers.

To support these needs/objectives, the primary model of our project is developed under the guidance and coordination of "SELCO Pvt. Ltd", a social enterprise established in 1995. The working model is developed and tested under the Incubation Lab provided by "SELCO Pvt. Ltd". Our project team consists of 4 members basically; each one is working on different aspects of the project.

We are primarily concerned about Customer Requirements, Internal Database Design, User Interface Design, Product Related Issues, Website with Login, Customer Support & Interaction. Essential features are only considered among the above mentioned Objectives, since all may not be relevant or may be already implemented. The working model is built by incorporating the 3 individual modules which are developed in parallel.

5. Analysis and Comparison of Practical Implementation of the System

5.1 What are the Requirements to be considered?

The most of the requirements are obtained from the Agriculture product Marketing Center, Belthangadi (APMC) which is a talluk for Agro marketing in South Kanara Dist. According to the survey conducted by our team in the Belthangadi and nearby agriculture areas, the results were summarized as shown below,

Table 2: Perception about Quality of Current Services.

Questions Asked	Good%	Average %	Poor%
Methods of customer support	14	54	32
Interaction of officers	26	57	17
Use of supportive tools	12	59	29
Timely completion of the schemes	20	56	24
Availability of warehouses	56	39	5
Satisfaction with the Restroom & related facilities	31	62	7
Availability of Computer & Internet	37	52	11
Medical & Remedial facilities	63	28	9
Examination & Quality clearance	14	81	5
Marketing & Pricing support	40	47	13

Along with this, a survey is also taken regarding the new services which we are planning to offer to the Farmers. Since it's a new system to the Agriculture area, this analysis from the farmers is very necessary. Most possible implementations are only covered during the survey, leaving the minor modifications. So, that there are no future complications. The questions are framed relative to the new implementations of our project & the response is noted down.

Table 3: Perception About new Services to be proposed

Questions Asked	Good%	Average %	Poor%
Automated updates	90	9	1
Very less or Free of Cost service	75	22	3
Customer care support	72	24	4
Timely delivery of Info and Prices	68	25	4
Natural language support(Kannada)	85	12	3
Various modifiable schemes	45	51	4
Technical support & guidance	70	22	8
Providing additional devices	54	37	9

Thus, from the above observations it's clear that currently available facilities are not up to the expectations of the Farmers. So, we planned to introduce our new system which rectifies the problems which exist in the Agriculture Marketing Sector. The main concern is to help the Farmer to improve his Economical Status by eliminating the need of Brokers and also providing info about variety of Products, which makes ours a Unique Facility.

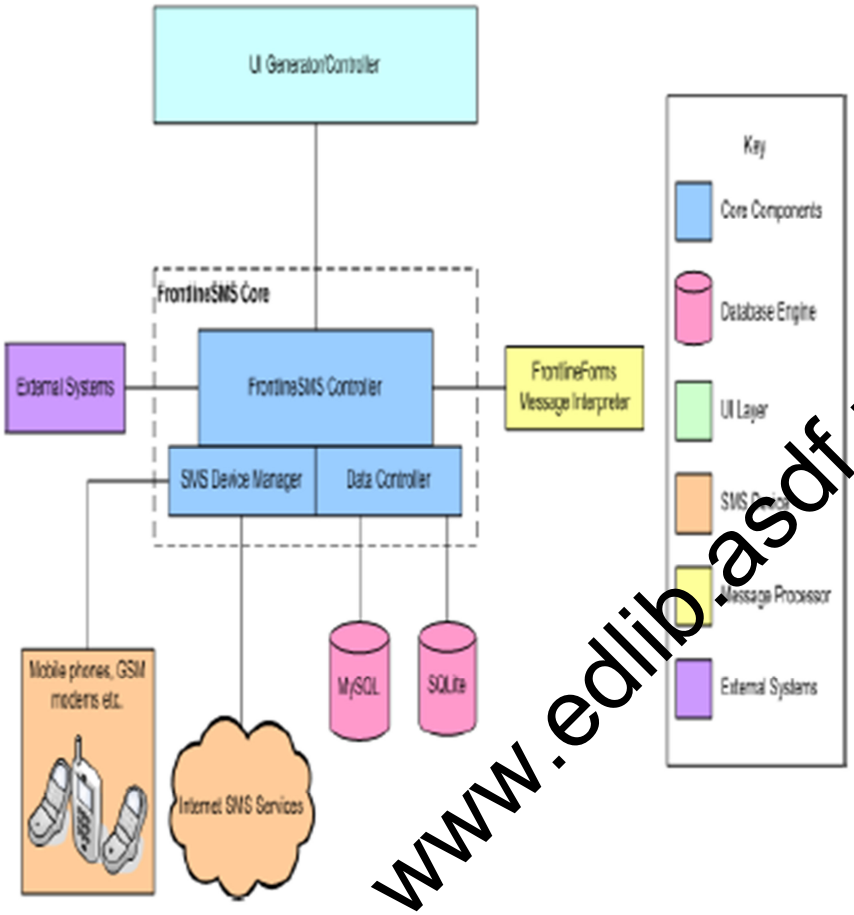
5.2 How the development is carried out?

The system is developed with 3 essential modules in mind namely:

- A Simple User Interface with SMS
- Linking between User & Database
- A Database System

So, all these independent components are necessary for the proper functionality of our system. All are initially tested independently and then they are combined together to form a working model.

A pictorial representation of the model can be given as below:



The various components involved are,

FrontlineSMS Controller- The FrontlineSMS Controller comprises the central part of the FrontlineSMS system, managing interaction between phones, stored data such as contact details, and an end-user's view and manipulation of the system.

SMS Device Manager- The SMS device manager is the interface through which all SMS messages are sent and received. It manages connections to hardware SMS devices, such as mobile phones connected via cable or Bluetooth, and software SMS devices such as Clickatell's HTTP service.

Data Controller- The data controller handles connections to the underlying database. Currently, SQLite and MySQL are fully supported. In the future, we are hoping to move database handling to a 3rd-party library, which should massively improve the supported platforms.

UI Generator/Controller- For the current UI layer, FrontlineSMS uses the ultra-lightweight Thinlet. It's a great little library - fast to get going and with great internationalization support - the FrontlineSMS UI is already translated into 8 languages.

External Systems- Keywords can trigger FrontlineSMS to make a call over HTTP or on the local machine with details of the message received. These systems can then process the message data, and respond to FrontlineSMS with instructions to send new messages.

Frontline Forms- Frontline Forms is a proprietary add-on for Frontline SMS allowing a mobile Java client to connect to FrontlineSMS and share data with it.

5.3 What are the key modules involved?

In the model along with the components indicated there are some additional modules which plays a vital role in implementation. Currently, we are working on simplifying these modules so that upgradation will be easy.

HTTP Trigger- HTTP Trigger allows developers with external applications to feed messages into FrontlineSMS for processing.

Keywords- Keywords is where you create Auto replies, subscriber lists, manage SMS-to-email settings and configure FrontlineSMS advanced features.

Command Line- It can be used for entering and executing the user defined commands and perform associated actions.

Finally, the website will be developed and implemented on the Server Side which incorporates the Database System containing all the Agriculture Details and other Information as per the design. Later in time Users, especially Farmers can register to the specific category of Product Updates as per their needs. The information to the database is fed by the APMC Data Sheets in a day-by-day manner either in a Automated way or with the Manual entry scheme.

The important feature of the website is that it contains information in both English and Kannada Language, which is very useful. The User can directly select the language version in the Welcome Page itself, so there will be no confusion. We developed the most of the website with HTML, PHP and JavaScript languages.

6. Why Cloud Computing?

We have chosen this technology, because it is ready to serve the small and medium business segment, which is our area of concern. As a future scope of this project, we can implement our system for the Large Scale also Cloud Computing Approach. The reason is that it is easy for expanding our project model for any other situations & vendors also. Cloud computing customers do not generally own the physical infrastructure serving as host to the software platform in question. The entire focus lies on the service provider who owns the huge scalable and variable host of infrastructure, software and bundle of other services.

Cloud computing is Network based computing, whereby shared resources, software and information are provided to computers and other devices on-demand, like a public utility. Cloud computing enables users and developers to utilize services without knowledge of, expertise with, nor control over the technology infrastructure that supports them. The concept generally incorporates combinations of the following:

- Deployment Model
- Service Type

In our system we used the Deployment Model as the Community Cloud. A community cloud may be established where several people have similar requirements and seek to share infrastructure, so as to realize some of the benefits of cloud computing. Usually in this the costs are spread over fewer users than a public cloud. But more than a single user and it offers a higher level of privacy and security.
The Service Type is DaaS (Data-as-a-service), in which we provide various database updates to the customer in the form of SMS. The customer queries against the providers database.

6. Conclusion

Currently in Tamil Nadu the Project is first of its kind using the FrontlineSMS as platform. So, the response from the agriculture field may take time. However it has been tried to incorporate the project with NGO and some other institutions like SELCO itself.

Also based on the cost effectiveness of project it can be implemented in various other rural areas and Other parts, if necessary. The updates can also be given via Email which already tested. Not all the models of mobile phone support the updates via FrontlineSMS platform, which need enhancing the FrontlineSMS core.

FrontlineSMS is Open Source software to enable enterprise use of mobile payments by businesses and organizations serving the base of the pyramid.

The service will be product & market-specific. Which means the farmer can choose accordingly. Also, the farmer will not be loaded with irrelevant information. And the update SMS will be kept as small as possible, to avoid the irrelevant costs. A farmer can choose the market, as also decide on whether he should hold on his product.

So, We conclude that, this project model can be helpful in various stages of Agriculture. It involves the production of food, the organization of food supply chains, the communication between agriculture, food production and consumers and the organization of regional trade. Also it will be directly and increasingly depend on electronic information, communication and control.

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Steps to Improve Quality in Education and Training using e-media

Dr. Subbarao Gollapudi

Advisor (Placement), GITAM University

With the introduction of high-speed, compact, multimedia computers, user – friendly software, global computer network through internet, have changed many traditional management techniques to "world-class management techniques" like Bench marking, BPR, ERP, Supply Chain, value chain, Corporate Governance, Kaizen, TQM, learning organization etc.

The business Environment (Technical, Economical, Political and Social) and the world class management techniques are changing so fast that the education institutions have to educate the students in latest Technology (practically on-line) for achieving performance excellence in global competition by the students in the oganisations, where they will be working

I did my PhD in Industrial engineering and Management at Indian Institute of Science (I.I.Sc), Bengaluru focusing in OD area, keeping my research as a back drop. I brought out steps to improve quality in education and training:

Education Institutions have to pay high attention to improve quality of education and training by taking the following steps as explained in table 1**.**

To improve quality of Education "ICT to improve Quality in education" has been evolved and is explained in table – I

Stage at which application of ICT in education success % involvement

Inspection Stage

After the education is completed according to the curriculum: measure knowledge/skills learnt by students through final examinations conducted by University.

Quality Control Stage

50 University Examinations Teacher(s) university

As the education is being carried out: during imparting knowledge/ skills to the students, measure the knowledge/skills learnt by the students through sessional work, project work, mid-term exams/tests, seminars, project work/vocational training at industry before students appearing final examinations conducted by the university

60 Practical Training and intermittent tests Educate students as per standard curriculum using standard teaching methods/text books.

Make students to do sessional work, take up project work/ vocational training at industry, appear midterm exams/tests, present papers in seminars etc. before appearing final examinations Teacher (s) HODs

QA Stage

Well in advance of starting the education: ensure adequate infrastructure like class rooms, laboratories, library, games / sports faculties, hostels, canteen etc. are available

Ensure adequate qualified teaching / non-teaching staff are available.

Design/ re-design appropriate curriculum and beyond university curriculum, involving Industry/ institutions. Continuous training

70 Infrastructure, teaching Staff and curriculum Ensure updated infrastructure facilities like class rooms, laboratories, library, hostels Canteen, paly ground etc.

Ensure adequate Qualified teaching / Non-teaching staff.

Up-date curriculum. Teacher (s) HODs Head / Management of institution heads of industries University / Govt. authorities. Personality development of students.

ISO 9000 Stage: 75 As at QA stage AICTE/NBA University.

QC Stage: Participation of all concerned Students, HODs, Head of institution, heads Of industries, University/Govt. authorities, board of studies (BOS) in designing curriculum including teaching hours, laboratory hours, summer placement/ vocational training hours, project report hours, industrial tour, personality development etc. and measurement of student's Performance through various strategies.

85 Participation of all concerned including Board of studies in designing the curriculum, practical work and personality development of Students. Students Teachers, HODs, Head/Management of Institution Heads of Industry University / Govt. authorities.

Tom Stage

Achieve performance excellence by students in the organizations, where they are working, by implementing the knowledge / skills learnt by them by their innovative, committed work on jobs to achieve vision and mission of organizations, where they are working

100 Total development including personality Besides the curriculum, train and develop personality of students through:

a) Industrial visits
b) Project work at industry
c) Summer placement/vocational training at industry
d) Communication skills team work etc.

Besides university Examination, obtain feedback from Heads of Industry, where the studies are employed .

All stake holders Students teachers, HODs, Head of institution Management of Institution, University/ Govt. authorities

Heads of Industry, Parents. etc.

Learn and Practice Things. Right First Time, Every Time and All Times

ICT application has five characteristics that may be called the five pillars of quality. These pillars are based on institution's values such as commitment to satisfaction of industry, where students are employed and commitment to create an environment in which students can achieve their best ability.

Customer focus (Meeting requirements) i.e. educate and give practical training in specific skills to students to achieve vision and mission of the organizations through innovative and committed hard work so that organization, where they are working, achieve performance excellence.

Total involvement (taking responsibility) i.e to improve quality of education, participation of all stake holders like students, teachers HODs, Head of institutions, Head of Industries, University/Govt. authorities, parents is necessary in designing curriculum, practical training and personality development, teaching methodology, teaching tools, measurement of student's performance at various stages though sessional work, midterm exams/tests, project reports, seminars, summer placement/ vocational training at industry, final examination and on the job performance etc.

Measurement (monitoring quality of education) i.e effectiveness of learning is measured during education through sessional work, midterm exams/tests, project work/vocational training at industry before final university examinations, through personality development and on the job performance, where the students are employed (by getting feedback from industry).

Systemic support (leading and reinforcing). i.e. all systems in the institution including planning & measurement of teaching and practical training, support the of quality of education.

Continuous improvement (preventing and innovating) i.e. continuous improvement in curriculum, practical training, personality development, teaching methodology, teaching tools, updating skills of teaching staff and measurement of student's performance at various stages.

Conclusion

By practicing the above five thrust areas, institutions could improve quality of education through ICT application

Institutions should have adequate autonomy to continuously upgrade curriculum, practical training, personality development, teaching methodology, teaching tools, updating skills of teachers, measurement of performance of students at various stages etc.

The students should be trained in personality development, communications skills, vision, mission, innovation, compassion and commitment so that can integrate their innovative actions towards performance excellence by the organization, where they are working.

The teachers should use multimedia computer, power point software, LCD etc. as training tools.

Institution should provide Internet extensively to browse world knowledge and on-line knowledge/skills by all students and teaching staff.

Investigation of Chemical Essential oil Components of Thymus Kotschyanus in Zagheh Area (In Lorestan Province)

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Abstract: From 200 genuses in Lamiacear family there are about 4000 species which one of them is Thymus. Existence of essence in these species is normal that uses for medicinal, nutritional, toiletry and health industry. The genus includes many species in Iran. This study was conducted components of essential oil in biomass of Thymus kotschyanus. Samples were collected in Zagheh area when plant was grown as flowering (in Lorestan Province) in 2011. First of all, anatomical investigations by using coloring and then samples in shadow dried and extracted by Clevenger device as Hydrodistilation method were produced. After producing essences, kind of components and percent of essential chemical components recognized and separated completely by using GC and GC/MS devices. According to components retention volume, retention time, Kovats retention index, mass spectrum and comparing those to standard components the results pointed out that 52 components (about 78.87% of essences in species) as main component such as; Thymol (32.77%), Gamma-terpineol (8.43%), Carvacrol (5.61%), Cynol (4.35%), Borneol (4.35%), Cis-Sabinene hydrate (2.87%), Terpineol (2.5%) and Gamma-gurjunene (2.17%). This study and most of the other researches had the same results according to main components of essences in the species but deal was different. It may affected by environmental and husbandry techniques such as; time of collecting, place of plant growing and climatic changes of region factors. These factors effect on biosynthesis of essential in time and place.

Keywords; Thymus kotschyanus, Essential oils, Chemical components, Botanical properties, Thymol

Introduction

The Middle East flora is estimated at 15,000 species. The use of medicinal and aromatic plants, herbs and species in the region has a long history and forms an important part of a number of cultures. Traditional medicine still plays a major role in health care systems despite the availability of modern medicine (Heywood, 1999). The collection, grading and processing of medical and aromatic plants is one of the main income generating activities. The great majority of these plants are still collected from the wild thus endangering the existence of many valuable species. Traditional medicine dates back more than 3,000 years in Iran. Evidence of the use of medicinal plants goes back thousands of years when Avicenna, the well-known Iranian medical scientist and practitioner wrote a volume on medicinal plants upon which western medicine was based until the 13th century (Sabra and Walter, 2000). The flowering plant species of Iran have been estimated to be about 8000 (WHO, 2001). Among 300 to 400 species are used for medicinal purposes. It is one of the largest biodiversity regions in the world containing some of the richest countries in plant resources. Medicinal and aromatic plants constitute the basis of primary health care for the majority of the population in Asia and are a critical source of income for rural populations. The book,

Ghanon in Medicine by Avicenna has been used by the European scientific community for more than 600 years. The works of Avicenna and Razes, another famous scientist have been translated into various languages (Mosaddegh and Naghibi, 2003). Lamiaceae family has about 200 genuses and 4000 species which one of them is Thymus. Majority species of the family have essence and uses for medicinal, nutritional, toiletry and health industry. The genus includes many species in Iran. The medicinal plants are more valuable that since a long time ago are used for treating skin diseases, food, cosmetic, and health industries and pharmacy and its unique properties were demonstrated. The study also included some of the plants used by rural inhabitants as herbal medicines (Amin et al., 2002). Result of Gersbash's (2002), Baran's(2008) and Buyisile's(2009) research show that there is essential oil resource of above of life of Prostanthera ovalifolia, Salvia argentea and Schistostephium heptalobium. Climate and weather are most factors which effect on essence of medicinal plants in each area (Kroger, 2000). Nickavar *et al.* (2005) research on shoot of *T.* daenensis and to get a result most components of the species is Thymol (about 47%). He also in other research in same year resulted that components of *T.* kotschyanus are Thymol (38.6%), Carvacrol (33.9%), Gamma-terpinene (8.2%) and p-Cymin (7.3%). In studies which have been done among 1991 to 1997 by Stahl–biskup, Jemminez and Salgueral the important essential oil in Thymus, Thymol recognized.

The aim of this study was to recognize components of essential oil in biomass of Thymus kotschyanus which collected from Zagheh area of the Lorestan province.

Materials and Methods

Iran with about 1,648,000 km2 areas is located in the southwest of Asia and lies approximately between 25N and 40N in latitude and between 44E and 64E in longitude. Iran's important mountains are Alborz and Zagros. Alborz and Zagros Chains stretch in northwest-southeast and northwest- southeast respectively. The area under study is located in 39º 29′ 52″ N and 48º 19′ 12″ E (Fig. 1). The average annual rainfall of the area is 490 mm, falling mainly in the autumn and winter. Samples were collected in Zagheh area when plants were grown as flowering (in Lorestan Province) in 2011. At the first time investigated anatomical by using coloring and then samples in shadow dried and extracted by Clevenger device as Hydrodistilation method were produced. After producing essences, kind of components and percent of essential chemical components recognized and separated completely by using GC and GC/MS devices. According to components retention volume, retention time, Kovats retention index, mass spectrum and were comparing to those standard components.

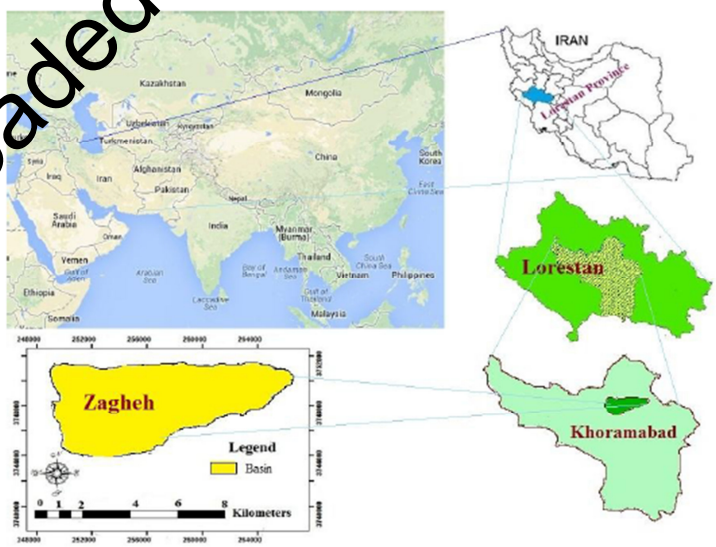

Fig. 1: Location of study area (Iran and Lorestan Province, Zagheh)

Results

Stem of T. kotschanus

Cross cutting prepared of the species show that outer layer is epidermis with non-gland secretory and gland secretory (Fig. 2). Next layer is integument of plant with collanchima and parenchyma. After this layer there is Phloem and Xylem then Marrow in center of integument (Fig. 3 and 4).

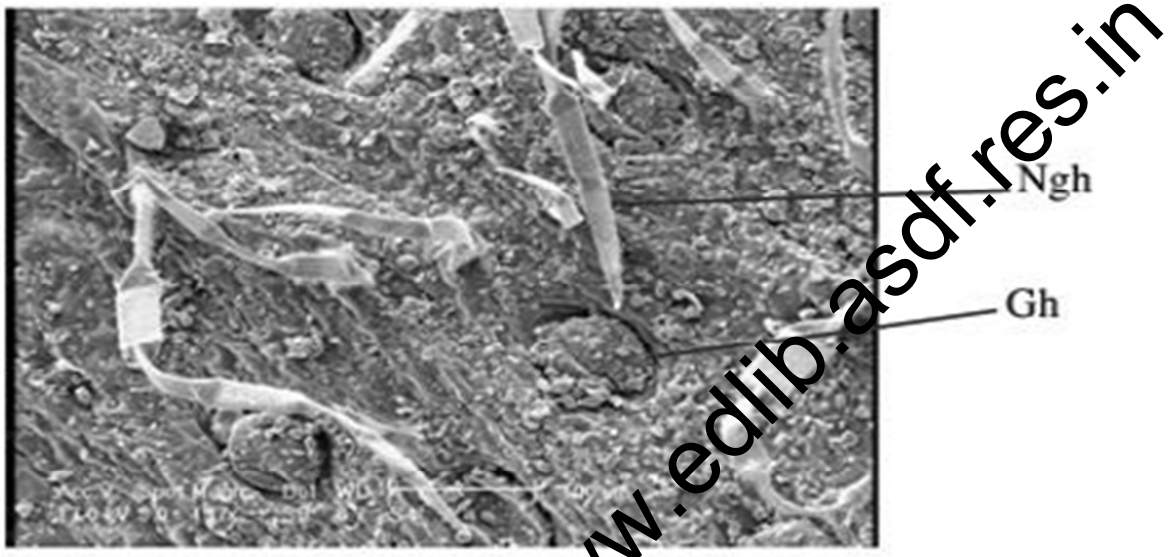

Fig. 2: Stem of the species using by SEM electronic by microscope 400X zoom, Ngh: non gland secretory, Gh: gland secretory

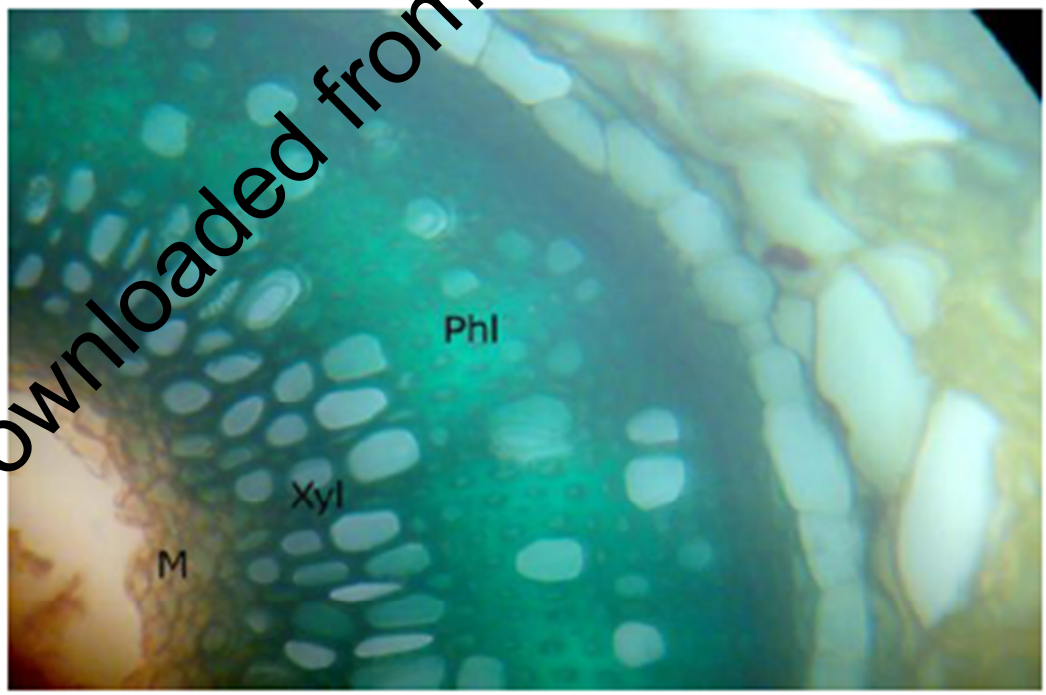

Fig. 3: Cross cutting of Thymus kotschyanus stem with 400X zoom, Ph: Phloem, Xyl: Xylem and M: Marrow

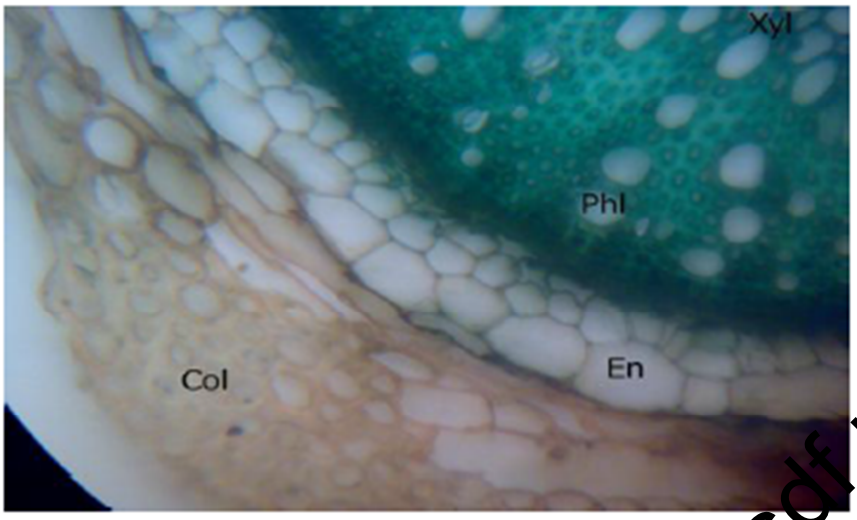

Fig. 4: Cross cutting of Thymus kotschyanus stem with 400X zoom, Ph: Phloem, Xyl: Xylem, Col: Collansim and En: Endoderm

Leaf of T. kotschanus

Microscopic investigations show that leaf of the plant have upper and lower epidermis which in lower epidermis there is fuzz that mainly are non gland secretory and lance-shaped. Fuzzes make by some cells. In the middle there is bunch of Phloem and Xylem (Fig. 5).

Fig. 5: Leaf of *Thymus kotschyanus* using by 400x zoom electronically microscope SEM, Ngh: non gland secretory, Gh: gland secretory

Recognition of components in essence of Thymus kotschyanus in flowering stage

According to components retention volume, retention time, Kovats retention index and mass spectrum and comparing those to standard components results show that there is 52 components in essence that formed 78/87% of all essences. Most of the components in the species were Thymol (32/77%), Gamma-terpinene (8/43%), Carvacrol (5/61%), Borneol (4/35) and Cynol (4/35%) (Tab. 1). Essence gas chromatography spectrum of shoot frequency has been showed in flowering stage (Fig. 6).

Table 1: Recognition components in essence of Thymus kotschyanus in flowering stage

No.	Components	Kovats retention index	Percent	No.	Components	Kovats retention index	Percent
1	Tricyclene	909	0.02	27	4-terpineol	1187	2.50
2	Alpha-thujene	916	0.50	28	Alpha-terpineol	1192	0.25
3	Alpha-pinene	926	0.49	29	Carvacrol methyl ether	1258	0.20
4	comphene	961	0.72	30	Beta-bourbonene	1391	0.06
5	sabinene	970	0.13	31	Beta-elemene	1414	0.10
6	Beta-pinene	967	0.16	32	Trans-caryophyllene	1479	1.67
7	3-octanone	980	0.18	33	Germacrene D	1491	1.25
8	1-octen-3-ol	977	0.11	34	valencene	1492	0.08
9	Beta-myrcene	992	0.66	35	bicyclogermacrene	1360	0.33
10	3-octanol	988	0.04	36	Neryl acetate	1511	0.03
11	Phellandrene	1000	0.10	37	Beta-bisabolene	1470	[illegible]
12	Delta-3-carene	1006	0.03	38	Beta-cadinene	1526	[illegible]
13	Alpha-terpinene	1019	1.22	39	Delta-cadinene	1737	[illegible]03
14	Cymol	-	4.35	40	Cis-alpha-bisabolene	157[illegible]	1.17
15	1,8-cineole	1009	1.45	41	Geranyl butyrate	15[illegible]9	0.14
16	limonene	1025	0.17	42	spathulene	[illegible]	0.25
17	Cis-ocimene	1038	0.05	43	Caryophyllene oxide	[illegible]472	0.60
18	Beta-ocimene Y	1039	0.71	44	Geranyl peropionate	[illegible]139	0.06
19	Gamma-terpinene	1062	8.43	45	Trans-Isolimonene	1469	0.07
20	Cis-sabinene hydrate	1069	2.87	46	Gamma-guri[illegible]e	1469	2.17
21	p-cymenyl	1027	0.02	47	gera[illegible]l	1285	0.2
22	Alpha-terpinolene	1016	0.19	48	Bornyl [illegible]tate	1267	0.18
23	Cis-beta-terpineol	1144	0.38	49	Th[illegible]mol	1299	32.77
24	Linalool	1098	0.12	50	ca[illegible]acrol	1351	5.61
25	comphor	1143	0.06	51	Ac[illegible]thymol	1379	1
26	borneol	1166	4.35	52	Geranyl acetate	1382	0.03

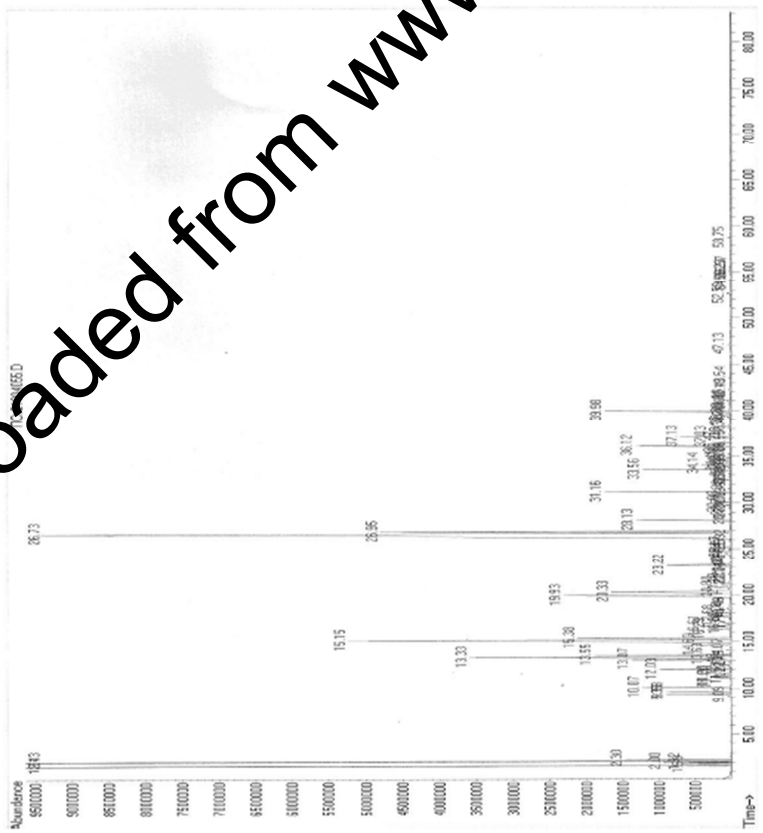

Fig. 6: Essence gas chromatography spectrum of Thumus kotschyanus shoots frequency in flowering stage

Discussion

As researchers in previous studies had been pointed out which weather is one of the most important affecting to essential oil in medicinal plants, this study indicates this fact too. Also weather can change number of components and percent of each components of essence in species, because each spices growth in different environmental factors which cause on number of endocrine glands in lower and upper of leaves. This subject has the same result of Gersbash's (2002), Baran's (2008) and Buyisile's (2009) studies. Also deal of percent of components is different may be because of different niche of the species. It may affected by environmental and husbandry techniques such as; time of collecting, place of plant growing and climatic changes of region factors. This factors effect on biosynthesis of essential in time and place.

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E-Governance in Davao Region: An Assessment of City Government Websites

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Abstract: The study evaluated the resources and services available in the official government websites of all the cities in Davao Region to determine the extent of its implementation of e-governance. In particular, the assessment was done to verify if the queried contents were promoted in their websites. Moreover, the compliance of the city websites in posting the reports required by the Full Disclosure Policy (FDP) was also determined.

Findings showed that relatively low results were acquired by the city websites in Davao Region except for Davao and Tagum where most of the contents were promoted in the site. Moreover, the websites of both cities have advanced features and services which were not included in the checklist. To add with, information cited are not that rich and limited only and most of the contents are displayed through text in static mode. As to the FDP compliance, findings revealed that except for Digos, all cities utilized their website to post the reports required under the FDP.

The study concludes that while all cities have utilized their websites for e-governance, the quality of its contents show substandard adoption and underutilization. The study suggests that each city exploit the benefits offered by the websites as a medium in promoting innovative public service delivery.

Categories and Subject Descriptors

H.3.5 [Online Information Services]: Web-based services
H.3.7 [Digital Libraries]: Collection, Dissemination, Standards, Systems issues, User issues

General Terms: Management, Measurement, Documentation, and Standardization

Keywords: Citizen's Participation, e-Governance, Transparency, Government Websites, Good Governance, Full Disclosure Policy, Accountability.

1. Introduction

The constant tremendous development in the field of Information and Communication Technologies (ICTs) in this modern era continues to influence the manner of how government should look into improving efficient and effective public service and promotion of transparency in order to boost responsiveness; this is the so-called e-government.

In fact, the once unreachable government's vital information such as budgets and spending are now made accessible to the general public through website as a medium.

At present, the rampant utilization of government websites to publish tremendous amount of information is observable. As a matter of fact, most countries are going beyond basic websites through providing national portals for the citizens to be connected to government services (UN e-Government Survey, 2010)1. Even the local governments around the world have their own website and regularly enhance its contents in order to develop better engagement with the citizens. This follows Darlington and Pitts (2012)2 who said

that local government websites have to shift from a simple and ease of use website management to a more engaging, personalized and sophisticated one such as providing a relevant roadblock, or a message that appears over the web page which has to be dismissed or followed.

In the Philippines, several provincial, city, municipal and some barangay (village) local government units (LGUs) have their own website. A study which analyzes the 102 websites of all the City Governments in the country accessed in 2004 was conducted by Siar (2007)3. This study aims to fill in and update some previous related studies through comprehensively investigating the content and information contained in each city government website in order to determine the scope, usefulness, degree of transparency and effectiveness in improving the governance process.

It has been 6 years since the study was published by Siar (2007) and almost a decade has passed since the websites that were included in the study were accessed last 2004. Various developments in information and communication technology (ICT), in particular to the transformation of e-governance in the country, have been noticeable. The very recent is the implementation of the Full Disclosure Policy (FDP) which was started last 2010 as spearheaded by the late DILG Secretary, Jesse Robredo.

Through FDP, Local Government Units (LGUs) have been encouraged to practice the culture of transparency and accountability in public service by means of fully disclosing to the general public the required reports and documents through posting in at least three conspicuous places including the official government website of the local government unit.

Thus, there is a need to update the current status of e-governance focusing on assessing the contents of the government websites of all the cities in Davao Region. In addition, the implementation of the FDP policy particularly the prerequisite of posting the required reports and documents at the government websites makes it imperative to know the extent of compliance of the concerned city LGUs to this requirement. Hence, this study.

2. Statement of the Problem

Generally, the study was conducted to know what resources and services are made available in the official government websites of all the cities in Davao Region. Specifically, the study sought to address the following questions:

1. What is the current status of the cities' websites in terms of promotion of the following information:
   a. Citizen awareness and understanding of their community's characteristics;
   b. Efficiency and effectiveness in service delivery;
   c. Transparency and accountability in operations and services;
   d. Awareness of policy making process and participation in decision making;
   e. Linkage and interaction between government and citizens and other groups; and
   f. Linkage between government and business?
2. What is the extent of compliance of the city governments in posting the following reports and documents at their government websites:
   a. Budget Reports;
   b. Procurement Reports; and
   c. Special Purpose Fund Reports?
3. How do these city websites compare in terms of:
   a. Contents of information; and
   b. Posting of the FDP required reports?

3. Objectives

This study aimed to provide a perspective as to what extent the local government of the cities in Davao Region implemented e-governance. Specifically, the study looked into the content of the websites and examined the services and resources of each city. Moreover, the research determined the compliance of the city government in implementing FDP in the manner of posting the required documents at their official government website.

Finally, the study tried to come up with an analysis as to the current status of the concerned cities in implementing e-governance along with a comparison of the contents of information and the posting of the contents of information and the posting of the FDP required reports. The translated assessment that was examined aimed to provide feedback that will be useful in the improvement of e-governance in the cities of Davao Region.

4. E-Governance

e-Governance was defined by Kasubiene (2007) and further cited in the work of Farhan and Sanderson (2009) as *"the process and structures pertinent to electronic delivering of government services to the public".*4 It is widely elaborated by Lallana, Pascual, Soriano (2002)5 as relevant to governance processes as the use of ICT by the government agencies for the ability of transforming relations with citizens, businesses, government employees and other arms of government in the delivery of services.

4.1 Website as a tool of e-Governance

Website was defined by Parajuli (2007)6 as a virtual location used by any of the organization having a unique uniform resource locator catering the need of all the intended users by providing information through multimedia components. In the article of Christopher Steins (2002)7 he reported that among the top 10 technologies being implemented as part of an e-Government, website ranks first. As years passed with its accompanying constant development of technology, Kalra and Verma (2005)8, explained that with government websites, forms and transactions became widely accessible in the sense that even tracking one's application are being made possible in the easiest manner. In respect to that, they regarded the websites as an effective medium for e-Governance and recognized its effectiveness as a powerful medium which became a reason why the types of e-Governance became familiar with the common citizens. As added by Parajuli (2007), the use of websites in government service reinforces the governments' commitment to thrive electronically and add new dimensions to the ways of the government in delivering physical delivery of its services.

4.2 Social Networking in e-Government Websites

In the Philippines, social sites such as Facebook and Twitter are widely used by the government agencies to reach millions of citizens for communication purposes. Such scenarios are likewise visible in the countries of Middle East and North Africa (MENA) by means of using Facebook where once or still a county battling for democracy. Citizen-Government interaction is now everybody's concern, in fact, the Public-Private Partnership collaborated in the countries of MENA as accorded by USTDA (2007) prioritizes the linking interaction of national and local levels of e-Government operations (Demissie, et al., 2010).[9]

In the report from UN e-Government Survey (2010), most developing countries around the world are still limited in the transactional aspect of e-Government and none of the countries listed were able to obtain over 50 percent of the 403 points available in the transaction stage. The development ranking of Philippines in the world e-Government is 78 during that time. Moreover, it is noteworthy to include that in the above survey stated, the e-Government program of the country of Bahrain involved presence on social networking sites such as Facebook and You Tube, features such are open forums, blogs, live chats, online polls, e-

newsletters and other interactive services that involve citizens in government decision making are visible in the national portal and ministry websites of the country. Another notable feature was obtained from the country of Ghana where the government websites of the country make use of featuring tools through social media box for You Tube and has direct links to the Facebook accounts of the government officials in the Ministry of Information. The government websites of the United States of America also uses social media tools such as You Tube, Twitter, and Facebook to easily connect and communicate with citizens and other government agencies and the Gov Gab Blog where bloggers share tips and information from the Federal government, comment and share their own experiences.

4.3 Contents and Features in the Government Websites

Parajuli (2007) cited the outcome of the study of La Porte, et. al. (2000) which reveals that government agencies must create a meaningful websites that enables citizens to capture and filter relevant information for their individual purposes. For Kim, et al. (1999) as likewise cited by Parajuli (2007), the frequency of update, freshness and maintenance of the site reflects that the site contains the currency of information; this could show that the government is serious in disseminating timely information.

Regarding the contact information still cited by Parajuli (2007), Misic and Johnson (1999) expressed that, other than making available of email information as a dominant mechanism of communication in government site, other contact information of the organization and personnel must also be provided. To foster greater interaction during and beyond working hours, the diffusion use of ICT services such as telephone and fax were suggested by Philips (2001). Whereas, United Nation (2005) insisted that, to target a larger audience the use of web media such as feedback feature, discussion forum, chat room and interactive bulletin board are the useful aids. This idea was supported by Parajuli (2007) as another avenue to facilitate government-government interactivity and further to be beneficial in understanding citizens' voice.

According to the 2001 study conducted by the World Market Centre and Brown University where a total of 2,288 government websites in 196 nations were reviewed, the following common features were the commonalities on the surveyed government websites: phone contact information, addresses; publications; databases, links to the other sites; audio clips, video clips; not having advertisements, not having user fees; having privacy policies, security policies, having online services, having a portal connection ; allowing digital signature on transactions, options to pay via credit cards and search capabilities, areas to post comment, broadcast of events (Lallana et al. ,2002). The overall conclusion of the survey revealed that many of the surveyed countries did not make used of the advantages offered by the interactive features of the Internet which resulted to lack of dynamism and robustness and failing to capture the potential of ICT to enhance democracy.

Contents' accessibility is also a must in any of the government websites; this was argued by the authors namely Shneiderman and Zahedi (2000) and also Song (2001) as reflected in the study of Parajuli (2007) that government websites must be made accessible to all regardless of expertise, personality, literacy, ethnicity and disability. The authors demanded that multilingual option, frequently asked questions (FAQs), text-only option and disability features are the functional features which must be provided in any of the government websites.

Accessibility (Nielson (2000) and Newmann and Landay (2000) as likewise cited by Parajuli (2007)), requires the presence of the site map as where the government website is located by any of the government unit; the authors stressed that the existence of the site map reveals the logical and structural order of a website. Moreover, appearance of search facility in the site was also helpful to allow fast retrieval of information (Nielson, 2000).

Unintended information is vulnerable to be displayed in any of the government websites. In fact, availability of words which are spelled incorrectly as posted in the government websites as well as grammatical errors are visible in the websites of MENA countries. The occurrence of the situation could

raise doubts among English-speaking citizens as well as English speaking tourists about the government's commitment to offering e-Government services (Demissie, et al., 2010). Further, the authors believed that the government websites should strive to provide convenience to the users accessing the websites by providing uniform templates in all the web pages of the site to ease user's navigation experience. In addition to that, the authors also suggested that as much as possible avoid embedding multimedia components which will make the loading of the web page slow, this could give an unpleasant and unaccommodating experience to the users.

To include the establishment date of the web site and the date particulars of the contents posted in the pages of the government websites reveals the evolution of the web activities which can assist in reviewing the historical development of government's online presence (Parajuli, 2007).

At the 2012 United Nations e-Government Survey, they found out that 179 countries provide some form of documentation related to finance, the most common among them were tax forms. Moreover, laws, policies and other documentation of interest to the citizen on education, health, social welfare and other sectors were increasingly being integrated within the overall national portal and/or the agency portals. Therefore, the survey concluded that most countries around the world continues its progress in online service delivery to further enhance public sector efficiencies and streamline governance systems to support sustainable development with the Republic of Korea as the world leader of e-Governance implementation.

4.4 Evaluation of Government Websites in the Philippines

The study of Ilago (2001) 10discussed the role of information in the process of participation and showed the nature of the internet as a medium in enhancing participation. At the time Ilago (2001) conducted the study, internet usage in the Philippines was still quite low based on a cross-country comparison with selected Asian countries. The result depicted the only 0.6% of the total population who has access to the internet. The author further reviewed the websites of the local governments of the country and found out that only 7 out of the 35 surveyed websites contained information on local government policies, memoranda, regulations and local legislations.

Meanwhile another report was noted from Lallana, et al. (2002) regarding e-Government in the Philippines. The report revealed that there is no transactional government website in the country, about 14% of the agency websites were unreachable, only 19% of the Philippine government websites studied can be considered "Interactive". Further, it was noted also that Philippine websites do not have a common look and feel. To sum up with, such results are not highly commendable.

Another study is from Siar (2007), where the purpose of such was to assess the local government websites of all the cities of the country. The outcome showed a clear absence of substantial information and resources that could enhance the quality and speed of service delivery, make government more transparent, facilitate public participation in decision making and ultimately bring government, citizens, business, community organizations and other groups in society together in the governance process. It is noteworthy that in the study the website of Panabo City is one of the several city websites where contents are mostly empty. It was considered technically to have a web presence but almost useless. While the study of Ilago (2001) utilized Klaus Lenk's 4 broad classification of services in order to determine the applications and services offered by the 35 local government websites as his subjects, the work Lallana et al.(2002) assessed the 140 websites of the government agencies of the country as to their progress in accordance to the 5 Stages of e-Government as per standard of the United Nations and the American Society of Public Administration (UN-ASPA). With due respect to the work of Siar (2007), the study come up with a comprehensive investigation of the content and information contained in each of the 102 city government websites while ascertaining their scope, usefulness, degree of transparency and effectiveness for the improvement of governance process.

4.5 Citizens' Participation

For Reddick (2004)11, it is the citizen interaction with e-Government or the use of the internet that lead the now so called e-citizens also termed as netizens in the improvement of their interaction with the government. In the study of La Porte et al (2000) as cited by Streib and Thomas (2003), they concluded that availability of governmental information on the web promotes governmental openness and transparency which later facilitates the achievement of democratic values. Letting citizens to participate in decision making is a transformative method which can be attributed to social change (Nelson and Wright, 1995 as cited by Irvin et. al, 2004) and citizen involvement is intended to produce better decisions which brought more efficient benefits to the rest of the society (Beirle 1999; Thomas 1995); while Echeverria (2001) argues that collaborative process is deliberately designed to slow down environmental decision making to favor the status quo. 12

4.6 Transparency in e-Governance

Transparency is making available of the internal system and processes to the external audiences (Phillips, 2001)13. For Lallana et al. (2002) it entails elimination of function duplications and improvement of adherence to proper government procedure. For the president of the USA, Obama (2009) believed that openness will strengthen democracy and promote efficiency and effectiveness in government.

From the above discussions, the relationship between transparency and good governance becomes directly proportional. This was observed in the case study of You and Lee (2014) entitled Budget Transparency and Participation in Korea where they acknowledged that the relationship between good governance and better economic and social outcomes is brought by transparency which they considered as a key element of good governance. Goldkuhl and Rostlinger (no date)15 revealed the outcome of their study stating that there is a positive relationship between a country's e-Government score and its transparency score. They added that the use of Internet technologies as a practice of e-Government is a means to increase transparency in government operations. This is supported by Hill (no date)16 that the use of ICT is vital in combating corruption; the author further cited that a benchmarking and constant evaluation is in need for efficient e-Government service.

4.7 FDP of the Philippines

In compliance with the promotion of transparency as pursuance of DILG memorandum Circular No. 2011-08 and DILG Memorandum Circular No. 2010-83, the Full Disclosure Policy in the Philippines came into existence as spearheaded by the Department of Interior and Local Government (DILG). The implementation of FDP was started last 2010 by its then Secretary Jesse M. Robredo. This has been the dream of the late DILG Secretary to promote honest government in order to bring back the Filipino people's trust in their local government through practicing transparency and accountability.

FDP is the Philippines' government policy requiring local officials of provinces, cities and municipalities to fully disclose particular financial transactions of the LGU to keep their constituents informed on how LGU budget is managed, disbursed and used. This policy is not a new rule existed since this act fully abides the following legal laws mandates which requires its implementation: Section 352 of the Local Government Code, Republic Act No. 9184- known as the Government Procurement Reform Act, Section 90 of Republic Act No. 10147 (General Appropriation Act) FY 2011- "Use and Disbursement of Internal Revenue Allotment of LGUs" and the Commission on Audit Internal Memorandum , dated October 8,2010.

In the report of Ong (2012)17, as of June 2012, as obtained from the latest Pulse Asia and Social Weather Stations survey, 1,697 or 99% of LGUs had complied with the policy. The said compliance of most of the LGUs could be attributed to the fact that FDP became a requirement in the conferment of the Seal of Good Housekeeping (SGH) which rewarded those LGUs who promoted honesty and excellence in local

governance. As of June 2012, 856 LGUs have qualified for the SGH and granted a P1.1 billion from the Performance Challenge Fund.

5. Conceptual Framework

The conceptual framework formulated determines the condition of e-Governance implementation in all the cities of Davao Region. Six (6) government websites were assessed focusing on the contents of information and reports available. The study utilized the framework used by Siar (2007) in assessing the quantity of websites. Moreover, the formulation of the framework is inspired in the Four-Dimensional e-Government Framework by Nour, et al. (2008) as cited by Rahman (2010) 18 which emphasized about the need to have an accessible and transparent e-Governance system.

There are two (2) main variables available; the independent variable which comprises the two indicators namely, contents of information and posting of the FDP required reports and the dependent variable which are the concerned city websites in Davao Region (see Figure 1).

6. Methodology

6.1 Methods and Sources

The study was predominantly concerned in attaining the answers in the questions "what is the update?" and "do they comply?" thus this is an evaluative type of research. Simultaneously, the study employed qualitative research method to allow the views, opinions, comments and observations of the researcher and the respondents to be included in the assessment.

This research used both primary and secondary data. Primary data involved the quantified results drawn from the evaluation conducted through the checklist used by the researcher in evaluating the contents of the concerned websites and also from the garnered data through the questionnaire made as evaluated by the respondents to triangulate the initial data gathered by the researcher who also acted as an evaluator. Secondary data comprised the official documents posted at the City Government websites which were retrieved by the researcher. Moreover, during evaluation of the websites and the conducted focus group discussion, a personal comment was taken account of by the researcher and evaluators as per observations during the assessment in order to come up with qualitative information.

6.2 Instrument Used and Sampling Technique

This research utilized the checklist scheme "*Functional Categorization in the Assessment of Web Content*" by Siar (2007) in finding out the answer as to the web contents of the cities' websites. The said scheme was both utilized by the researchers during the initial evaluation and also by the participants during the conducted focus group discussion (FGD). In order to know the availability of the reports required by FDP, the researchers prepared a dummy table that was filled-out once certain reports were retrievable or not at the portal.

To triangulate the data obtained by the researcher during the initial evaluation using the checklist scheme, a focus group discussion (FGD) was further conducted. Clustered sampling was used in selecting 30 respondents belonging in the field of information technology (IT). Moreover, purposive sampling were utilized in picking ten (10) 3rd year IT students, ten (10) 1st year IT students and ten (10) IT instructors to participate in the three (3) sessions set for FGD.

6.3 Procedure of Data Collection

1. The researcher individually accessed each of the government city websites in Davao Region and evaluated through the use of the instrument adapted from the study of Siar (2007).
2. Initial assessment was made initially by the researchers where during that time; some screenshots were captured in each of the websites. Insightful comments and observations are carefully noted for the purpose of valuable deliberation in discussing the results and in giving recommendations.
3. Three (3) sessions were held and each session was participated by a total of 30 respondents to name, fifteen (10) 3rd year IT students, ten (10) are 1st year IT students and ten (10) IT instructors in separate session where every session last for about three (3) hours.
4. Equipped with the LCD projector, the researchers then utilized the first one (1) hour in discussing the purpose of the discussion, clarifying some unclear items inquired and familiarization on the section of the websites. The remaining two (2) hours were utilized for assessing the presence of every item in the websites of the concerned LGUs, for entertaining deliberative discussions and queries as well as for letting the respondent write their individual comments in the blank space provided in the instrument.
5. In order to assess the manner of pursuance of the city LGU to the FDP in the manner of posting the reports in the websites, the researcher used the table drawn in checking the availability of the reports inquired from 2010 to 2012.
6. Descriptive statistics tools such as Frequency, Mean and Percentage were used in processing the data.
7. Evaluation period runs between February 10 to March 10, 2013.

7. Findings and Discussion

7.1 Status of the Cities' Websites

The prevalent typical information contained in most of the websites in Davao Region was apparently about the connection between city government and business sectors (Function 6) where 58% were garnered by the cities' websites. It was followed by Function 1 for having 56% garnered average of the information which promotes awareness of the citizens in understanding the characteristics of their community.

However, only 43% of all the items queried in Function 3 serve as the average contents of the websites concerned. Though there were two city websites, Davao and Tagum which got all the items that promote transparency and accountability, other websites got a low outcome.

While Davao and Tagum websites were sufficient enough in posting contacts of the officials and offices as well as making available of either vertical or horizontal communications, some other websites poorly provided these contents. An average of 40% is the total outcome of the websites in Function 5. To continue, an average of 43% were garnered for Function 2 out of all the contents of the websites since almost all of the websites does not have downloadable forms in securing relevant permits and not of all websites displayed contents concerning to procedures in applying and/or availing pertinent documents.

Extremely low result can be found in Function 4 where 25% is the percentage of the websites in the contents queried in this specific function. Four of the city websites did not have any item inquired relating to the awareness of policy making and participation in decision making while Davao and Tagum got only 1 and 2 items respectively.

The functions wherein average contents were less than 50% are Function 2, 3, 4 and 5 where contents respectively inquired about delivery of frontline services, transparency and accountability, public awareness in policy making and their participation in decision making and linkage between city government, citizens and other groups.

7.2 Compliance to FDP

Among the 13 reports required, the most complied documents as posted in the concerned websites were the budget reports, specifically the annual posting of Budget and Statement of Receipts and Expenditures wherein 56% of the 18 items queried in both items were displayed on the sites. For the Statement of Debt Services report, 44% were obtainable, the same percentage for the Statement of Cash Flow report which is required on a quarterly basis.

For the procurement reports, the highest garnered percentage was 39% for the posting of the Annual Procurement Plan or List. While both Trust Fund and SEF Utilization reports were the most complied report in the special fund reports category having both a percentage of 39%.

It was individually presented that every year each city is required to post 34 reports, so for the 6 cities a total of 204 reports were inquired yearly. As observed in the table there was a gradual rate of compliance of the city websites, where in the year 2010, a total of 41 reports out of 204 can be obtained among the websites concerned, for the year 2011 it increased to 72 reports and for the year 2012 a total of 113 reports can be found.

The use of websites as a medium to promote transparency is observably utilized by the cities in Davao Region except for Digos. This practice affirms President Barack Obama of USA who believes that openness will strengthen democracy and promote efficiency and effectiveness in government. 19 However, to achieve increase transparency which decreases corruption is not possible without incorporating appropriate channels for public feedback (UNDP, 2005).

As far as the availability of the documents are concerned, a total of 612 reports were inquired from 2010-2012, however only 220 reports which could be found in all the concerned city LGU websites. Referring to the outcome presented individually wherein only the cities of Mati and Tagum has more than half of the inquired documents from the year 2010-2012, accompanied with the overall outcome reflecting that in totality a percentage of 36% is obtained as the computed extent of compliance of all the cities, it can be concluded that not all the cities complied with the FDP requirement on posting the inquired reports.

7.3 Comparison of the Websites' Contents

The city of Davao and Tagum unexpectedly got an equal rate of 3.86 which corresponds to good remarks, this simply imply that the two city websites possessed 70% to 84% of the respondents' assessments. It was followed by the city websites of Samal and Mati for having the means of 1.91 and 1.58 respectively. The average rates emphasize that only 40% to 54% is the outcome of the city websites in the assessments done by the respondents; this corresponds to a poor remarks. Average rates of 1.34 and 1.18 were given consecutively to the cities of Panabo and Digos. This signifies that the city websites possessed less than 40% of the expected outcome of the respondents; this corresponds to unsatisfactory remarks.

None of the government city websites in Davao Region got an excellent remark though cities of Davao and Tagum has a lot of features but these are not queried in the checklist thus were not rated by the respondents. For Affisco and Soliman (2006) and Al-adawi, Yousafzai and Pallister (2005) for the cities of Davao Region be considered as a higher level of e-government service, the websites must possessed higher number of features and dynamic features such as online executable service. 20

In the respective function schemes, Function 1 and 6 both obtained a means of 2.60 and 2.70 respectively which equates to average remarks. The result tells that averagely, the information which promotes citizens awareness and understandings of the cities' characteristics and linkage between government and business were made available by all the city websites of Davao Region 55% to 69% as accorded by the expected outcome of the respondents.

For the information which promotes efficiency and effectiveness in service delivery (Function 2), transparency and accountability in operations and services (Function 3) and linkage and interaction between government, citizens and other groups (Function 5); respective rates of 2.31, 2.49 and 2.15 were the computed means. This denotes that only 40% to 50% of the expected information was being displayed in all the concerned websites; it is equivalent to a rating of poor.

Lastly, the government websites in Davao Region earned an unsatisfactory rating in posting information queried in Function 4. The rating obtained tells that averagely, the city websites in Davao Region contained less than 40% of the contents which promotes awareness of policy making process and participation in decision making. Boris and Krehely (2002) and Brody, Godschalk and Burby (2003) as cited by Chadwick (2003) noted that provision of the above contents heightened citizen' participation which is vital in ensuring that the governmental decisions and policies reflect the public interest; it decreases the doubts of the citizens and their distrust to the government.

It is noteworthy also to ponder and discuss that none of the city websites in Davao Region offer the web services through .com which are often used as a commercial site. This could be linked in to what Cresswell et al. (2007) said that, once offered as commercial site, it may indicate lack of commitment by the government in offering web services to the public. Hence, the city websites of Davao Region were made accessible having a .gov domain which clearly emphasizes that the city websites were launched as e-government sites.

Regarding the currency of information, it can be noted during the evaluation period that the city websites of Digos, IGaCoS, Mati and Panabo were not regularly updated. Appearance of this scenario hinders the citizens to be informed of the current updates of the citie's' activities. These cities must take note of what Kim, et al. (1999) as cited by Parajuli (2007) said that it is necessary to have updated information in the government websites as it shows the seriousness of the government to disseminate timely information in order to gain the trust of the users in general.

Moreover, in the stages of development of e-government services as indentified by Affisco and Soliman (2006) and Al-dawi et al. (2005), Davao can be regarded as already in Stage 4 – the transforming stage since the website of Davao can be considered already a single-point portal which integrates all the e-government services offered by all the departments of the city. However considering Stage 3 which is the transacting level, it is observable that the city website does not offer completion of an entire service online, yet the city website can be identified to reach already on the last level.

The city website of Digos is still on Stage 1- the publishing level since its website presented only the information regarding the city in a static way. Since the website of Tagum is capable of providing downloadable forms and has a search function, it can be indentified on the interacting level, the Stage 2. The city websites of IGaCoS, Mati and Panabo can be considered also to be in the level of Stage 2 even though there were no search functions provided just making available of the downloadable form.

7.4 Manner of Posting FDP Reports

In terms of accessibility of the reports, in the 5 cities of Davao Region complying to FDP, only the city of Davao does not provide a specific page and link where relevant documents can be accessed conveniently, all other websites make available of a link which redirects to the page where reports are displayed. To add with, only the city website of IGaCoS and Mati provide information of the reports uploaded along with the details of the published date, but not all the reports uploaded in the website of IGaCoS were accompanied with date published only the recent reports. In the city website of Mati, the manner of displaying the reports is confusing to the viewer since the query is not about the reports intended for the particular year or quarter but instead as to the date it was uploaded in the website.

The city website of Davao, Panabo and Tagum posted the reports according to what year or quarter the report is with no accompanied date but only the website of Tagum conveniently posted it in just one page since for the city of Davao not all the reports were posted on the same page though a search mechanism is provided and for the city website of Panabo it was plainly listed on the page no filtering feature provided.

In viewing the report, you have to download it first to see the content of the specific reports in the case of the websites of Davao, Panabo and Mati while for the city website of IGaCoS the report is also available for download and you can also view the content online and a feature where you can print directly the certain report is provided; as to the city of Tagum it can be viewed online and once you redirected to docs.google.com you can have it printed directly.

It can be observed also that the posted reports of the city website of Panabo were uploaded in www.sribd.com wherein not everyone can download it unless you undergo the sign-up process of the site. In Tagum, as observed, all the reports regarding FDP were uploaded in docs.google.com where you can opt to print the .pdf file though you can directly view it as it was displayed as it was displayed on the frame provided once you click certain report.

As to the format of the file which can be downloaded, all the city websites which made available of downloadable reports were having a .pdf extension. The uniformity of the file format could ease the user's navigation experience (Demissie, et al., 2010).

About the accuracy and quality of the reports posted, it was observed that only the city websites of Davao and Tagum embed the city logo in all the reposts which can be viewed and downloaded from the site and followed the proper templates provided in posting the reports. Some reports uploaded by the city website of Panabo were not that clear since it was scanned only and some posting of documents does not follow the required frequency of posting if it is by quarter or just annual, the same case is observable to the city website of Mati wherein there were reports which the content does not match to its title, words which were misspelled and since it is archived directly, redundant reports were often encountered. The availability of the words which were spelled incorrectly, grammatically errors and some reports which were mistakenly uploaded could hinder the process of citizen participation Demissie et al. (2010). The authors added that the occurrences of the mentioned erroneous actions could raise doubt among English-speaking citizens and tourist regarding the commitment of the government to offer reliable e-government services.

The city website of IGaCoS also did posting of the reports not following the guidelines of the frequency of posting, some documents were summarized reports and not done quarterly, other reports were done quarterly which should be updated. Bulky documents can be found on all the websites since most of the sites posted individual reports with regards to the bidding and some other documents as posted but the city website of Tagum organized the manner of displaying it.

Out from the discussion presented it can be concluded that all the cities in Davao Region except for Digos practice the culture of transparency via ICTs capabilities as the medium. Through this, it enhances the degree of accountability of the cities and shows the ability of the officials spearheading the city to interact with citizens through e-governance. This proves the idea of Wong and Welch (2009)21 that websites serve as medium in comparing various aspects and features which promotes transparency as brought by e-governance.

7.5 Other Contents and Features

The below discussions are the contents and features found in the city websites in Davao Region during the conduct of FDG. The following lists are not queried in the checklist of Siar (2007):

- **Archival of FDP Reports**. The required documents by FDP were archived by all the city websites in Davao Region except for Digos. This gives the possibility to browse relevant documents

pertaining to the transparent actions promoted by the city LGU not just for the current but also in the previous years; thus this can also become a reference for any scholarly work such as research and case study.

- **Archival of News**. This feature is available in the city websites of Davao and Tagum as all the news posted were archived in a page wherein citizen can query the specific new which once posted in the website.
- **Blogs**. Blog is an avenue where people can freely write information and expressed opinions to be presented using any multimedia components. Once published, this will be made available to all the individuals who will be connected in the Internet. The city websites of Davao and Tagum provided a specific page wherein links of the blogs which contains updates and impressions of the city, promotion of the tourism industry were clustered together and made available to the reader. The output of the bloggers is an aid to promote the city government not just locally but worldwide.
- **Calendar of Events**. The city website of Davao and Tagum included a feature wherein all the scheduled activities were hereby posted wherein once clicked, it displays the details of the event selected. This feature conveniently let the citizens to browse the list of events as if you are just scrolling on a calendar (literally) having a memo in every concerned event.
- **Current Prices of Products.** The website of Tagum posted information regarding the current prices of the products available in the city market. Once visited the site, the manner of displaying the information is through providing an eye-catching link which when clicked redirects the user to the page where relevant information is provided. Having this information accessibly made available to the citizen can be considered as a transparent action concerning the benefits of the citizens. This lets the citizens be informed and encouraged to visit the site frequently.
- **Departmental Page**. The city website of Davao allocated specific web pages in every department wherein services offered and downloadable forms were accessibly provided. The availability of the vital details as posted in every department of the city would bring rich information to the citizens in availing the services of the city.
- **Entry Form in Joining Events**. A form regarding the events which can be downloaded by the interested citizens who want to participate was provided in the city website of Davao. The accessibility brought by the provision of this service adds convenience and encourage participation of the citizens.
- **Featured and Coming Events.** The city website of Davao provided a page where contents about the latest and coming events were visibly displayed in the homepage enabling the citizens to be at always updated and be informed of the events in the city.
- **Online Publication.** The city websites of Davao and Tagum made available of the online magazines in their websites which can be downloaded free of charge. According to West (2007), online information is a typical content of e-government website but in the Davao Region, only the cities of Davao and Tagum provided such.
- **Published Details of Website.** The city website of Tagum provided information regarding the history of its city websites along with the date and the incurred development. For Parajuli (2007), making available the establishment date and/or profile of the website reveals the evolution of web activities, hence this becomes an aid in reviewing the historical development of government's online presence.
- **Site Map.** The sole city which provided a site map on its official website is Tagum; this provides a bird's eye view of the entire site. According to Nielson (2000) and Newman and Landay (2000), site map as a directory of the content areas is vital to be included since it reveals the logical and structural order of a website thus adds convenience as the citizens make it easier to browse the contents of the site.
- **Site Requisites.** The city websites of Davao and Tagum provided information regarding the compatibility concerns of its websites. The two website specifically define the browser (Chrome for Davao and Mozilla Firefox for Tagum) and the screen resolutions where the sites execute smoothly. Other than that, the two websites also included the additional plug-ins required by the websites

which includes the Adobe Flash Player and Adobe Reader. Availability of the above details inhibit desire of the city governments to provide a convenient environment as the citizens browse for any information available in the websites in order to gain citizens' satisfaction.

- **Search Links and Bar.** The provision of the quick links which redirect users to locate specific page and textboxes which conveniently search for the specific query could add convenience to the users as it promotes a friendly-user environment. As for Nielson (2000), search facilities can efficiently respond to the query, with that it allow fast information retrieval and reduce the navigation time of the users. Thomas and Streib (2003)22 expressed that users will highly recommend government sites which provided good aspect such as ease of use and usefulness. Hence, provision of these lets the user to visit more often the site and boost citizens' interaction.
- **Social Networking.** The city websites of IGaCoS, Samal and Tagum utilize the advantages brought by the social networking sites such as Facebook and Twitter as proven in the embedded plug-ins posted in the websites. Facebook pages and Twitter accounts of the cities were used to interact with the citizens as the citizens can freely post comments and join in the discussions provided. The three city websites provided an avenue were citizens can interact with the government and other citizens freely and with ease as it is available 24/7. The trending use of social networking sites as a channel of interaction between government and citizens is noticeable also in some other countries of Middle East and South Africa; this heightened the stakeholders to participate thus becomes a tool for opinions sharing purposes (Demissie, et al., 2010).
- **Translator.** The contents of the city website of Tagum can be conveniently translated into 10 different common languages used in the world. It adds convenience to the readers especially the foreigners as the websites caters it services not just locally but internationally. As a result, this could facilitate promotion of the city's tourism industry.
- **Visitor Counter.** The city LGU of Davao and Tagum provided a counter which increments once the city website is visited. The number of visitors counted could make the citizens perceive how useful and popular the site is which somewhat creates a positive perception.
- **Widgets.** These features were provided in the city websites of Davao, IGaCoS, Mati and Tagum wherein the manner of displaying the current climate and temperature of the cities were powered by the external links which were embedded in the sites. The illustrative and entertaining displays offered by these widgets are informative enough which adds positive impression to the viewers.

8. Conclusion

8.1 Qualitative Discussions

8.1.1 Website Contents

In the checklist used from the study of Siar (2007) where there were six (6) functions with corresponding number of items specifically querying for the contents of information a website promotes, minimal outcomes are accessible to all the cities in Davao Region except for Davao and Tagum. There are some available contents and advanced features in the websites of Davao Region which are not included in the checklist used. The contents of the city website of Digos were found to be mostly empty in view of the slight availability of information, dead links and inaccurate display of information; though a website is accessible technically, it is almost useless. Therefore, it can be concluded that not all the essential information queried in each of the function scheme were made available by the cities' websites in Davao Region. Even by that, generally, the city websites are into the promotion of information which incites civic engagement and striving to make the government more accountable and transparent.

In specific terms, majority of the contents of information available in the city websites are those related to the linkage between the LGUs and the business sectors. However, lack of information relating to the citizens awareness of policy making process and participation in decision making can be observed in all the

city websites of the LGUs concerned. To add with, it is notable that there is a deficiency in displaying vital information and resources which enhances the quality and speed of service delivery.
With all due fairness in the concerned sites, improvements regarding the availability of contents are noticeable especially in the city website of Panabo where Siar (2007) describe it as an almost useless website when it was accessed last 2004.

8.1.2 Compliance to FDP

Since the FDP was implemented last 2010, all the city websites are compliant in posting the required reports as depicted in the increasing number of reports accessed in 3 years' time. But this is exceptionally false in the city website of Digos since there is no reports can be found in the site. It can be noted also that the city website of Mati as the one garnered the highest percentage in making available of the documents inquired.
With that, it is fair to conclude that all the city websites in Davao Region were compliant to FDP in posting the required reports except for the city government website of Digos.

8.2 Quantitative Discussions

8.2.1 Comparison of the Contents of the City

Every department of the city of Davao has its own specific page detailing the departments' own resources and services in its website where rich information was provided in each of the department. With these, some contents are not instantly visible and easily to be accessed since you need to have it located on some other page, a sort of possibility is open in the case the researcher overlooked some information which are available in the city. Meanwhile, Tagum website provided a convenient way in displaying the contents on its homepage. Contents of information were categorized orderly according to menu and varied sectors; some other links and pages were also clustered orderly. In the websites of IGaCoS, Mati and Panabo, information cited are not that rich and limited only to standard information and most of the contents are displayed through text in static mode.

8.2.2 Manner of Posting the FDP Reports

Not all the contents uploaded in the city website of Davao can be visibly located. The queried reports relevant to FDP were not displayed on the same page with that there is a tendency that the researcher overlooked some reports which are available in the site. Further, no specific searching or filtering feature was provided to conveniently search specific report.

Relatively low reports can be obtained in the city websites of IGaCoS since reports inquired start in the year 2010 – 2012. This is due to the fact that most of the relevant reports posted in the website of IGaCoS are recent reports for the year 2013. Panabo website displayed the reports not in organize way as it's plainly displayed all the reports in a list format and lengthy page. Some documents uploaded in the city website of Panabo were distorted and blurred; one of these is the Gender and Development report for the year 2012. There were also reports which were repeatedly uploaded in the city website of Mati and the Annual Procurement Plan provided is a different report which is a Notice to Conduct Direct Contracting.

Not all the reports uploaded by the city websites followed the guided template provided in posting the concerned reports. The researcher encountered difficulty in determining the availability of all the inquired reports available in the city websites since some reports uploaded are not by quarter or annual oftentimes it was updated monthly and bidding reports are posted every bidding occurs in any item. With that, reports which are not completely available as to the inquired frequency of posting or the covered month per quarter are not counted. The same action was done to the reports which are uploaded incorrectly and the reports which are not clear but reports are counted even though the format is not the same as the guided one.

8.3 Recommendations

The following are the recommendations of this study:

a. Generally, concerned government websites must display informative contents which are rich and updated not just some standard information and outdated one. Recent news must be posted on the homepage and obsolete news must be kept on archive where citizen can query according to the date happened.
b. Concerned LGUs must strive to make available of the recent ordinances approved and the resolutions in their websites. In this way, citizens will be aware of the recent developmental actions initiated by the government for the city and this could answer the questions which boggles the mind of the citizen thus this could avoid any misinterpretation and enhance the level of citizen's participation.
c. The use of social networking site which is Facebook would be an ideal feature to be embedded in the sites in getting online surveys and polls. In the extreme number of users the social networking sites has, where online people are rampant, it could be the best way to have an official Facebook page to be acquired by the city LGU where citizens can follow and be updated on any recent update posted in the government Facebook page. This will keep the citizens be updated and at the same time promotes the page to some other friends in the social site.
d. Regarding the discussions and chat capability of the websites, LGU must set a specific page in the website where registered citizens through email addresses can open a discussion or can chat and discuss with other registered users. On the other hand, features of the social networking sites like Facebook and Twitter can be utilized where authorized personnel can post topic subject for discussion just like what the city websites of Davao and Tagum did. Plug-ins for Facebook and Twitter must then be installed in the sites in order for the post, comments and updates will be synchronized in the websites. Having those mentioned communication tools could lower the cost of participation while enhancing citizen involvement.
e. Downloadable forms intended for applying any transactions catered by the LGU must be made available in the site and ready to be downloaded; it could add convenience also to provide a file uploading capability to directly send the accomplished form. Making available some forms and information which are mostly requested by the citizens would become a reason for the citizen to frequently visit the site.
f. Specific sites of IGaCoS, Mati and Panabo must include vital information on the departments and offices and other business sectors available in the LGU with complete contact information which could include email addresses, telephone/fax numbers and mobile numbers. Further, to promote tourism and access to any business establishment, contact of information must also be included.
g. To establish user-friendliness, site requirements and requisites are best to be displayed in the site accessibly in the homepage and links to obtain additional software must be provided also. Further a page intended for the frequently asked questions (FAQs) must be provided to cluster all the most asked questions thus most probably answer the possible questions queried by the citizens. The above actions add convenience to the citizens while exploring the page.
h. The Local government unit of Digos must develop its government site by providing the necessary contents needed to be displayed in the website, enhance the design and appearance of its web pages, and should make available of some features which requires user's interaction. Further, the city government should practice transparency by posting the governmental budgets and spending in its official website.
i. In displaying reports required by the FDP, even though city LGUs are required to submit the reports at the FDP portal, it is best to provide a specific page in the site where all relevant reports required are posted. With regards to the format, the template guide provided by the FDP in the FDP portal should be followed. To add convenience to the inquiring citizen in accessing the reports, reports should be named appropriately and must be clustered according to category; this should be sorted in chronological order specifying the date published. However, it is recommended

to provide a search function specifically intended for querying any related report which must be made available on the same page where the reports are posted. It is best to display the transparency seal in the government site.

j. The focus of this study is the assessment of the contents available in the websites which leads to the comparative discussions in each of the contents available. Though the study was able to identify the lacking contents in each of the city websites concerned, it overlooked the design development, accessibility, usability and security and implementation of the websites. Hence, it is recommended by the researcher that future research be conducted, this time with on the said indicators.

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Examining Teachers Attitude and Competence Towards Integration of Computer Technology in the Classroom

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Abstract—This study examined the teachers' attitudes and competence towards computer technology integration in selected schools of Iligan City Division for school year 2009-2010. Specifically it determined the extent of teachers' attitude towards computer technology integration. In addition, the study also determined the level of teachers' competence in terms of the following application tools: PC Basics; Word Processing; Spreadsheets; and Graphic Presentations. This study employed the descriptive-survey method. The respondents were the randomly selected 161 teachers of Iligan City Division. As to the gathering of data, a rating scale instrument on attitude and competence toward technology integration was used. Statistical tools used were frequency, percentage, and mean. From the data gathered, it was found that teachers' encourage their students to use computers in their class tasks. It was also found that integrating computer technology in their lessons excite their students. In addition, it was also found that teachers never use various application softwares for their lesson. Moreover, as to teachers' competence in PC Basics it was found that teachers were fully capable of turning ON and OFF the computer and can open and close window or application. As to teachers' competence in word processing it was found that teachers were capable of using different ways of opening MS Word and can save and rename an MS Word file. As to the teachers' competence in utilizing spreadsheet it was found that teachers were fully capable of naming and saving a workbook; close a workbook and quit Excel. They were also capable of changing the orientation and scale of the worksheet; add and delete page breaks; set and clear print areas of the worksheets. As to teachers' competence in graphic presentation it was found that teachers were fully capable entering text in a slide pane and insert new slide. They were also fully capable in opening the power point application; create a presentation using design template; add text to a slide; adjust the position of the text object; change text alignment and spacing. From the findings the following were the recommendations: DepED Key Officials must hold in-service trainings, conferences and workshops that would address the need of teachers utilizing various application tools such as web 2.0 tools in the classroom; DepEd Administrators must invite education and IT specialists and experts to help train teachers effectively integrate computer technology in the classroom; Teachers must undergo continues education in the area of computer technology integration in the classroom. They must allow themselves to be equipped of technological skills to teach the 21st Century Learners; To increase the level of teachers' competence in different application tools such as PC Basics, Word Processing, Spreadsheets, and Graphic Presentations, latest issue of computer units must be provided to each school as possible through the efforts of the local government units, non-government organizations and the initiative of the DepED officials. By then, teachers can be trained in utilizing the different application tools at their nearest stations; and further studies on teachers' practices, attitudes toward ICT Integration, and teachers' competence in ICT should be undertaken to enhance the curriculum of the basic education.

Keywords- component; Education, Attitude, Competence, Computer Technology, Teachers

Introduction

In today's society computer technology has taken a front seat even in education. We are now in the information age, leaving behind the so called industrial age. This age is said to be the "Third Wave" of the

modern society. In this information age computer has become the revolutionizing force. It has been used in automobiles, home appliances, VCRs and video cameras, in our homes, financial institutions, health care facilities, research centers, politics, churches and even in our schools. The pervasiveness of computers in our schools has led the Department of Education to demand of computer professionals to train the public school teachers. According to Toffler (2001), machines that enhanced man's ability to do physical work were produced in the industrial age, but the computer is the first machine considered to be an extension of the mind. Computers not only change how professionals and leisure activities are done but how an individual becomes a model and think about the world we live in.

On the other hand, the growing attention on the use of computer technologies in education, its actual use in the classroom has not grown to the extent that many have predicted. This may be attributed to many reasons; the two main factors cited by Weisberg (1991) were lack of teacher's training and lack of equipment. It is this lack of training, however, that seems to stand out as a major impediment. Many teachers have shown that it is possible to accomplish great things with access to even a single computer, but an abundance of computers would only sit and waste away without teachers who know how to exploit them in their classrooms. Hence, the ICT Governance of the Department of Education compels teachers to learn ICT-aided modes of instruction in the classroom and must collaborate in the continuous planning and implementation of ICT programs (Deped Order No. 26, s. 2009). The intent of this paper is to determine the status of computer technology integration in the classroom. It will look into the condition as to the practices of teachers inside the classroom that will promote this integration, their attitude and their competence on computer technology.

Objectives of the Study

1. Describe the extent of teacher's attitude towards integration of computer technology
2. Determine the level of teachers' competence in terms of the following application tools: PC Basics; Word Processing; Spreadsheets; and Graphic Presentations.
3. Identify teacher development program in the integration of computer technology in the classroom

Methodology

This study described the extent of teachers attitude towards integration of computer technology. It also determined the level of teachers' competence in terms of PC Basics, Word Processing, Spreadsheets, and Graphic Presentation. The researcher employed the descriptive-survey method.

This study was administered in the division of Iligan City, school year 2009-2010. The Division of Iligan City has thirteen (13) central schools. However, only these schools with ICT equipments were considered in this study. Therefore, the respondents were the teachers of only five (5) schools. These schools were City Central School, Northeast I-A CS, North I CS, Iligan City East CS, South I – A CS. Moreover, from the 270 teachers only 161 were selected as sample population. This was determined using Slovin's formula, proportional random sampling, and fishbowl technique.

Results and discussions

The following were the findings arranged according to Objectives of the study.

Table 1 presents the teacher's attitude towards integration of computer technology. As shown, the indicator that obtained the highest rank was "I encourage my students to use computers in their class task" with a mean score of 4.32. This means that teachers always allow the students to make use of computer technology to accomplish their classroom activities. This can also be supported by next highest indicator which was, "Integrating computer technology in my lessons excite my students" with a mean score of 4.20. This describes why teachers encourage their students to utilize computer teacher in the classroom.

Meanwhile, the indicator that obtained the lowest rank was "I use various application software for my lesson" with a mean score of 1.12. This means that teachers never used other application softwares other than the basics. It also implies that teachers did not expose their students to the various web 2.0 tools that can enhance classroom instructions.

Teachers' Attitude towards Computer Technology Integration

Indicators	Mean	Description	Ranks
I encourage my students to use computers in their class tasks	4.32	A	1
I Integrate computer technology in my lessons to excite my students	4.20	U	2
I like use computer for my daily routine task	4.18	U	3
I allow my students to manipulate on a computer	4.12	U	4
I want to learn a lot of ways to use computers in my class	3.57	U	5
I like provide lessons to my students that involves computer work	3.39	S	6
I like to use computer as tool for internet classroom	3.17	S	7
Figuring out computer problems does not appeal to me	2.80	S	8
I like to use computer in my daily class activities	2.68	S	9
Teaching with computers is boring to me	2.30	R	10
Integrating computer technology intimidate and threaten me	1.96	R	11
I get a sinking feeling when I think of trying to use a computer	1.82	R	12
Working with a computer makes me feel tense and uncomfortable	1.75	N	13
Using computers in my class activities frustrate my students	1.71	N	14
I like to use various application softwares for my lesson	1.12	N	15
	2.87	S	

Legend:

(1)	1.00-1.80	strongly disagree	(SD)	Never
(2)	1.81-2.60	disagree	(D)	Rarely
(3)	2.61-3.40	undecided	(U)	Sometimes
(4)	3.41-4.20	agree	(A)	Usually
(5)	4.21-5.00	strongly agree	(SA)	Always

Table 2 shows the level of teachers' comptence towards PC Basics. As depicted from the table, the indicator that obtained the highest rank with a mean score of 4.92 was "Turn the computer ON and OFF correctly". This means that teachers are fully capable of performing the proper shut dowm of the computer. The next higher indicator with a mean score of 4.59 was "Open and Close window or application". This suggests that teachers are fully capable of opening and closing the window or computer applications. Moreover, the indicator that obtained the lowest rank with a mean score of 2.76 was "Use the search command in looking and locating files or folders". This means that teachers are moderately capable of performing the search command for finding files and folders in the computer.

Table 2: Level of teachers' competence in terms of the PC Basics

I. INDICATORS	Mean	Description	Ranks
Turn the computer ON and OFF correctly	4.92	FC	1
Open and close window or application	4.59	FC	2
Perform the different mouse operations such as left, right and double clicking and dragging	4.32	FC	3

Arrange icon on the desktop	3.56	C	4
Use the search command in looking and locating files or folders	2.76	MC	5
II. TOTAL	4.03	C	

Legend

1	1.00-1.80	Not capable (**NC**)
2	1.81-2.60	Barely capable (**BC**)
3	2.61-3.40	Moderately capable (**MC**)
4	3.41-4.20	Capable (**C**)
5	4.21-5.00	Fully capable (**FC**)

Table 3 presents the level of teachers' comptetnce in terms of the word processing. As shown, the indicator that obtained the highest rank with a mean score of 4.04 was "use the different ways of opening MS Word". This means that teachers were capable opening word processing using various ways. On the other hand the lowest indicator as indicated by its obtained mean score of 2.61 was "Use the formatting tool bar in applying character effect to text, cutting and pasting text; Use the drag and drop feature to edit text". This means that teachers were moderately capable in editing and applying character effect to text such as cutting, pasting, or changing text color.

Table 3: Level of teachers' competence in terms of the Word Processing

I. INDICATORS	Mean	Description	Ranks
Use the different ways of opening MS Word	4.04	C	1
II. SAVE A MS WORD FILE, RENAME A MS WORD FILE	3.94	C	2
Use the Print Dialog Box and Print Button in printing a document	3.78	C	3
III. ADJUST THE PAGE MARGIN SETTINGS, ETC.; THE PARAGRAPH NUMBERS; CREATE, CUSTOMIZE	3.32	MC	4
IV. CREATE COLUMNS WITH EQUAL AND UNEQUAL WIDTHS; INSERT AND DELETE MANUAL COLUMN BREAK	3.28	MC	5
V. USE THE WORD TEMPLATE AND THE WIZARD TO CREATE A DOCUMENT	3.18	MC	6
VI. INSERT PICTURES FROM MS GALLERY AND FROM FILES; USE THE FORMATTING TOOL BAR IN THE FORMATTING THE OBJECTS	3.09	MC	7
VII. USE THE FIND AND REPLACE TEXT FEATURE; INSERT SPECIAL CHARACTERS IN THE DOCUMENTS	2.77	MC	8
VIII. PERFORM EDITING TASK SUCH AS SELECTING, DELETING, RESTORING, AND INSERTING TEXT	2.68	MC	9
IX. USE THE FORMATTING TOOL BAR IN APPLYING CHARACTER EFFECT TO TEXT, CUTTING AND PASTING TEXT; USE THE DRAG AND DROP FEATURE TO EDIT TEXT	2.61	MC	10
X. TOTAL	3.28	MC	

Legend

1	1.00-1.80	Not capable (**NC**)
2	1.81-2.60	Barely capable (**BC**)
3	2.61-3.40	Moderately capable (**MC**)
4	3.41-4.20	Capable (**C**)
5	4.21-5.00	Fully capable (**FC**)

Table 4 depicts the level of teachers' competence in terms of spreadsheet. As shown, the highest rank indicator with a mean score of 4.55 was "name and save a workbook; close a workbook and quit Excel". This means that teachers were fully capable in naming, saving and closing a spreadsheet. Meanwhile, the lowest rank indicator with a mean score of 2.76 was "Create and edit hyperlinks in worksheets". This describes that teachers were moderately capable in using hyperlinks in their worksheets.

Table 4: Level of teachers' competence in terms of the Spreadsheet

I. INDICATORS	Mean	Description	Ranks
Name and save a workbook; close a workbook and quit Excel	4.55	FC	1
II. CHANGE THE ORIENTATION AND SCALE OF THE WORKSHEET; ADD AND DELETE PAGE BREAKS; SET AND CLEAR PRINT AREAS OF THE WORKSHEETS	3.61	C	2
III. BUILD, COPY AND EDIT FORMULAS; USE NUMBER SERIES AND AUTOFILL; USE RELATIVE AND ABSOLUTE CELL REFERENCES	3.43	C	3
Open MS Excel application; Enter, numbers and dates in worksheet	3.40	MC	4.5
IV. SELECT AND EDIT CELL CONTENTS; RENAME WORKSHEETS; MOVE BETWEEN WORKSHEETS	3.40	MC	4.5
V. NAVIGATE BETWEEN WORKSHEETS IN A WORKBOOK; LINK WORKBOOKS	3.34	MC	6
VI. USE THE CHART WIZARD IN CREATING CHART; MOVE, RESIZE AND DELETE CHARTS; FORMAT CHARTS	3.17	MC	7
VII. SAVE WORKBOOK AND WORKSHEETS AS WEBPAGES; SEND WORKBOOK VIA E-MAIL	2.98	MC	8
VIII. HIDE AND UNHIDE ROWS AND COLUMNS; FREEZE AND UNFREEZE ROWS AND COLUMNS	2.93	MC	9
IX. CREATE AND EDIT HYPERLINKS IN WORKSHEETS	2.76	MC	10
X. TOTAL	3.36	MC	

Legend

1	1.00-1.80	Not capable (**NC**)
2	1.81-2.60	Barely capable (**BC**)
3	2.61-3.40	Moderately capable (**MC**)
4	3.41-4.20	Capable (**C**)
5	4.21-5.00	Fully capable (**FC**)

Table 5 presents the teachers' competence in graphic presentation. As depicted from the table, the indicator that obtained the highest rank with a mean score of 4.65 was "Enter text in a slide pane and insert new slide". This means that teachers were fully capable in preparing the basic slide presentation. They can easily enter text in a slide and insert new slide for their graphic presentation. As to the lowest rank indicator which obtained a mean score of 2.07 was "Create a web presentation with the auto content wizard". This means that teachers were barely capable in using auto content wizard for web presentation.

Table 5: Level of teachers' competence in terms of the Graphic Presentation

I. INDICATORS	Mean	Description	Ranks
Enter text in a slide pane and insert new slide	4.65	FC	1
Open the PowerPoint application; Create a presentation using design template	4.58	FC	2
Add text to a slide; Adjust the position of text object; Change text alignment and spacing	4.25	FC	3
II. SET SLIDE TRANSITION; ANIMATE TEXT AND OBJECT SLIDES	3.41	C	4
III. PREVIEW A PRESENTATION WITH THE AUTO CONTENT WIZARD	3.39	MC	5
IV. SAVE AND PUBLISH A PRESENTATION AS WEBPAGE	3.30	MC	6
V. SEND A PRESENTATION VIA-EMAIL	3.17	MC	7
VI. INSERT SOUND AND MOVIES IN THE PRESENTATION	2.72	MC	8
VII. APPLY THE DESIGN TEMPLATES; USE THE SLIDE MASTER IN CHANGING THE DISPLAY; SAVE A PRESENTATION AS A TEMPLATE	2.66	MC	9
VIII. CREATE A WEB PRESENTATION WITH THE AUTO CONTENT WIZARD	2.07	BC	10
IX. TOTAL	3.43	C	

Legend

1	1.00-1.80	Not capable (**NC**)
2	1.81-2.60	Barely capable (**BC**)
3	2.61-3.40	Moderately capable (**MC**)
4	3.41-4.20	Capable (**C**)
5	4.21-5.00	Fully capable (**FC**)

Table 6 shows the summary table of teachers' competence towards PC Basics, Word Processing, Spreadsheet, and Graphic Presentation. The table indicates that the PC Basics rank the highest as shown by its mean score of 4.03 and this was followed by Graphic Presentation with a mean score of 3.43. The result shows that teachers were capable in performing PC Basics and Graphic Presentation. This implies that teachers were often integrating graphic presentation in their lessons. Thus, they often use basic functions of the PC.

Table 6: Summary Table on Teachers' Competence towards PC Basic, Word Processing, Spreadsheet, and Graphic Presentation

I. INDICATORS	Mean	Description	Ranks
PC Basics	4.03	C	1
II. GRAPHIC PRESENTATION	3.43	C	2
Spreadsheet	3.36	MC	3
III. WORD PROCESSING	3.28	MC	4
IV. TOTAL	3.53	C	

Legend

1	1.00-1.80	Not capable (**NC**)
2	1.81-2.60	Barely capable (**BC**)
3	2.61-3.40	Moderately capable (**MC**)
4	3.41-4.20	Capable (**C**)
5	4.21-5.00	Fully capable (**FC**)

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e- Facilitative Leadership and Management: A Perspective towards Globalization

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Abstract— Great leaders and managers get things done, and they care deeply about their organizations' success. But sometimes that's not enough; despite heroic efforts they may encounter roadblocks, lack of cooperation, and unforeseen delays. So , this collaborative research focus on the new distinction of analyzing the contribution of facilitative leadership and management using ICT integration or e-"facilitative leadership and management style" as an interdisciplinary approach of educational method used in this is a triangulation of quantitative-qualitative, theoretical and empirical design. Most of the data a7re gathered through analyzing internet sources as used in supporting the data gathered through open-ended questionnaire and focus group discussion as well as one on one interview to the participants of this study. The concept of this study is more on the views and perspective of respondents in using e-facilitative leadership and management towards globalization. There are fifty participants of this study who are randomly selected through systematic sampling design.

Based from the interview, focus group discussion, open-ended question through writing their views and analyzing the different authors' views from the internet sources, the findings reveal that "e-Facilitative Leadership is a transformational learning experience that expands participants' ability to bring out the best in others" using online communication through collaboration and sharing of ideas in educational management including teaching and learning process. Administrators, faculty, staff and students are all leaders. In order to become global leaders, everybody must learn to maintain the passion of internationalization towards organizational direction and momentum while enabling people to take risks, innovate using online media and "own" the outcomes", have e-facilitative leadership as "the behaviors that enhance the collective ability of a school to adapt, solve problems, and improve performance." Several key strategies are used by e-facilitative leaders: overcoming resource constraints; building teams; providing feedback, coordination, and conflict management; creating communication networks; practicing collaborative politics; and modeling the school's vision. These strategies could be easily dne through digital and online educational management or e-facilitative leadership and management. In conclusion, e-facilitative leadership and management or educational management using ICT is very important towards globalization.

Keywords-e-facilitative, Leadership, Management Style

Introduction

In the coming 21st century education, everybody must be in line with digital tools in attaining the vision, mission, goals and objectives in the teaching and learning process. In achieving the philosophy set by the educational system, everybody must have a heart, mind, and soul that lead to effective instructional leadership and management. In fact, in this age of computer technology, great leaders and managers get things easily done, and they care deeply about their organizations' success. But sometimes that's not enough; despite heroic efforts they may encounter roadblocks, lack of cooperation, and unforeseen delays. Indeed, there are still people who do not appreciate the great of multimedia or online media and softwares to educational management process. They are still traditional thinkers and resist to digital application towards the realization of the vision of schools. Hence, in order to be democratic in leading the people in the organization as well as in teaching the students, e-facilitative leadership and management is the focus

of this collaborative effort on the new distinction of analyzing the contribution of e-facilitative leadership and management using ICT integration or e-"facilitative leadership and management style" as an interdisciplinary approach of educational management. The method used in this study is a triangulation of quantitative-qualitative, theoretical and empirical design with focus group discussion and open-ended questionnaire in analyzing the perspective views of the people in educational organization towards the use of e-facilitative leadership and management through online communication, using softwares for easy retrieval of student's records and other management information system with speed access.

Literature Review

In educational management, there are types of instructional and administrative supervisory leadership applied to the organizations. It depends on the type of situation, behaviour of people and tasks to be attained. Indeed, educational management varies also to the vision, mission, goals and objectives of the organizations. Hence, in order to be effective leaders in educational setting, leadership style will also vary.

According to Lashway (1995) principals were perceived as effective if they took charge of a school by setting clear expectations, maintaining firm discipline, and implementing high standards. This view of leadership was implicitly hierarchical, dependent on administrators firmly exercising their authority to direct subordinates.

Lashway added, because schools are not easily changed by simple prescriptions, researchers began searching for more sophisticated conceptions of leadership. Influenced by developments in the private sector, they have increasingly focused their attention on "transformational" or "facilitative" models of leadership that emphasize collaboration and empowerment. The statements of Lashway really help in the concept of having facilitative models of leadership and management.

David Conley and Paul Goldman (1994) define facilitative leadership as "the behaviors that enhance the collective ability of a school to adapt, solve problems, and improve performance." The key word here is Collective; the facilitative leader's role is to foster the Involvement of employees at all levels.

Several key strategies are used by facilitative leaders: overcoming resource constraints; building teams; providing feedback, coordination, and conflict management; creating communication networks; practicing collaborative politics; and modelling the school's vision (Conley and Goldman). In facilitative leadership the use of power is based on mutuality and synergy, and it flows in multiple directions. The hierarchy remains intact, but leaders use their authority to support professional give-and-take (Diane Dunlap and Paul Goldman 1990).

According to Dunlap and Goldman, schools may be especially appropriate arenas for this type of power because teaching requires autonomy and discretion, not standardized formulas. Teachers can't succeed just by imposing mandates on students; rather, they have to work indirectly, creating conditions under which students will learn. Principals control learning even less directly; they have to create environments in which teachers can work effectively. In short, facilitative power is power through, not power over. Dunlap and Goldman emphasize that facilitation occurs within the existing structure, meaning that whoever normally has legal authority to ratify decisions continues to do so. Unlike delegation, where administrators unilaterally assign tasks to subordinates, in a facilitative environment, anyone can initiate a task and recruit anyone else to participate. The process thrives on informal negotiation and communication.

Moreover, in educational management for the 21st century education, facilitative leaders behave differently than traditional leaders. They spend much of their time negotiating decisions they could unilaterally make; they encourage competitive views from subordinates; they make decisions on the fly, in corridors and classrooms. Thus, effective facilitation may depend less on any particular set of behaviors than on the underlying belief system. Indeed, Conley and Goldman emphasize the importance of trust, "a letting go of control and an increasing belief that others can and will function independently and successfully within a

common framework of expectations and accountability. Achieving this trust is not a trivial task; Conley and Goldman warn that administrators may lapse into "pseudo-facilitative leadership," using the language of facilitation while covertly trying to lead employees to a preordained conclusion. Similarly, Andrew Hargreaves (1991) warns of "contrived collegiality," in which administrators attempt to mandate collaboration using hierarchical methods.

In like manner, facilitative leadership in educational management will become very effective once internet or ICT is also used in management information system particularly in online communication process and other stored data that need speed access in retrieving the file. So, facilitative leadership and management can be easily done using the school administration software. This is the so called e-facilitative leadership and management which are very important for globalization. This is supported with the idea of Mark Van Doren who said "The art of teaching is the art of assisting discovery." to assist in that discovery by providing tools that allow the administrators, faculty and staff to easily organize, track and share information throughout the school. Thus, the education edge using e-facilitative leadership on its own is an excellent tool that facilitates admissions, re-enrollment, communication, reporting, and student billing. When you combine The Education Edge with The Raiser's Edge, The Financial Edge, Online Campus Community, and Online Admissions & Re-Enrollment, your school will have a total software solution that is seamlessly integrated. A fully integrated approach champions accuracy and efficiency while respecting the time of teachers, administrators, parents, and students. Use Faculty Access for the Web to input grades for assignments, quizzes & tests. Create visual seating charts and when all students are present, just press “all present”. You can enter assignments for multiple classes at one time. Tools like these make class administration easy. (Retrieved: August18, 2013).

According to Dr. Kapil Dev sharma, in most of the business schools knowledge and information are delivered with teaching aids like slide projector, overhead projector and LCD projector. However, in distance mode of learning various other tools like audio-visual tapes, broadcast on radio and telecast through T.V., teleconferencing through satellite, floppy diskettes and CD-ROMS, networking via ERNET and INTERNET and direct to home DTH technology are being used or may be used in a big way to impart management education in remote areas also. With access to internet, the learners have a reach to an unrestricted pool of knowledge, through the Web T.V. while operating at their home. Hence the homes will come to harbor the ëVirtual class room. With the help of broadcast T.V. the best available professionals, emeritus professors and functional specialists can interact directly to a large number of learners. In remote areas where networking is not available or may not prove cost effective CD-ROMS run on a multimedia PC are treated to be the best option of taking business education. Huge information, data, figures, pictorials, documents, graphics may be stored within them along with audio and video effect. Further internet communication is a very useful medium of imparting knowledge as classroom situations may be created at home with the access to E-mail and web browsing on the World Wide Web, which is now commonly available due to the launch of web television.

In management discipline students come with mature personality. Computer based learning provides them an opportunity for self-growth rather than being taught which stimulates the as they themselves make an appraisal of their achievements in the learning process. On the other hand teachers may also concentrate themselves on development and research related activities as they are relieved from routine monotonous tasks such as tasking, drill, practice and sharing of information. Hence, the new system reduces dependence on conventional and less cost effective infrastructure on elements of learning and also avoids wastage of time to assemble in a class room. It is now realized that IT tools have some relative advantages as compared to conventional mode of information sharing. This generates the[[need for computer which is not only useful in sharing knowledge but also imbibes skills required in a prospective manager such as conceptual, behavioral, analytical and administrative. In business schools case studies, workshop, project work, business games supplements conceptual learning. To develop the ability to apply knowledge in real life and hypothetical situations different soft wares are developed. Now-a-days most of the management literature is also published with CD ROM to provide visual effect to printed material(retrieved: September 8, 2013).

Method/Design

This collaborative research focus on the new distinction of analyzing the contribution of facilitative leadership and management using ICT integration or e-"facilitative leadership and management style" as an interdisciplinary approach of educational method used in this is a triangulation of quantitative-qualitative, theoretical and empirical design. Most of the data are gathered through analyzing internet sources as used in supporting the data gathered through open-ended questionnaire and focus group discussion as well as one on one interview to the participants of this study. The concept of this study is more on the views and perspective of respondents in using e-facilitative leadership and management towards globalization. There are fifty participants of this study who are randomly selected through systematic sampling design.

Findings/Analysis

Based from the interview, focus group discussion, open-ended question through writing their views and analyzing the different authors' views from the internet sources, the findings revealed that "e-Facilitative Leadership" is a transformational learning experience that expands participants' ability to bring out the best in others", "Leaders will learn to maintain organizational direction and momentum while enabling people to take risks, innovate and "own" the outcomes", e-facilitative leadership as "the behaviors that enhance the collective ability of a school to adapt, solve problems, and improve performance." Several key strategies are used by e-facilitative leaders: overcoming resource constraints; building teams; providing feedback, coordination, and conflict management; creating communication networks; practicing collaborative politics; and modeling the school's vision. In e-facilitative leadership management, administrators, faculty and staff used internet communication which is a very useful medium of imparting knowledge as classroom situations may be created at home with the access to E-mail and web browsing on the World Wide Web, which is now commonly available due to the launch of web television. It is now realized that IT tools have some relative advantages as compared to conventional mode of information sharing. This generates the need for computer which is not only useful in sharing knowledge but also imbibes skills required in a prospective manager such as conceptual, behavioral, analytical and administrative.

Conclusion

Through qualitative approach and reading online sources in gathering the data of this study, the researchers found out that e-facilitative leadership management is very relevant in the 21st century education globalization management using the philosophies of pragmatism, constructivism and progressivism as well as the eclectic management style with the integration of ICT. Hence, using computer technology in educational management is very effective through e-facilitative leadership and management style among administrators, faculty and staff specifically towards globalization where collaboration and linkages are needed towards internationalization.

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Online YouTube Instrumental Music Background: It's Effect to Descriptive Writing Performance of Students

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Abstract: This study aimed to analyze the effect of online you tube instrumental music in the descriptive writing performance of the students. The participants of this study were the diverse students enrolled in Ed109A-Developmental Reading during summer term 2013. There were fifty students enrolled in Ed109. So twenty five(25) students in control group and twenty(25) students in experimental group. The control group students learned the lesson in descriptive writing through traditional method-lecture while the experimental group students learned the descriptive writing lesson through online you tube instrumental music background. Both control and experimental group students have the same evaluation writing skills using rubrics as the criteria of analyzing the writing performance of the students. The method used in this study was the one-shot design for control and experimental group. Only post-test evaluation through descriptive writing was given to the students after the discussion of the lesson. Both groups were tested for their level of descriptive writing performance in terms of content and mechanics. The result showed that the respondents in the experimental group have shown an improvement of their descriptive writing in terms of content and mechanics compared to the control group. The findings reveal that there was a significant difference between performance level of the students in the control and experimental groups. This implies that teachers should consider online YouTube instrumental background music as a tool to enhance the paragraph writing skill of the students.

Keywords: Online YouTube, Descriptive Writing, Performance

Introduction

It is obvious that students today are part of a different learning environment. They live and learn in an environment that uses technology which allows them to have easier access to different types of media. In this 21st Century, it has never been difficult to find students on any campus throughout the world who owns an iPod, mp3 players or some form of musical paraphernalia that fits conveniently in their ears. Moreover, most of these students routinely perform their tasks while listening to music and they even consider this as a way of helping them concentrate on their task on reading, studying or even writing. Consequently, this habit has raised the researchers' interest to find out whether this affects the students' performance in descriptive writing. Over the last ten years, College English writing has become an important debated topic. Literacy instruction and learning environment have become the main focuses of college students. A long and contentious debate continues on how and if college students writing, reading, and educational activities are affected positively or negatively while listening to background music (A. Nikolaidis, 2010). Some are concerned on how important music is for classroom instruction and needs to be incorporated into student learning, many, however, explain how vital it is to incorporate music in the classroom and how music has enhanced our brain development. For example, Mary Ann Davies described music as a teaching strategy that integrates the functions of both hemispheres and uses the natural design of the brain to make learning easier, faster, and more fun.

According to K.M Weiland, music can be a powerful tool. It can continually inspire you as you write.... by creating a mood it can fuel ones writing and drive it to places he might not otherwise go. Also, listening to music while writing can help the writer block out distractions—both physical ones demanding his attention, like people and noises, but also distractions in his head, random thoughts and things that need to

be done which usually fights for one's attention and tells him to stop wasting time writing stories. By listening to music, especially through headphones, one may find it easier to settle into the writing zone, to shut out those other distractions by filling his ears with sound and clearing his mind, especially with ambient or instrumental music." Nona King an independent writing professional for Angel Breath Books said that music is one of the key aspects of her writing process. King enumerates how music affects the writing process. Furthermore, she states that music encourages focus, enhances mood, promotes inspiration and encourages one to seek inspiration.

Although most college students would have to agree that they work in the same environment, there is still other half that need pure silence and cannot hear a peep or their concentration and focus will be disrupted. One of them is JK Rowling who claims that she never listen to music while writing because she finds music much too distracting. Aside from her, Philip Pullman believes that one can't write with music playing, and anyone who says he can is either writing badly, or not listening to the music, or lying. For him, he needs to hear what he's writing, and for that he needs silence. Furthermore, all students have found their own environment for writing. And we need to see how they are affected with noise, background music, while writing. Much has been discussed on the topic of music engaging students who want to write and learn in a more productive way. However, we need to know how college students' writing performance are affected by online youtube background music while writing.

In relation to this problem, this study tries to find out how effective is online youtube instrumental background music in the descriptive writing performance of the college students. Specifically, through this study, we found out that descriptive writing performance level of the students has been improved through using online youtube instrumental background music. This implies that students are already prepared for the 21st century education skills in using digital tool for learning. The result of this study enabled us to identify how effective it is to use online youtube instrumental background music in the descriptive writing tasks of the college students and such information be used for the improvement of language and education. Hence, the results of this endeavour could be a great contribution to the enhancement of curriculum and instruction through ICT integration.

Literature Review

Students are rapidly taking advantage of technology in the marketplace (Jones, 2009). MP3 players are widely used by teens and young adults being the choice of entertainment. According to Gee (2003) as the use of this technology becomes more visible this type of technology could soon be as a form of literacy. These types of technology related pedagogies maybe more effective in teaching the students than traditional teacher-centered pedagogies (Gee, 2003). Being aware of student's use of technology with more frequency, it is apparent that educators would want to explore more ways to take advantage of this new form of electronic technology (Jones, 2009).

Students who listen to music from the MP3 player during quiet time in class have been noted to stay focused during class and further, to observe quiet time before and during class. This affords quiet to other students who require an environment free of noise (Stiler, 2007). It could be concluded here that music is providing relaxation to the student and the student can focus better as a result of listening to the music on the MP3 player. Use of MP3 players, iPods, Podcasts and such are felt by many educators to enhance creativity and higher levels of thinking. Catering to a more teacher driven restrictive didactic classes is stifling the abstract thinking of the students (Cantor, 2006).

For many college students, listening to music is an associative task. According to Darrow, Johnson, Agnew, and Rink (2006) an associative task is defined as "listening to music while engaged in other activities." The majority of college students engage in activities such as using the computer, completing homework, or studying for test while listening to music. Music is more pervasive at present than any other point in history. Its function is not only as pleasurable art form but it also serves many important psychological functions (MacDonald et al., 2002). Music has many benefits beyond simple listening enjoyment. Studies

have shown its positive effects on person's mood and memory recall (Oldroyd 2012). In addition, music has also been proven to have an effect on memory, an important factor for those who study while listening to music. Different types of music, however, may have varying degrees of effectiveness on memory depending on musical taste. (Brent 2012). To fully understand the effects of music we must account for the interaction between the listener, the music and the context within which the task is taking place (Miell and Hargreaves 2005).

The research paper of Elona Hartjes (2008) cites a study done by F. F. Cripe , L. Morton, J. Keshner and L. Seigel, conclude that music has a beneficial effect on students music with a prominent beat stimulates an increased arousal in students which overrides the effect of environmental distractors, repetitive beat produces a reduction in muscle tension, thus reducing hyperactivity, significant reduction in distractibility among students after being exposed to music. Short term memory was also beneficially affected by having to listen to music. (Johnson, 2012). According to Adam Gazzaley, MD, an associate professor of neurology, physiology, and psychiatry at the University of California, San Francisco, "...even the simplest forms of multitasking can lead to glitches in the moment-to-moment processing of information known as working memory...taking a toll on our attention." (Sanders, 2012).A writer is influenced by many factors when he/she sits down to write a paper and many factors may disrupt the writer in the writing process. According to these authors' findings, many different aspects of writing are influenced by music and many positive attributes come from background music. On the downside, there are also negative effects shown from background music that strain the quality of the paper. All in all, the connection of music and literacy differs between ages, genres, and effectiveness, and needs to be seen at the college level for new research results. Most college students enjoy background music when engaging in their educational assignments, most importantly, writing (Nikolaidis,2010).

Experts in the field of neurology cite that there are physical differences in the brains of today's young people that make them better multi-taskers than their parents, but it does not mean "that they can more effectively learn while multi-tasking." (Sanders, 2012). The effect of music on studying depends to some degree on the student. Learning capabilities and styles vary. While some of us are auditory learners and may be soothed by music, others learn differently and therefore the impact of the music can also be different. Research does suggest, however, that any bad effects of listening to music while studying can be instant, triggering problems with memory, mood and other responses. (Sigafoos, 2012).

The new study suggests that studying for a test and putting on background music that you like seems like a good idea. But if you're trying to memorize a list in order - facts, numbers, and elements of the periodic table - the music may actually be working against you. The study found that participants performed worse while listening to music, regardless of whether they liked that music, and to the speech of random numbers. They did the best in the quiet and while listening to the repeated "three." The new study does not necessarily contradict those previous findings, but does suggests some limitations on the benefits of music in memorizing lists of things in order, the authors wrote. It may still be the case that listening to music before performing a task like that helps cognitive abilities. But this new research suggests that it might be better to study for an exam in quiet, or listen to music beforehand (Landau, 2010).

Nina Jackson in her article "Music and the Mind" suggests that although more research needs to be done, we can be cautiously optimistic about the potential benefits of listening to motivate students, improve concentration and study skills. Apparently, she supported the use of music in the classroom. In fact, she calls music the new teaching tool for the 21st century. Moreover, she added that music plays with person's state of mind as the electrical energy generated by firing neurons creates brain waves. The music that a person chooses to listen to can influence the waves' frequency, and their state of mind. It's not only the mind that is influenced by music the body also responds. Energizing music can make your brain exercise longer and harder, it increases speed and workload capacity (Hartjes, 2008). Music with a strong steady beat can increase endurance, boost effort level, increase motivation and distract from discomfort and agitation.

Method/Design

The method used in this study was the one-shot design for control and experimental group. Only post-test evaluation through descriptive writing was given to the students after the discussion of the lesson. Both groups were tested for their level of descriptive writing performance in terms of content and mechanics. The result showed that the respondents in the experimental group have shown an improvement of their descriptive writing in terms of content and mechanics compared to the control group. We made a lesson plan on descriptive writing by analyzing the content of the short story. We conducted a one-hour class about descriptive writing. Then after the discussion, students read the short story entitled the elevator by William Sleator. This process was similarly done for experimental and control group. However, they differ in the part of learning evaluation. Wherein, after the lesson, the researchers asked the students to write a short story on their own. . For the control group, the respondents wrote a scary descriptive short story without any instrumental background music, only normal sound or noise from the environment was heard. On the other hand, for the experimental group, the respondents wrote a scary descriptive short story with scary instrumental background music using online youtube. The story needs to be something scary. A short story plan was given to the respondents for them to be guided on how they will write their own short story. This study was conducted on different days and was conducted separately.

Findings/Analysis

The following tables showed the level of descriptive writing performance of the control and experimental groups in terms of content and mechanics.

Table1. Level of Descriptive Writing Performance of the Control Group in terms of Content

Content Score	Frequency	Percentage
22 – 28	2	8.0
16 – 21	13	52.0
10 – 15	10	40.0
Total	25	100.0
Average Score = 16.16	**Minimum Score = 10**	**Maximum Score = 25**

As reflected in the table above, majority of the respondents in the control group have content score of 16 - 21. The group comprises of 13 or 52.0% of the total respondents. About 10 or 40.0% of the respondents have content score of 10 – 15 and only about 2 or 8.0% of the respondents have content score of 22 - 28. On the average, the respondents in the control group have 16.16 content score which was above the median for a total of 28 content score. The maximum content score of the respondents in the control group was 25 and the minimum content score for the control group was 10. This implies that the respondents were proficient enough in their writing skills since they are already junior and senior students. Their skills in organizing thoughts were manifested through times. This is not their first time to write descriptive short story so they already had ideas in writing.

Table2. Level of Descriptive Writing Performance of the Control Group in terms of Mechanics

Mechanics Score	Frequency	Percentage
13 – 16	2	8.0
10 – 12	5	20.0
7 – 9	18	72.0
Total	25	**100.0**
Average Score = 9.16	**Minimum Score = 7**	**Maximum Score = 13**

As depicted from the table above, majority of the respondents in the control group scored between 7-9. It comprises of 18 or 72.0% of the total respondents. About 5 or 20.0% of the respondents have mechanics score of 10 – 12 and only about 2 or 8.0% of the respondents have mechanics score of 13 - 16. On the average, the respondents in the control group have 9.16 mechanics score which was above the median for a total of 16 mechanics score. The maximum mechanics score of the respondents in the control group was 13 and the minimum mechanics score for the control group was 7. This implies that the respondents needed to improve (Gromko, 2005) in terms of sentence structure, paragraph placement, conventions- spelling, punctuation, grammar and capitalization. They were not really exposed to the syntax usage because they are not English majors. The respondents were not considered competent enough in sentence grammar.

Table3. Level of Descriptive Writing Performance of the Experimental Group using online youtube instrumental Music in terms of Content

Content Score	Frequency	Percentage
22 – 28	7	28.0
16 – 21	15	60.0
10 – 15	3	12.0
Total	**25**	**100.0**
Average Score = 19.4	**Minimum Score = 13**	**Maximum Score = 28**

As evidenced from, the table above, for a total of 28 content score, majority of the respondents in the experimental group have content score of 16 - 21. This constitutes 15 or 60.0% of the total respondents. Three or 12.0% of the respondents have content scores of 10 – 15 and 7 or 28.0% of the respondents have content scores of 22 - 28. On the average, the respondents in the experimental group have 19.4 content score which was above the median of a 28 content score. The maximum content score of the respondents in the experimental group was 28 and the minimum content score for the experimental group was 13. The above results indicate that the respondents in the experimental group were better in descriptive writing in terms of content compared to the control group. This implies that some respondents were more proficient in their writing performance. They were knowledgeable enough and can relate to the topic. Music also has a big impact to the writing performance because music motivated (Nikolaidis, 2010) them and allowed them to be more imaginative. Through the use of music as a background, it probably aroused their senses to think critically on how to write short stories.

Table4. Level of Descriptive Writing Performance of the Experimental Group using online youtube instrumental Music in terms of Mechanics

Mechanics Score	Frequency	Percentage
13 – 16	4	16.0
10 – 12	9	36.0
7 – 9	12	48.0
	25	**100.0**
Average Score = 10.64	**Minimum Score = 7**	**Maximum Score = 16**

As shown in the table above, majority of the respondents in the experimental group have mechanics score of 7 – 9. The group comprises of 12 or 48.0% of the total respondents. About 9 or 36.0% of the respondents have mechanics score of 10 – 12 and only about 4 or 16.0% of the respondents have mechanics score of 13 - 16. On the average, the respondents in the experimental group have 10.64 mechanics score which was a little above the median for a total of 16 mechanics score. The maximum mechanics score of the respondents in the experimental group was 16 and the minimum mechanics score for the experimental group was 7. The above results indicate that the respondents in the experimental group have improved in descriptive writing in terms of mechanics. This implies that the respondents were proficient in terms of their mechanics: sentence structure, paragraph placement and conventions. Their performances were much better than the

control group. Music affects the descriptive writing performance of the students due to the collaboration of the ideas and context in their mind with the help of background music that arouses their emotions.

The following table shows the comparison of the experimental and control groups in the level of descriptive writing performance in terms of content and mechanics.

Table5. Computed t – Value for the Comparison of the Experimental and Control Group in the Level of Descriptive Writing Performance in terms of Content and Mechanics

	Experimental Group	Control Group			
	Mean Score	Mean Score	t – value	P – value	Remark
Content	19.40	16.16	-3.164	0.003	Significant
Mechanics	10.64	9.16	-2.374	0.022	Significant

Legend: If P-value is less than $\alpha = 0.05$ (level of significance), then the test is significant (i.e., there is a significant difference); otherwise, the test is not significant (i.e., there is no significant difference).

As revealed in the table above, the computed t-value of -3.164 for the comparison of the experimental and control groups in the descriptive writing performance in terms of content implied that there was a significant difference. The result showed that experimental group is better in the descriptive writing in terms of content compared to the control group. On the other hand, the computed t-value of -2.374 for the comparison of the experimental and control groups in the descriptive writing performance in terms of mechanics implied that there was a significant difference. The result showed that experimental group is better in the descriptive writing in terms of mechanics compared to the control group. The results imply that the instrumental background music has an effect to the descriptive writing skills of the students. The experimental group was more motivated (Hartjes ,2009) in writing descriptive short story because of the instrumental background music which is something scary that really fits the topic that they must write. In fact, music is one factor (Cantor, 2006) that helps them to think new ideas and it also awakens the senses of the respondents. The five senses are important in writing descriptive stories because through your feelings and emotions you can write a lot.

Conclusion

Based from the findings of the study, online youtube instrumental background music directly affected the descriptive writing skills of third year and fourth year students of Mindanao State University-Iligan Institute of Technology. The experimental group was highly motivated to engage writing when there was instrumental music in the background. Thus, instrumental background music definitely influenced and improved the descriptive writing skills of the students.

Online youtube instrumental background music can be viewed as a modern tool in enhancing the students' writing performance in the 21st century. We have concluded that music has positive effects on person's mood and memory by just simply listening. Music provides a total relief and relaxation to the students' mind that made them feel them more focused- becoming better on generating ideas and constructing sentences. Studies show that students' senses, emotions, imaginations and experiences are activated when music was incorporated. Music encourages and pursues their mood in writing. In relation to this is the Integral Theory's map of human experiences. This theory allows individual to explore and develop multiple aspects of themselves such as their physical body, emotional intelligence, cognitive awareness, interpersonal relationships and spiritual wisdom. Hence, music has a beneficial effect on a students' level of writing performance with a prominent beat that stimulates an increased arousal of the students. Music significantly enhanced the students' ability in writing descriptive short story and music increased their interest in performing academic tasks. According to Davies (2010), ''Music as teaching strategy integrates the functions of both hemispheres and uses natural design of the brain to make learning easier, faster, and

more fun." It will be possible in the future that some teachers will utilize background music in their evaluation such as writing essay, story and poems for the students to improve their skills in writing. Students will be more motivated and eager to think critically and become imaginative and creative in building their ideas and thoughts toward writing. Based from the result of our study, background music has an impact in the writing performance of the respondents. Teachers, administrators and other stakeholders of education should help promote the use of online youtube instrumental background music as an innovative strategy in the attainment of quality curriculum and instruction.

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Ubiquitous/Pervasive Computing

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Abstract

2013: The year of the Internet of Things; The Internet of Things probably already influences your life. And if it doesn't, it soon will, say computer scientists; Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of our lives. Alan Kay of Apple calls this "Third Paradigm" computing. Ubiquitous computing is essentially the term for human interaction with computers in virtually everything. Ubiquitous computing is roughly the opposite of virtual reality. Where virtual reality puts people inside a computer-generated world, ubiquitous computing forces the computer to live out here in the world with people. Virtual reality is primarily a horse power problem; ubiquitous computing is a very difficult integration of human factors, computer science, engineering, and social sciences.

The approach: Activate the world. Provide hundreds of wireless computing devices per person per office, of all scales (from 1" displays to wall sized). This has required new work in operating systems, user interfaces, networks, wireless, displays, and many other areas. We call our work "ubiquitous computing". This is different from PDA's, dynabooks, or information at your fingertips. It is invisible; everywhere computing that does not live on a personal device of any sort, but is in the woodwork everywhere. The initial incarnation of ubiquitous computing was in the form of "tabs", "pads", and "boards" built at Xerox PARC, 1988-1994. Several papers describe this work, and there are web pages for the Tabs and for the Boards (which are a commercial product now):

Ubiquitous computing will drastically reduce the cost of digital devices and tasks for the average consumer. With laborintensive components such as processors and hard drives stored in the remote data centers powering the cloud , and with pooled resources giving individual consumers the benefits of economies of scale, monthly fees similar to a cable bill for services that feed into a consumer's phone

Architecture of Direct Benefit Transfer (DBT) for Social Pension Payments by Ministry of Rural Development (MoRD), Govt. of India

A C2G, G2G & G2C application at Grass Root Level Benefiting the Rural Mass

Brijesh Kumar Srivastava, Ganesh Khandnga, Vinay Thakur, Anubha Goyal and D.C Misra

National Informatics Centre, 274-A,Krishi Bhawan, MoRD, New Delhi, India

Objective: Direct Benefit Transfer (DBT) programme has been launched by Government of India for effecting direct transfer of entitlements such as pensions to beneficiaries across the country. The DBT platform, combined with the biometric-based Unique ID programme **Aadhaar**, will eliminate '**duplicates**', i.e., one person getting benefits multiple times, and 'ghosts', i.e., non-existent people getting benefits. More importantly, the DBT platform will bring more efficiency, accountability and transparency in the process of benefit disbursal to the pensioners using financial institutions (Bank/Post offices). Success consists of three-fold i.e. **Money must reach beneficiaries on time, in the full amount and at their doorstep**.

Benefits of DBT

1. Disbursal of pension at doorstep
2. Delay in payment due to manual intervention eliminated
3. Duplicates are eliminated
4. Disbursement information availability in public domain.

Abstract: NSAP (National Social Assistance Programme) comprises mainly three schemes as Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi National Widow Pension Scheme (IGNWPS) and Indira Gandhi National Disabled Pension Scheme (IGNDPS). Under these three schemes, monthly pension are being disbursed by all 28 Province and 7 UT's. Ministry of Rural development provides central assistance as ACA as central contribution to Province and Province further sum with their Province contribution. State contribution amount under a scheme varies from Province to Province.

NIC in collaboration with Ministry of Rural Development, Government of India has developed eGov solution, a work flow based model capturing legacy pensioners data, submission of application, verification and sanction of new application online using eGov solution. Sanction letters are generated and provided to applicants and Pension pay order is prepared for inclusion of pensioners name in pensioners scroll list from the date of pension effective date. Pension payment are presently made using Banks, Post Offices and through Cash from respective Sub district office level or by village secretaries.

eGov solution is workflow based application available online. It uses Postgres database with JBOSS as application server.

Introduction of NSAP

The National Social Assistance Programme (NSAP) which came into effect from 15th August, 1995 represents a significant step towards the fulfillment of the Directive Principles in Article 41 of the Constitution. The programme introduced a National Policy for Social Assistance for the poor and aims at ensuring minimum national standard for social assistance in addition to the benefits that Province are

currently providing or might provide in future. NSAP at present, comprises of IGNOAPS, IGNWPS), IGNDPS, National Family Benefit Scheme (NFBS) and Annapurna.

The intention in providing 100 percent Central Assistance is to ensure that social protection to the beneficiaries everywhere in the country is uniformly available without interruption. Further the States are also expanding the schemes as per their own rules and provide the social assistance to eligible beneficiaries separately.

NSAP Design Architecture

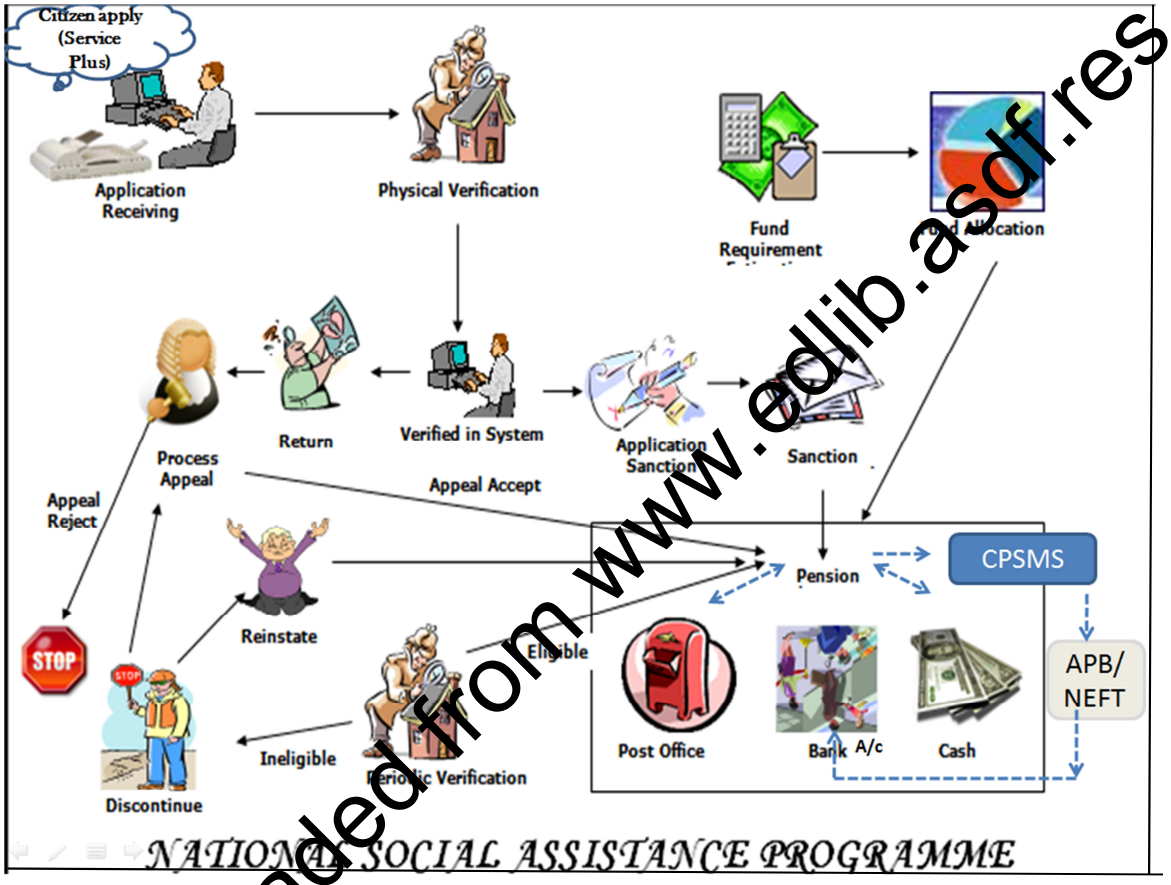


Table -I System Work Flow in eGov solution

System Architecture (NSAP)

In NSAP 3 – Tier Redundant Architecture has been followed for failover and recovery purposes. In this architecture we use a Server Array for application tier to take advantage of auto scaling in the cloud, here a load balancer server, two application servers, 3 database servers as Master database, reporting and Backup database configured as Disaster Recovery(DR). This redundant architecture will help protect your site/application from system downtime. Following are the benefits of using 3 – Tier Redundant Architecture cloud computing as

- Provides shared computing environments that deliver cost savings to government agencies
- Offer resources to any approved government entity on an as-needed basis
- Deliver administrative support, data security, and governance controls
- 24/7 customer support and Dedicated technical support team

- Specific dedicated servers for secure data storage

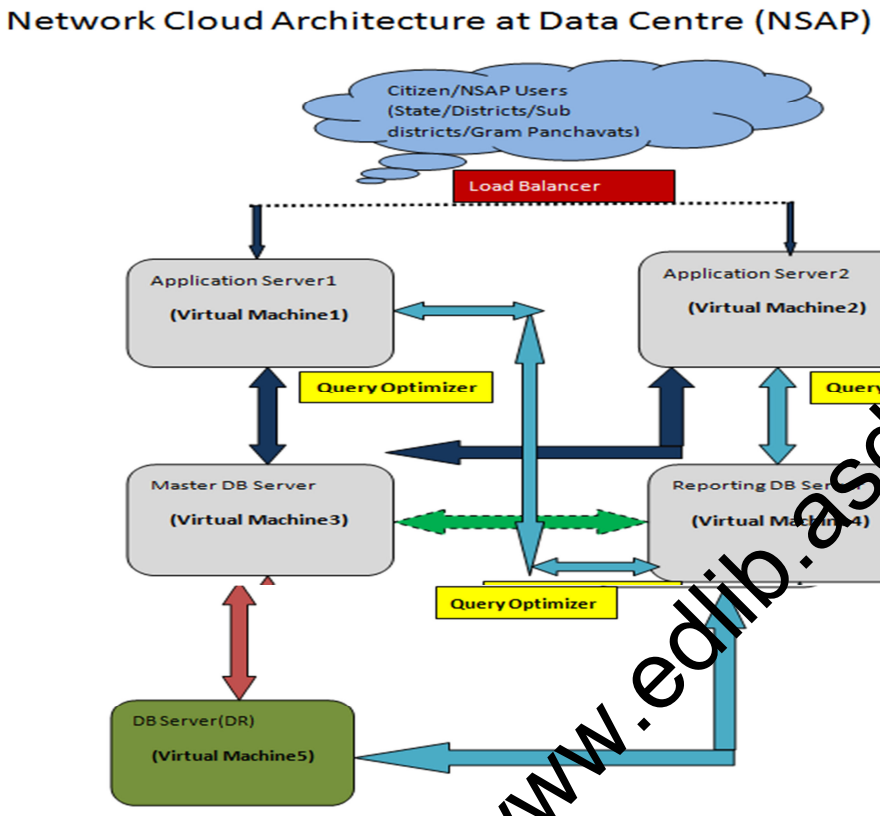


Table -II Redundant a tier cloud computing architecture

Deployment Architecture at Data Centre – NSAP

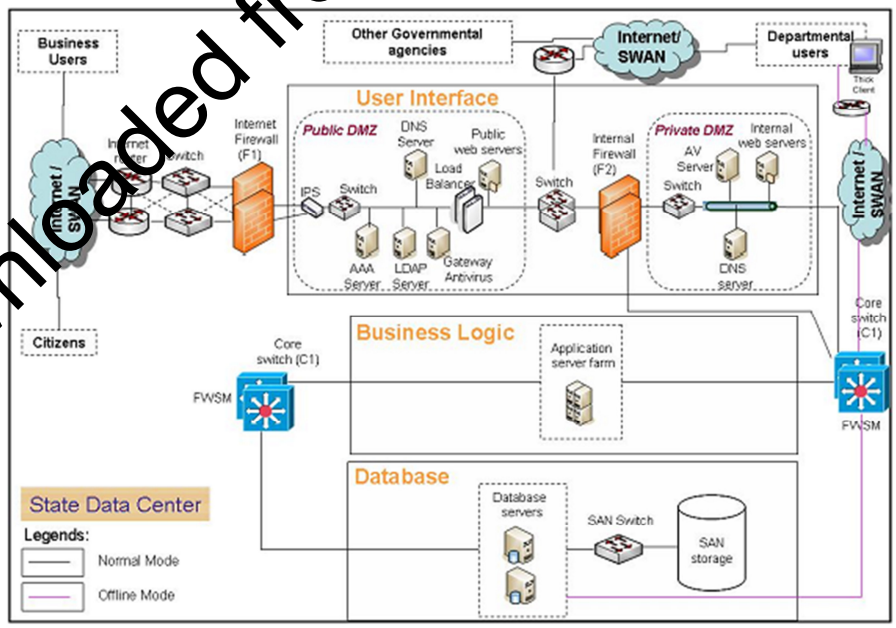


Table -III Deployment architecture at Sastri Park Data centre

Criteria for Schemes

Different criteria is adopted to facilitate the weaker section under the each schemes and eligibility criteria is also set by the Ministry of rural development.The criteria details are shown below.

Schemes	Age Limit	BPL Status	Annual Income	Pension Amount
Indira Gandhi National Old Aged pension Scheme- IGNOAPS	Minimum Age 60 when apply	For new cases, name in BPL list is mandatory where prior to 1st Jan 2007 name in BPL was not mandatory	Annual income for the BPL status varies from State to Province	Central Assistance Rs 200 below 80 Years Rs 500 for 80 years and above State Assistance Depend upon Province to Province
Indira Gandhi National Disability pension Scheme- IGNDPS	Min 18 years and max 79 years when apply	Name in BPL list is mandatory	Annual income for the BPL status varies from Province to Province	Central Assistance Rs 300 State Assistance Depend upon Province to Province
Indira Gandhi National Widow pension Scheme- IGNWPS	Min 40 years and max 79 years when apply	Name in BPL list is mandatory	Annual income for the BPL status varies from Province to Province	Central Assistance Rs 300 State Assistance Depend upon Province to Province

Table -IV: Scheme criteria details

Identification of Beneficiaries

In rural area the Below Poverty List (BPL) as prepared by States on the basis of norms prescribed by Ministry of Rural Development is the key element in identifying a beneficiaiary. Similar lists prepared by States following norms by Ministry of Urban Development and Poverty Alleviation would be applicable in urban areas or any other norms set by States for Urban areas may also be followed. The Govt. of India reserves the right to review these criteria and suggest appropriate revised criteria for identifying whether a beneficiary belongs to a household below the poverty level or not.

Age indicated in birth certificate issued by Registrar of Births & Deaths, School Certificate, Ration Card and EPIC Card may be taken into account. In the absence of age proof, a certificate issued by a Medical Officer at least of the rank of Assistant Civil Surgeon or by the Revenue Authority may be taken as proof of age and disability percentage.

The widow status of a beneficiary will be certified by the Revenue Authority.

The identification could be based on (i) application by the candidate or (ii) From Gram Panchayat / Gram Sabha or (iii) report of any other competent Authority. In all such cases the application form has to be filled

up and submitted to sub district level offices as Blocks in rural area and at Municipality in case of Urban area. On entering the details of applicant, eGov solution generates a unique application no and a copy of receipt given to applicants for making further enquiry.

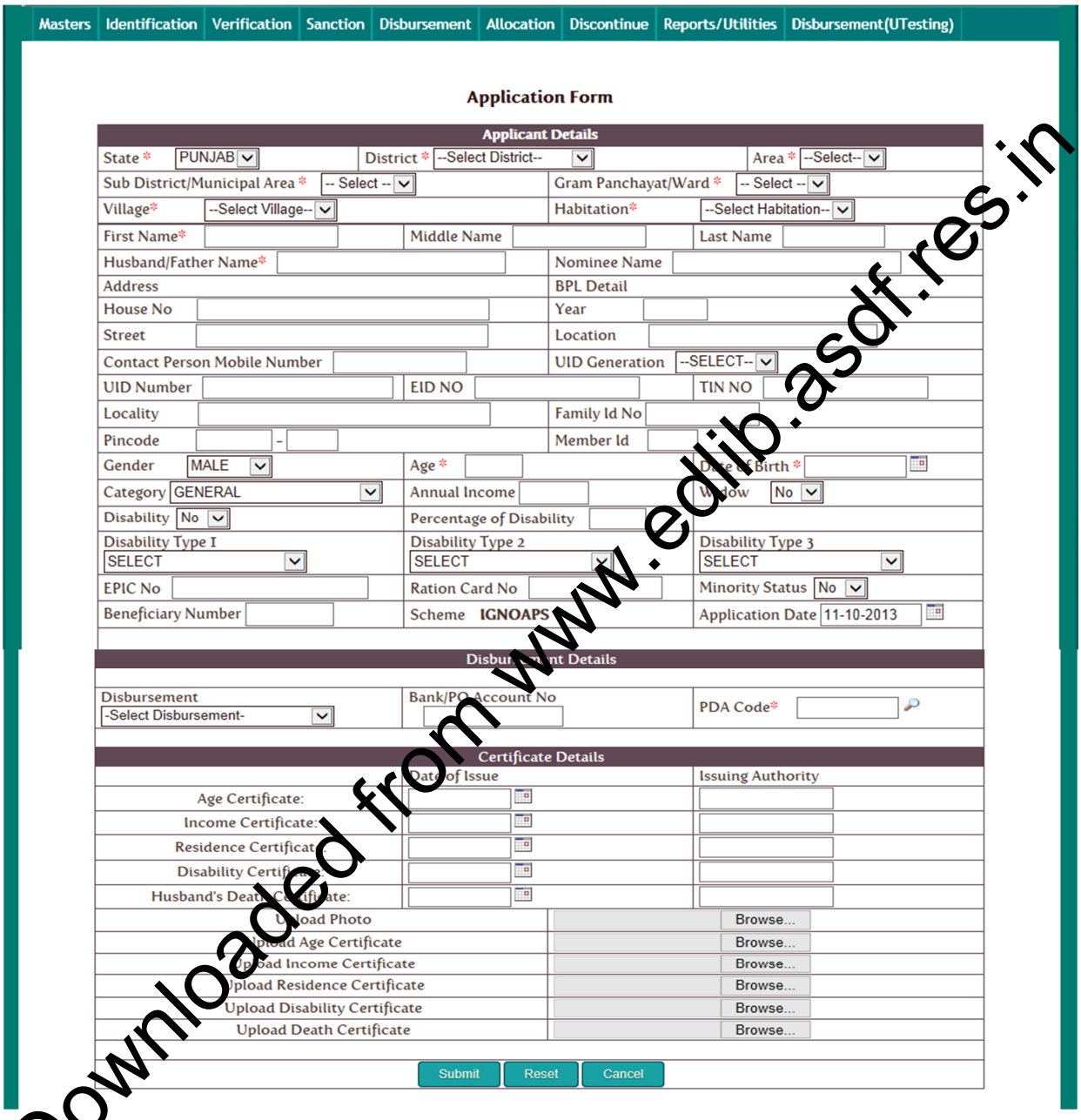


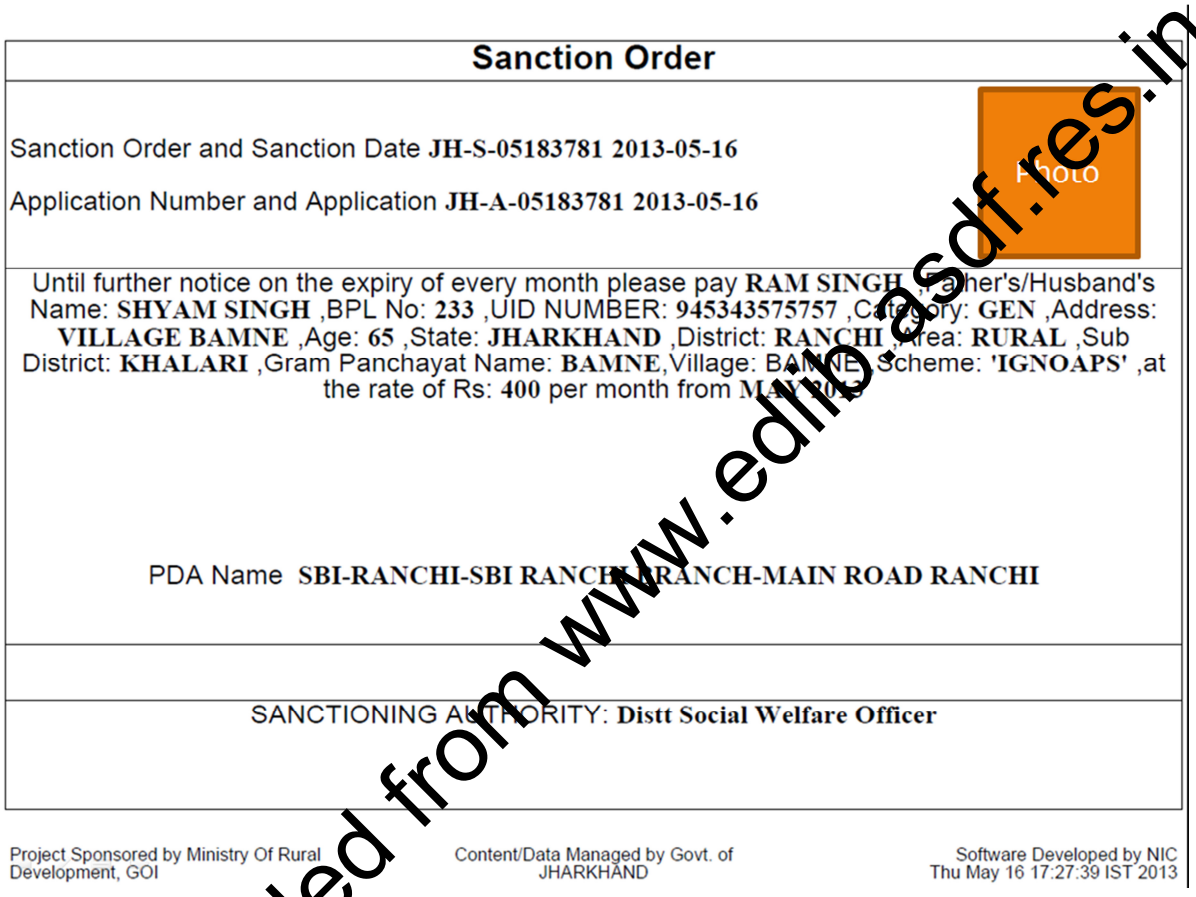
Table -V Pensioner's Details entry form capturing Aadhar and bank Details

Verification and Sanction of Beneficiaries

On receipt of application as new cases, physical verification conducted by the appropriate verifying authorities about applicants. Verification reports is noted and forwarded to sanctioning authorities for sanctioning for application found correct and suitable where as in case found not suitable applications, a proper remarks with reason are also noted which can be seen by the applicant from eGov solution.

Regular periodic verifications are also conducted by the department from time to time to identify death, migrated and transferred cases to mark them for stopping their pension from pension scroll list generated on monthly basis. On an average, periodic verification conducted annually/six monthly.

Once application is verified and the sanctioning authority sanctions the application and sanction order no is allocated to each approved application. A sanction order cum Pension Pay Order (PPO) is generated and print out given to the applicant.



Sanction Order

Sanction Order and Sanction Date **JH-S-05183781 2013-05-16**

Application Number and Application **JH-A-05183781 2013-05-16**

Photo

Until further notice on the expiry of every month please pay **RAM SINGH** ,Father's/Husband's Name: **SHYAM SINGH** ,BPL No: **233** ,UID NUMBER: **945343575757** ,Category: **GEN** ,Address: **VILLAGE BAMNE** ,Age: **65** ,State: **JHARKHAND** ,District: **RANCHI** ,Area: **RURAL** ,Sub District: **KHALARI** ,Gram Panchayat Name: **BAMNE**,Village: **BAMNE** ,Scheme: **'IGNOAPS'** ,at the rate of Rs: **400** per month from **MAY2013**

PDA Name **SBI-RANCHI-SBI RANCHI BRANCH-MAIN ROAD RANCHI**

SANCTIONING AUTHORITY: **Distt Social Welfare Officer**

Project Sponsored by Ministry Of Rural Development, GOI

Content/Data Managed by Govt. of JHARKHAND

Software Developed by NIC
Thu May 16 17:27:39 IST 2013

Table -VI Sample Sanction Order/Pension Payment Order (PPO)

Pension Disbursement using DBT (Direct Benefit Transfer)

As an initiative of Prime Minister Office (PMO) to ensure Direct Benefit Transfer (DBT) of pensions to the pensioners bank accounts taken up in 43 districts in phase-I further expanded up to 121 districts in 26 Province in phase-II based on electronic fund transfer to respective pensioners bank accounts using NEFT/RTGS and based on AADHAR.

Ministry of Finance, Government of India appointed a agency Central Plan Scheme Monitoring Scheme System (CPSMS) for processing pension benefit to transfer in pensioner's respective bank account based on electronic fund transfer and AADHAR.

Integration of eGov solution with CPSMS has been done in such a way that any beneficiary added to eGov solution get registered automatically to CPSMS and where ever pension scroll are generated by district/Province, it automatically forwarded to CPSMS for processing of pension payment and after successful transfer, it confirm to eGov solution on successful transfer for ledger updation.

eGov solution also supports pension disbursement through Post offices and Cash.

Features of EGOV Solution

NSAP Website - The NSAP website is available at http://nsap.nic.in. It comprises at present of eGov solution / transaction-based software of three schemes of IGNOAPS, IGNWPS and IGNDPS.

Following screen shot are enclosed herewith for clear understanding of existing features of eGov solution.

Status of DBT districts can be downloaded from NSAP web site which is updated regularly as

Beneficiaries Database

The States are required to maintain a database of eligible beneficiaries and upload it in the public domain. The beneficiary data should include all the details of the beneficiary including his / her photograph. Since belonging to a BPL family and having a BPL ID is a condition for getting the pension for new beneficiaries, the proposed link with the BPL database would be used to avoid duplication of pensioners.

Detail of NSAP scheme such as IGNOAPS, IGNDPS and IGNWPS, beneficiaries' data abstract are separately shown in tables below of all Province.

Beneficiary Abstract

State*	All State
Select Scheme*	INDIRA GANDHI NATIONAL OLD AGE PENSION SCHEME

Submit

State Name	Sanctioned Pensioners					New Applicants					Total
	Sanctioned	Female	Male	Below 80	80 and Above	New Applicant	Female	Male	Below 80	80 and Above	
ANDAMAN AND NICOBAR	68	0	68	52	[illegible]	9	0	9	9	0	77
ANDHRA PRADESH	1311786	707300	604486	1229408	[illegible]	0	0	0	0	0	1311786
ARUNACHAL PRADESH	7793	5122	2671	[illegible]	2315	0	0	0	0	0	7793
ASSAM	580915	318411	262504	[illegible]	101125	39118	16560	22558	35958	3160	620033
BIHAR	1515274	829829	685445	[illegible]	174890	7	2	5	5	2	1515281
CHANDIGARH	3743	2182	[illegible]	[illegible]	95	0	0	0	0	0	3743
DADRA & NAGAR HAVELI	1083	835	[illegible]	[illegible]	62	5597	3231	2366	5404	193	6680
DAMAN & DIU	3373	1913	[illegible]	3167	206	239	117	122	219	20	3612
DELHI	372729	[illegible]	[illegible]	330636	42093	0	0	0	0	0	372729
GOA	1705	[illegible]	649	1191	514	4	2	2	4	0	1709
GUJARAT	250043	[illegible]	98099	236129	13914	43890	25383	18507	41060	2830	293933
HARYANA	113875	[illegible]	70079	86882	26993	25351	8792	16559	23462	1889	139226
HIMACHAL PRADESH	[illegible]	[illegible]	38729	58193	26579	0	0	0	0	0	84772
JAMMU AND KASHMIR	[illegible]	24859	29801	48093	6567	779	236	543	757	22	55439
KARNATAKA	[illegible]	497148	446821	856526	98481	0	0	0	0	0	955007
KERALA	[illegible]	95399	61521	92014	64906	1	0	1	0	1	156921
MADHYA PRADESH	[illegible]	447119	329111	684361	91869	51427	25583	25844	46358	5069	827657
MAHARASHTRA	1038136	668915	369221	951787	86349	89061	53194	35867	86290	2771	1127197
LAKSHADWEEP	202	105	97	189	13	0	0	0	0	0	202
MANIPUR	60982	35586	25396	56274	4708	0	0	0	0	0	60982
MEGHALAYA	49914	30422	19492	44245	5669	1405	743	662	1344	61	51319
MIZORAM	23756	13040	10716	17193	6563	2	0	2	2	0	23758
NAGALAND	40820	24427	16393	26833	13987	312	77	235	216	96	41132
ODISHA	1482950	691354	791596	1320035	162915	71449	27415	44034	67678	3771	1554399
PONDICHERRY	61249	34266	26983	59445	1804	0	0	0	0	0	61249
PUNJAB	150988	93774	57214	128673	22315	1047	534	513	983	64	152035
RAJASTHAN	913667	517020	396647	819741	93926	13402	6475	6927	12674	728	927069
SIKKIM	3892	1791	2101	3375	517	0	0	0	0	0	3892
TAMIL NADU	1096666	706780	389886	994679	101640	9897	5109	4788	9494	403	1106563
TRIPURA	140368	71327	69041	118544	21824	758	281	477	694	64	141126
UTTAR PRADESH	3690772	1450058	2240714	3364876	325896	17	7	10	15	2	3690789
WEST BENGAL	263004	140098	122906	228855	34149	0	0	0	0	0	263004
CHHATTISGARH	473128	259218	213910	420806	52322	57482	28902	28580	51805	5677	530610
JHARKHAND	559502	302400	257102	518476	41026	446	210	236	409	37	559948
UTTARAKHAND	169756	89286	80470	146862	22894	11	6	5	8	3	169767

Table VII. Beneficiary data of IGNOAPS scheme

Beneficiary Abstract

State* All State

Select Scheme * INDIRA GANDHI NATIONAL WIDOW PENSION SCHEME

Submit Close

State Name	Sanctioned Pensioners					New Applicants					Total
	Sanctioned	Female	Male	Below 80	80 and Above	New Applicant	Female	Male	Below 80	80 and Above	
ANDAMAN AND NICOBAR	3	0	3	3	0	0	0	0	0	0	3
ANDHRA PRADESH	516229	516229	0	515982	247	0	0	0	0	0	516229
ASSAM	73644	73644	0	73642	2	19945	19945	0	19945	0	93589
BIHAR	17243	17243	0	17243	0	1	1	0	1	0	17244
CHANDIGARH	2911	2911	0	2911	0	0	0	0	0	0	2911
DADRA & NAGAR HAVELI	0	0	0	0	0	1423	1423	0	1423	0	1423
DAMAN & DIU	2314	2314	0	2313	1	275	275	0	275	0	2589
DELHI	112446	112446	0	112446	0	0	0	0	0	0	112446
GOA	315	315	0	314	1	68	68	0	68	0	383
GUJARAT	1204	1204	0	1204	0	867	867	0	867	0	2071
HARYANA	16235	16235	0	16235	0	12536	12536	0	12509	27	28771
HIMACHAL PRADESH	13213	13213	0	13190	23	0	0	0	0	0	13213
KARNATAKA	132058	129728	2330	130540	1518	0	0	0	0	0	132058
MADHYA PRADESH	113482	113482	0	113440	42	19928	19928	0	19914	14	133410
MAHARASHTRA	6330	6329	1	6329	1	4885	4885	0	4885	0	11215
LAKSHADWEEP	119	119	0	119	0	13	13	0	13	0	132
MEGHALAYA	7208	7208	0	7207	1	461	461	0	461	0	7669
MIZORAM	1192	1192	0	1192	0	0	0	0	0	0	1192
NAGALAND	463	463	0	463	0	0	0	0	0	0	463
ODISHA	184871	184861	10	184867	4	15064	15064	0	15064	0	199935
PONDICHERRY	504	504	0	504	0	0	0	0	0	0	504
PUNJAB	14058	14058	0	14058	0	1332	1332	0	1332	0	15390
RAJASTHAN	113887	113887	0	113874	13	3476	3475	0	3475	1	117363
SIKKIM	65	65	0	64	1	0	0	0	0	0	65
TAMIL NADU	371214	371213	1	338208	33006	4996	4996	0	4996	0	376210
TRIPURA	8324	8097	227	8296	28	0	0	0	0	0	8324
UTTAR PRADESH	2	1	1	2	0	0	0	0	0	0	2
WEST BENGAL	205631	205630	1	205631	0	0	0	0	0	0	205631

Table VIII. Beneficiary data of IGNWPS scheme

Beneficiary Abstract

State* All State

Select Scheme * INDIRA GANDHI NATIONAL DISABILITY PENSION SCHEME

Submit Close

State Name	Sanctioned Pensioners					New Applicants					Total
	Sanctioned	Female	Male	Below 80	80 and Above	New Applicant	Female	Male	Below 80	80 and Above	
ANDAMAN AND NICOBAR	4	0		4	0	3	0	3	3	0	7
ANDHRA PRADESH	32703	13166	19537	32703	0	0	0	0	0	0	32703
ASSAM	14192	4550	9642	14192	0	6056	1630	4426	6056	0	20248
BIHAR	361	82	279	361	0	78	24	54	78	0	439
CHANDIGARH	101	35	66	101	0	0	0	0	0	0	101
DADRA & NAGAR HAVELI	0	0	0	0	0	91	35	56	91	0	91
DAMAN & DIU	373	114	215	329	0	44	14	30	44	0	373
DELHI	34334	11036	23298	34334	0	0	0	0	0	0	34334
GOA	41	14	27	41	0	21	7	14	21	0	62
GUJARAT	2124	667	1457	2124	0	609	203	406	609	0	2733
HARYANA	2122	545	1577	2122	0	3851	1041	2810	3846	5	5973
HIMACHAL PRADESH	413	136	277	413	0	0	0	0	0	0	413
KARNATAKA	51958	22617	29341	51511	447	0	0	0	0	0	51958
MADHYA PRADESH	45584	13986	31598	45583	1	6562	1518	5044	6562	0	52146
MAHARASHTRA	1596	539	1057	1594	2	907	277	630	907	0	2503
LAKSHADWEEP	60	20	40	60	0	0	0	0	0	0	60
MEGHALAYA	1443	621	822	1443	0	106	51	55	105	1	1549
MIZORAM	589	260	329	589	0	0	0	0	0	0	589
NAGALAND	288	36	252	288	0	0	0	0	0	0	288
ODISHA	50470	15389	35081	50470	0	2701	866	1835	2701	0	53171
PUNJAB	2929	1338	1591	2929	0	309	47	262	309	0	3238
RAJASTHAN	21800	6606	15194	21799	1	827	242	585	827	0	22627
TAMIL NADU	40941	14714	26227	40941	0	892	288	604	892	0	41833
TRIPURA	1911	855	1056	1902	9	0	0	0	0	0	1911
UTTAR PRADESH	1	0	1	1	0	0	0	0	0	0	1
WEST BENGAL	7508	2686	4822	7508	0	0	0	0	0	0	7508
CHHATTISGARH	12466	4497	7969	12466	0	9921	4409	5512	9921	0	22387
JHARKHAND	15584	5322	10262	15570	14	17	3	14	17	0	15601

Table IX. Beneficiary data of IGNDPS scheme

Legacy Data - This legacy database is required to be uploaded on the NSAP website. For this purpose, legacy data formats for IGNOAPS, IGNWPS and IGNDPS are placed on the NSAP website. Since legacy data is very large in number, it can be entered in the legacy data formats which are downloadable from the NSAP website and entered offline (without continuous use of internet).Facility has been provided to Province/districts to upload data online under eGov solution logins. The new pensioners' data needs to be entered online.

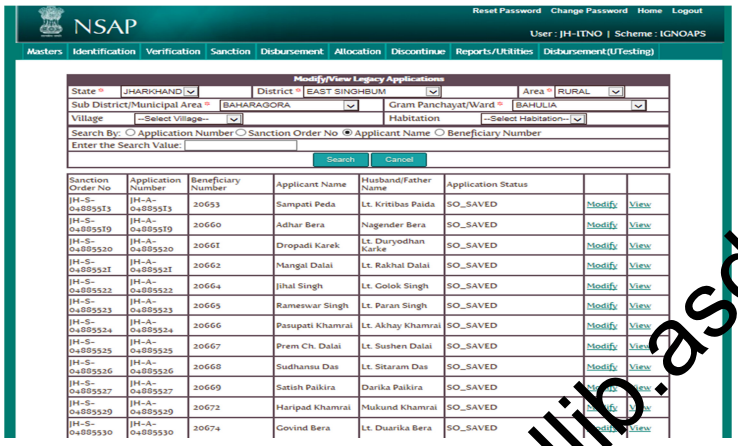


Table X – Legacy data updation

Process flow for new beneficiaries - For new pensioners, the data entry should be made directly on the NSAP website, using the State / District / Sub-district logins. The identification form of a new beneficiary is filled by the 'application receiver', the verification is done by the 'verifying officer', the sanctioning and issue of sanction order is done by 'sanctioning authority' and disbursement is done by the pension disbursing Agency (PDA). There are separate logins created for each role in the whole procedure.

Fund Flow - The fund flow contains the estimation of funds required, allocation and release. Estimation is done from bottom – up i.e, village to Ministry, as per number of beneficiaries and allocation and release is done from top to down i.e., Ministry to State to District, upto the level of the PDA, taking into account the fund available at each level.

Pension Disbursing Agencies - State Governments are required to appoint and indicate the 'Pension Disbursing Authority'. Depending upon the mode of disbursement, the PDA can be created at State / District / Sub-District level.

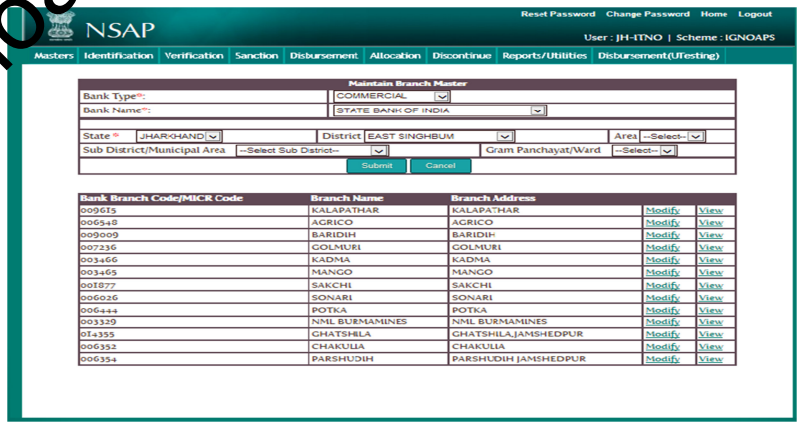


Table -XI : List of bank branches

Acquaintance Roll/Pension Scroll

In order to disburse pension to the beneficiaries, first of all a demand are being generated in order to know estimated beneficiaries bank branch wise and total fund required to nodal bank and it is branches separated. This demand is generated and submitted to treasury for release of fund for pension disbursement.

BANK WISE FUND REQUIRED

State : JHARKHAND	District: EAST SINGHBUM	Area : RURAL
Sub District : BAHARAGORA		Scheme : IGNOAPS
From Date : 2013-09-01		To Date : 2013-09-30

Bank Name	Total Pensioners SC	Amount(Rs.)
JHARKHAND GRAMIN BANK	1	400.00
Bank Name	**Total Pensioners SCP**	**Amount(Rs.)**
BANK OF INDIA	37	15,700.00
CANARA BANK	67	29,800.00
CENTRAL BANK OF INDIA	9	3,900.00
CO-OPRETIVE BANK	20	8,000.00
JHARKHAND GRAMIN BANK	116	52,700.00
PUNJAB NATIONAL BANK	84	35,100.00
Bank Name	**Total Pensioners SCSP**	**Amount(Rs.)**
BANK OF INDIA	4	1,600.00
CANARA BANK	5	2,000.00
CO-OPRETIVE BANK	1	400.00
JHARKHAND GRAMIN BANK	4	1,600.00
PUNJAB NATIONAL BANK	2	1,1[illegible]
Bank Name	**Total Pensioners TSP**	**Amount(Rs.)**
BANK OF INDIA	506	2[illegible]
CANARA BANK	563	2[illegible]
CENTRAL BANK OF INDIA	308	[illegible]600.00
CO-OPRETIVE BANK	409	[illegible],400.00
JHARKHAND GRAMIN BANK	1503	699,300.00
PUNJAB NATIONAL BANK	496	217,600.00
Grand Total	***4135***	***1,853,700.00***

Rupees Eighteen Lakh Fifty Thr[illegible] Thousand Seven Hundred Only

Table XII – Demand/Estimate generated nodal bank wise for fund release

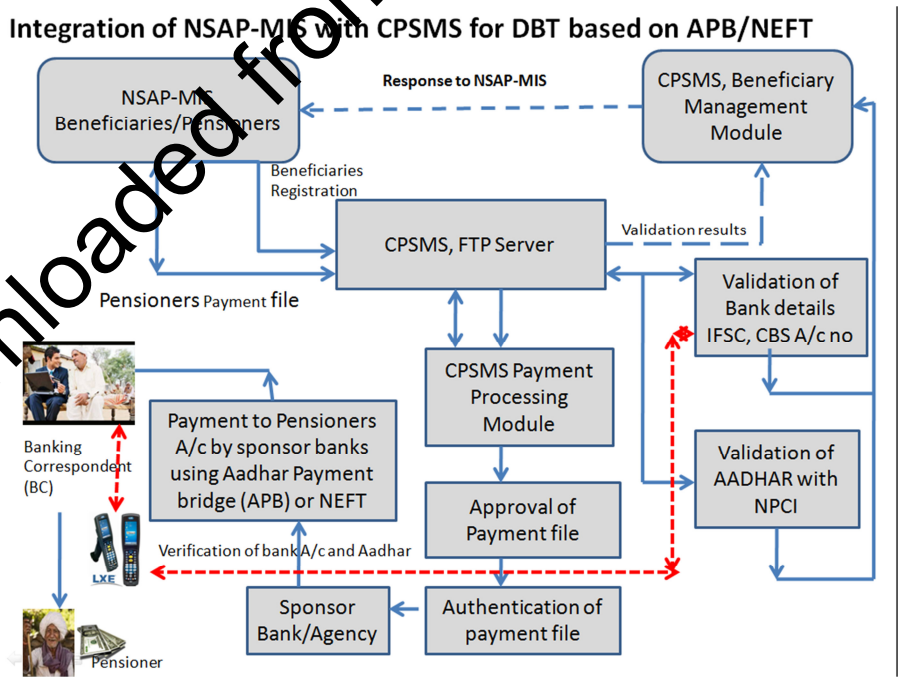


Table XIII. Integration of EGOV SOLUTION with CPSMS for DBT payment of pension

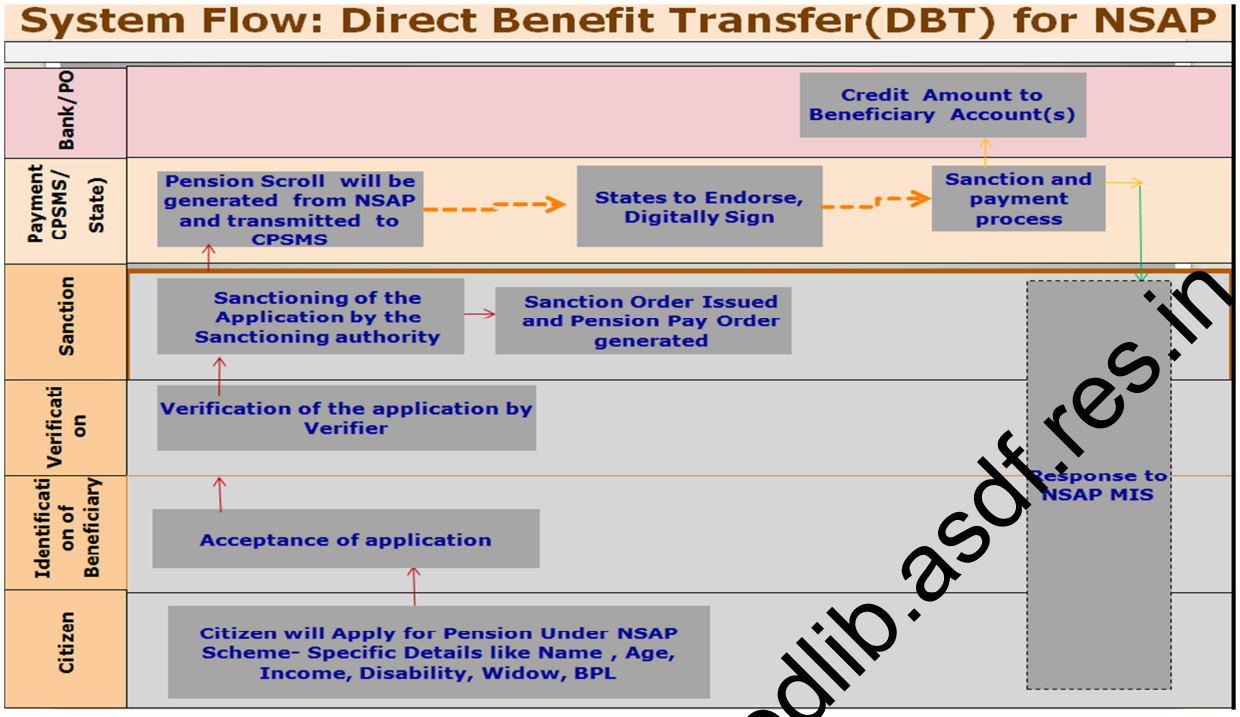


Table XIV. Direct Benefit Transfer (DBT) model for pension payment in social sector.

Gram Panchayat Na BANKATA

Sr No.	Sanction Order No.	Benef. No.	Applicant Name	Husband/Father Name	Account No	Pension paid up to	Amount Due	Plan Code
1	JH-S-04882583	1668	BINODINI MAITY	[illegible]SADHAN MAITY	457II0II0000I86	AUG 2013	800	TSP
2	JH-S-04885641	20780	radha rani maiti	Gourhari Maiti	475II0II0000I56	AUG 2013	800	TSP
3	JH-S-04885642	20781	nani ba[illegible]w	Bhban Show	475II0II0000I91	AUG 2013	800	TSP
4	JH-S-04885660	20801	a[illegible]krishn patr	Lt. Harish Ch. Patr	475II0II0000I38	AUG 2013	800	TSP
5	JH-S-04885665	20800	[illegible]sri mohan panda	Bhupati Panda	475II0II0000I28	AUG 2013	800	TSP
6	JH-S-04885668	20800	gopal ch. Maiti	Ganesg Ch. Maiti	475II0II0000II9	AUG 2013	800	TSP
7	JH-S-04885[illegible]3	20820	Gourango Barik	Harish Ch. Barik	475II0II0000I92	AUG 2013	800	TSP
8	JH-S-04885[illegible]84	20821	Praful Barik	Nand Kumar Barik	475II0II0000I66	AUG 2013	800	TSP
9	JH-S-04885685	20822	Lalita Nayak	Hadi Ram Nayak	475II0II0000I22	AUG 2013	800	TSP
10	JH-S-04885699	20837	Bhawani Sankar Maiti	Lt. Surender Nath Maiti	475II0II0000I07	AUG 2013	800	TSP
11	JH-S-04885700	20838	Bridan rana	Rameshwar Rana	475II0II0000I57	AUG 2013	800	TSP
12	JH-S-04885708	20845	Nripal Kanti Maiti	Bhupati Maiti	475II0II0000202	AUG 2013	800	TSP
13	JH-S-048857II	20848	Sudevi Show	Sudhir Show	475II0II0000I93	AUG 2013	800	TSP
14	JH-S-04885747	20886	Radhakanth Patar	Lt. Anirud Patar	475II0II0000I47	AUG 2013	800	TSP

Table -XV – Compute pension showing pension amount due and CBS bank account nos

	Full Name in English	Full Name in Recognized Official Language	Gender	Address line 1	Address line 2	Address line 3	District	State	Country	Bank Name	IFSCCode	Account Number	Aadhaar Number	Pincode	Scheme Specific ID	Center Share Payment Amount	State Share Payment Amount
34	GANGA DHAR KALINDI		M	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491010000104 7		0		200	200
35	Savitri Pradhan		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000057 5				300	200
36	Domi Pradhan		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000057 6				300	200
37	Dhirendra Jana		M	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000057 9				200	200
38	Dangi Hembram		M	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000058 3				200	200
39	Budheshwari Bera		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000058 5				300	200
40	Aasha Khuntia		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000059 1				200	200
41	Basanti Raut		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000059 3				300	200
42	Menka Bishal		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000059 4				300	200
43	Kalpana Bera		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	45491011000059 5				300	200
44	Subhashi Bishal		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	4549101 061 2				200	200
45	Aarti Kalindi		F	GUHIYAPAL			EAST SINGHBUM	JHARKHAND	INDIA		BKID04549	4910110 063				300	200
							EAST					1000064					

Table – XVI :- Payment file generation in eGov solution for payment by CPSMS

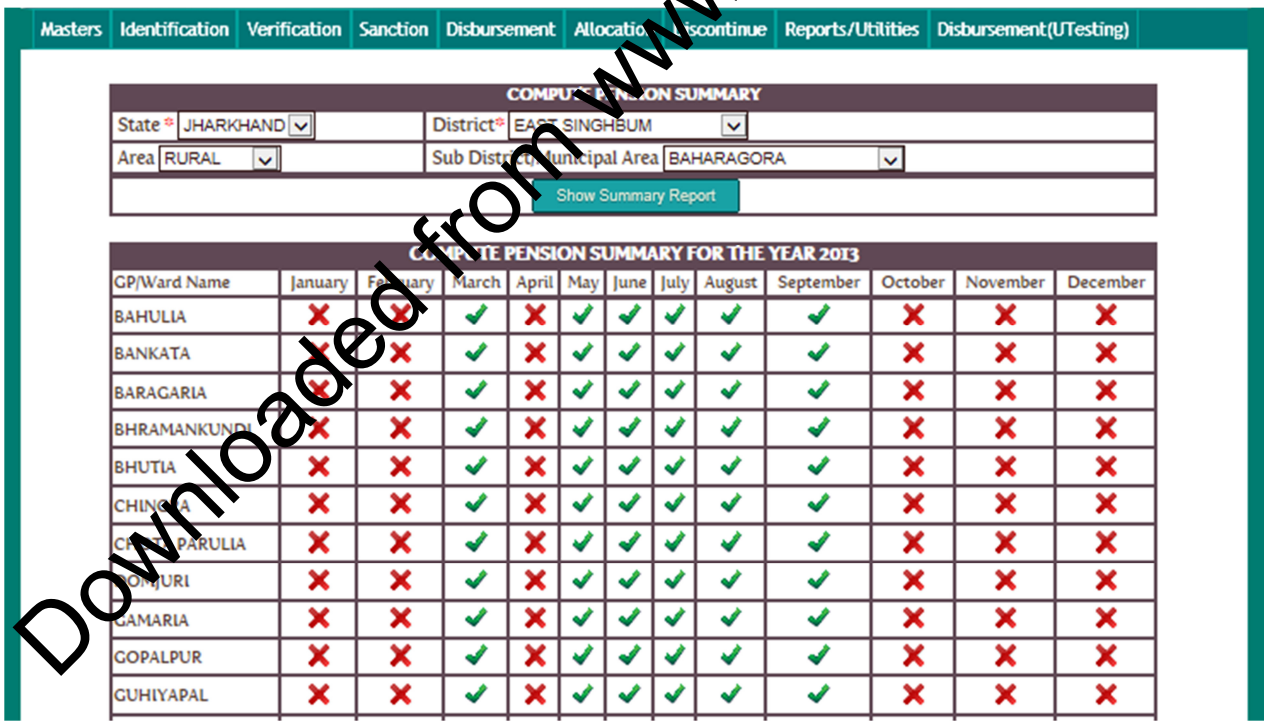


Table -XVII : Dashboard of pension payment Gram Panchayat/Ward wise month wise

Updation of the Disbursement Ledger – Once pension computed and send to CPSMS for payment of pension in respective bank accounts of pensioners using Aadhar Payment Bridge (APB) or NEFT/RTGS, the same is also updated in eGov solution and pensioners ledger is updated automatically

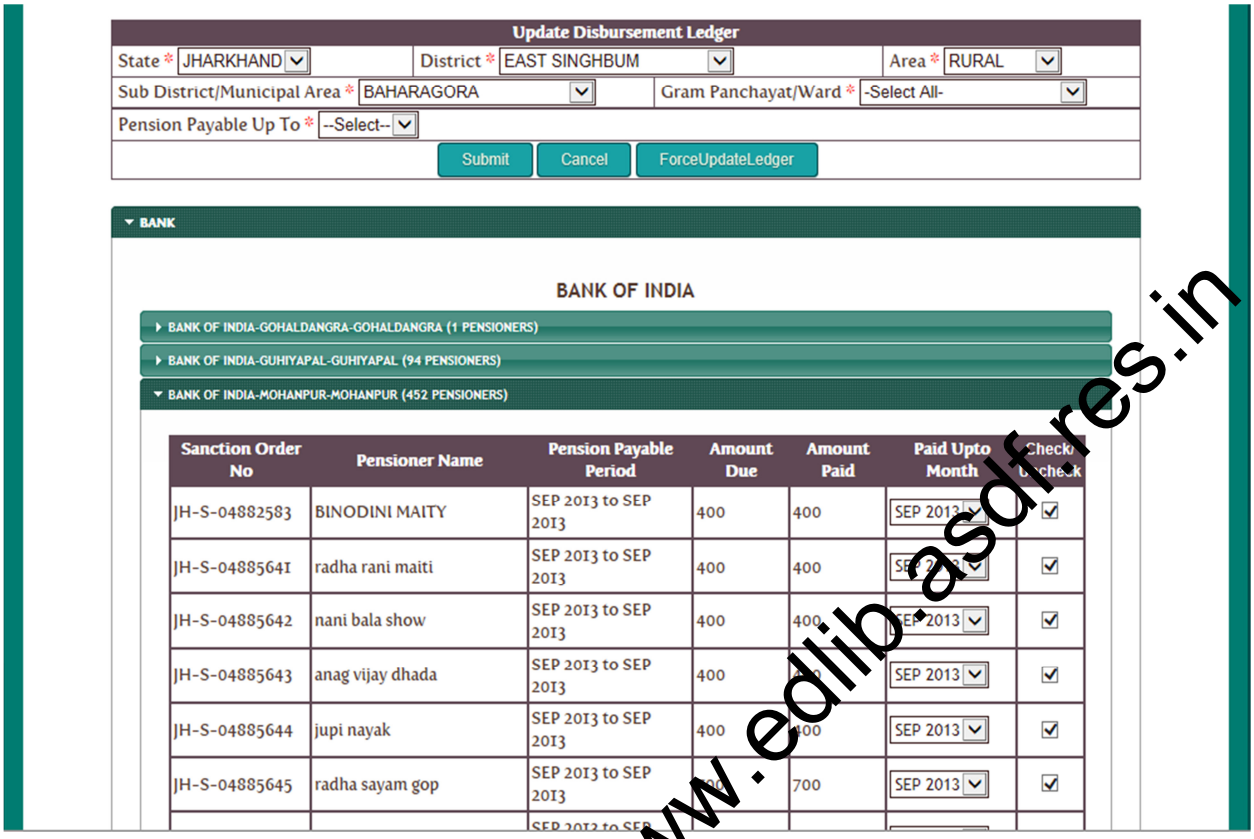


Table XVIII. Updation of bank ledger after making payments in pensioner's A/c

Discontinuation – On the basis of periodic/annual verification from time to time, pensioners are marked in case of death, migrated and transferred cases found in eGov solution to make data database up to date. Their pension is stopped and are not included in pensioner scroll onwards from the date of discontinuation. Provision to re-instate pensioner also available in case pensioners wrongly marked/discontinued.

Current Status of the eGov Solution

All the States are using the eGov solution for online generation of Sanction Orders of beneficiaries.

The State MAHARASTRA, JHARKHAND, WEST BENGAL, HIMACHAL PRADESH, KERALA and TRIPURA has started transferring the pension payments in pensioners bank A/c using CPSMS as transferring pensions based on Aadhar Payment bridge(APB) and NEFT as Direct Benefit Transfer successfully since 1st July 2013. State wise total fund transferred between 1st July 2013 to 21st October 2013 are as

State	Total Beneficiaries/Pensioners	Total Fund transferred using Aadhar/NEFT
Jharkhand	56,893	INR 2,95,80,600
Maharashtra	4,35,969	INR 23,87,03,934
Himachal Pradesh	2,893	INR 2,893
Chhattisgarh	9,43	INR 2,91,600
Kerala	1,76	INR 176
Tripura	4,15	INR 1,79,800
Total	**4,97,289**	**INR 26,87,59,003**

Table XIV – DBT fund transfer summary between 1st July 13 – 21st Oct 13

State: Jharkhand

District wise DBT Transaction Summary

State Name :	JHARKHAND		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊞	HAZARIBAG	40	20,000.00
⊞	KHUTI	6197	27,12,200.00
⊞	LOHARDAGA	67	29,800.00
⊞	RANCHI	50589	2,68,18,600.00
	Total :	56893	2,95,80,600.00
Controller General of Accounts: Central Plan Scheme Monitoring System	Page No:1 / 1		21-10-13 13:00

State: Maharashtra

District wise DBT Transaction Summary

State Name :	MAHARASHTRA		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊞	AMRAVATI	12165	6,32,17,682.00
⊞	AURANGABAD	3398	2,05,89,000.00
⊞	GONDIA	2812	1,71,19,200.00
⊞	JALGAON		1,45,34,100.00
⊞	JALNA	1	1,02,49,200.00
⊞	LATUR	1686	14,89,702.00
⊞	MUMBAI	4403	26,41,800.00
⊞	MUMBAI (SUBURBAN) *	5519	27,70,600.00
⊞	NANDURBAR	58432	1,63,56,620.00
⊞	PUNE	15587	1,19,86,100.00
⊞	RATNAGIRI	38773	82,26,100.00
⊞	WARDHA	86089	6,95,23,830.00
	Total :	435969	23,87,03,934.00
Controller General of Accounts: Central Plan Scheme Monitoring System	Page No:1 / 1		21-10-13 13:06

State: Himachal Pradesh

District wise DBT Transaction Summary

State Name :	HIMACHAL PRADESH		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊟	SHIMLA	2893	2,893.00
	National Social Assistance Programme including Anapurna (NSAP)	2893	2,893.00
	Total :	2893	2,893.00
Controller General of Accounts: Central Plan Scheme Monitoring System	Page No:1 / 1		21-10-13 13:08

State: Chhattisgarh

District wise DBT Transaction Summary

State Name :	CHHATTISGARH		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊞	DHAMTARI	113	33,900.00
⊞	KORIYA	830	2,57,700.00
	Total :	943	2,91,600.00
Controller General of Accounts: Central Plan Scheme Monitoring System	Page No:1 / 1		21-10-13 13:10

State: Kerala

District wise DBT Transaction Summary

State Name :	KERALA		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊟	THIRUVANANTHAPURAM	176	176.00
	National Social Assistance Programme including Anapurna (NSAP)	176	176.00
	Total :	176	176.00
Controller General of Accounts: Central Plan Scheme Monitoring System		Page No:1 / 1	21-10-13 13:12

State: Tripura

District wise DBT Transaction Summary

State Name :	TRIPURA		
Period :	01-07-2013 / 21-10-2013		
	District/Scheme	Total Beneficiary Paid	Amount (In Actuals)
⊟	KHOWAI	407	1,76,600.00
	National Social Assistance Programme including Anapurna (NSAP)	40	1,76,600.00
⊟	WEST TRIPURA	8	3,200.00
	National Social Assistance Programme including Anapurna (NSAP)	8	3,200.00
	Total :	415	1,79,800.00
Controller General of Accounts: Central Plan Scheme Monitoring System		Page No:1 / 1	21-10-13 13:13

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An Efficient Load Balancing Algorithm for virtualized Cloud Data Centers

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Atwine Mugume Twinamatsiko, Arash Habibi Lashkari, Mohammad Sadeghi

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Abstract: Cloud computing has become a new computing paradigm as it can provide scalable IT infrastructure, QoS-assured services and customizable computing environment. Although there are many research activities or business solutions for Cloud computing, most of them are focused on single-provider Cloud. As a key service delivery platform in the field of service computing. Cloud Computing provides environments to enable resource sharing in terms of scalable infrastructures, middleware and application development platforms, and value-added business applications .This study examined the latest technology in the field Cloud Computing. The main study focused on load balancing for virtual machines inside single cloud data center. There different algorithms for balancing, one of them called Throttled load balancing which treats the virtual machines based on two values that can send to the intended virtual machine or send it to the remote ones .A proposed modification has been proposed to solve some of the key features in this algorithm like Process migration, Fault tolerant and Overload protection. The idea is to send even when all the virtual machines heavily loaded by determining the most expectable hardware specifications of the virtual machines.

Keywords: Cloud Computing, cloud Virtualization, load balancing, Cloud Data Center

Introduction

Cloud computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services. With a connection over the internet, a consumer is able to access various resources, be it premium or free in order to perform certain functionality and all these constitute a cloud; The services themselves have long been referred to as Software as a Service (SaaS). Some vendors use terms such as IaaS (Infrastructure as a Service) and PaaS (Platform as a Service) to describe their products. This is to say with cloud computing, a cloud is formed over the amalgamation of various services be it physical or virtual over a network to perform certain services (Parhizkar B. et.al, 2013).

By deploying IT infrastructure and services over the network, an organization can purchase these resources on an as needed basis and avoid the capital costs of software and hardware. With cloud computing, IT capacity can be adjusted quickly and easily to accommodate changes in demand. While remotely hosted, managed services have long been a part of the IT landscape, a heightened interest in cloud computing is being fueled by ubiquitous networks, maturing standards, the rise of hardware and software virtualization, and the push to make IT costs variable and transparent.

Great interest in cloud computing has been manifested from both academia and private research centers and numerous projects from industry and academia have been proposed. In commercial contexts among the others, we highlight: amazon elastic compute cloud, IBM's blue cloud, etc .There are several scientific activities driving toward open cloud-computing middleware and infrastructures such as reservoir and eucalyptus, etc (Parhizkar B. et.al, 2013).

Clouds aim to power the next generation data centers as the enabling platform for dynamic and flexible application provisioning. This is facilitated by exposing data center's capabilities as a network of virtual

services (e.g. Hardware, database, user-interface, and application logic) so that users are able to access and deploy applications from anywhere in the Internet driven by the demand and QoS (Quality of Service) requirements. Similarly, IT companies with innovative ideas for new application services are no longer required to make large capital outlays in the hardware and software infrastructures. By using clouds as the application hosting platform, IT companies are freed from the trivial task of setting up basic hardware and software infrastructures. Thus they can focus more on innovation and creation of business values for their application services.

Related works

According to Abhay Bhadani and Sanjay Chaudhary (Bhadani A. et.al, 2010), they propose a Central Load Balancing Policy for Virtual Machines (CLBVM) to balance the load evenly in a distributed virtual machine/cloud computing environment. This effort tries to compare the performance of web servers based on their CLBVM policy and independent virtual machine(VM) running on a single physical server using Xen Virtualizaion. The paper discusses the value and feasibility of using this kind of policy for overall performance improvement.

The proposed CLBVM policy is at an inception stage and requires work for I/O as well as memory availability on the target server. The CLBVM policy has the potential to improve the performance of the overall N Servers though it does not consider fault tolerant systems. They tried to make the system completely distributed such that, if the performance of the VM gets affected by another VM, it can move itself to lightly loaded server on the go (Bhadani A. et.al, 2010).

Glauco Estácio Gonçalves et. al (Gonçalves, G. E. et.al , 2013), proposed algorithms for allocation of computing and network resources in a Distributed cloud (D-Cloud) with the objectives of balancing the load in the virtualized infrastructure and of considering constraints, such as processing power, memory, storage, and network delay. The evaluation of the algorithm shows that it is indeed adequate for link allocation across different physical networks. It considers that links are unconstrained in terms of capacity. They argue that this situation is well-suited to a pay-as-you-go business plan, very common in Cloud Computing and it allows a better usage of the resources than the common idea of link capacity reservation. The proposed algorithms were tested through simulations, focusing on the improvements brought by the minimax path strategy. The experiments showed that the minimax path strategy can offer better load balancing, in terms of maximum link stress than heuristics from the literature as the rate of requests increases (Gonçalves, G. E. et.al , 2013).

Zehua Zhang and Xuejie Zhang (Zhang Z. et.al , 2010), proposed a load balancing mechanism based on ant colony and complex network theory in open cloud computing federation in this paper, it improves many aspects of the related Ant Colony algorithms which proposed to realize load balancing in distributed system, Furthermore, this mechanism take the characteristic of Complex Network into consideration. Finally, the performance of this mechanism is qualitatively analyzed, and a prototype is developed to enable the quantitative analysis, simulation results manifest the analysis.

This mechanism improves many aspects of the related Ant Colony algorithms which proposed to realize load balancing in distributed system, and the characteristic (small-world and scale-free) of Complex Network have been taken into consideration (Zhang Z. et.al , 2010).

Srinivas Sethi et. al (Sethi S. et.al , 2012) , they introduced the novel load balancing algorithm using fuzzy logic in cloud computing, in which load balancing is a core and challenging issue in Cloud Computing. The processor speed and assigned load of Virtual Machine (VM) are used to balance the load in cloud computing through fuzzy logic. It is based on Round Robin (RR) load balancing technique to obtain measurable improvements in resource utilization and availability of cloud-computing environment.

The network structure or topology also required to take into consideration, when creating the logical rules for the load balancer. Two parameters named as the processor speed and assigned load of Virtual Machine (VM) of the system are jointly used to evaluate the balanced load on data centers of cloud computing environment through fuzzy logic (Sethi S. et.al, 2012).

Pengfei Sun et. al, They presented a new security load balancing architecture-Load Balancing based on Multilateral Security (LBMS) which can migrate tenants' VMs automatically to the ideal security physical machine when reach peak-load by index and negotiation. They have implemented their prototype based on CloudSim, a Cloud computing simulation. Their architecture makes an effort to avoid potential attacks when VMs migrate to physical machine due to load balancing (Sun P. et.al, 2011).

Shu-Ching Wang et.al (Wang S. et.al, 2010), they introduced a two-phase scheduling algorithm under a three-level cloud computing network is advanced. The proposed scheduling algorithm combines OLB (Opportunistic Load Balancing) and LBMM (Load Balance Min-Min) scheduling algorithms that can utilize more better executing efficiency and maintain the load balancing of system.

The goal of this study is to reach load balancing by OLB scheduling algorithm, which makes every node in working state. Besides, in their research, the LBMM scheduling algorithm is also utilized to make the minimum execution time on the node of each task and the minimum whole completion time is obtained. However, the load balancing of three-level cloud computing network is utilized, all calculating result could be integrated first by the second level node before sending back to the management. Thus, the goal of loading balance and better resources manipulation could be achieved (Wang S. et.al, 2010).

He-Sheng WU et.al (Wu H. et.al, 2013), discussed the new characteristics the load balancing should have in cloud computing. In cloud computing, load balancing manages virtual machine in the cloud instead of actual one. Therefore, load balancing system should be provided with the function of elastic management of back-end resource, i.e. to dynamically add or delete back-end server (existing in the form of virtual machine in the cloud) based on actual network load condition.

Since the virtual machine for load balancing management in cloud computing can be dynamically applied and released, an algorithm of prediction-based elastic load balancing resource management (TeraScaler ELB) is presented to overcome the drawbacks.

Experiments have shown that the required number of virtual machines change in compliance with the change of network load, thus TeraScaler ELB is able to dynamically adjust the processing capacity of back-end server cluster with the applied load. Besides it could make full use of the 'use on demand' feature of cloud computing, TeraScaler ELB leads to a better application of prediction based load balancing in cloud computing. It concludes that compared with the traditional elastic resource management algorithm, TeraScaler ELB is more reasonable for providing scalability and high availability (Wu H. et.al, 2013).

Jiann-Liang Chen, et. al (Chen J. et.al , 2012), this paper presents a study to improve cloud computing systems performance based on Eucalyptus cloud platform. An optimal load balancing mechanism called EuQoS system for scheduling VMs is proposed. Extending EuQoS to accommodate real-time services, Hadoop platform is integrated into the EuQoS system. Log processing services are utilized to investigate the performance of system throughput. Experimental results indicate that the proposed EuQoS system can improve system throughput by 6.94% compared with the basic Eucalyptus platform with Hadoop mechanisms.

According to Xiaona Ren et. al (Ren X. et. al , 2011), Considering the unique features of long-connectivity applications, an algorithm is proposed, Exponential Smoothing forecast-Based on Weighted Least-Connection ESBWLC. ESBWLC optimizes the number of connections and static weights to actual load and service capability, and adds single exponential smoothing forecasting mechanism. Finally, experiments show that ESBWLC can improve the load of real servers effectively.

Analysis of Previous Load Balancing Algorithms

The throttled algorithm has been chosen to be modified based on the simulation conducted as it has better results compared with the other algorithms especially if it is working with response time algorithm and based on recommendations of the experts that we have found in the articles (Shiraz M. et. al , 2012). Throttled algorithm is also known as the threshold algorithm as it has two values (tUpper and tUnder) which specify the load on the virtual machines. If the load is greater than the value of tUpper then, it will send the process to the remote processor, otherwise if the load if less than the value of tUnder then it will process it locally and if the virtual machine is overloaded then it will update the other virtual machines of its state. The algorithm has a low inter-process communication as most of the load is processed locally which leads in performance as there is not much sending and receiving of jobs (Sanei Z. et. al, 2012).

There many metrics that govern the load balancing in a virtualized data centers, the threshold algorithm guarantees most of them except some which are as follows (Sharma S. et.al, 2008):

Overload Rejection: If Load Balancing is not promising additional overload rejection measures are needed. When the overload situation ends then first the overload rejection measures are stopped. After a short guard period Load Balancing is also closed down.

Fault Tolerant: This parameter gives that algorithm is able to bear twisted faults or not. It enables an algorithm to continue operating properly in the event of some failure. If the performance of algorithm decreases, the decrease is relational to the seriousness of the failure, even a small failure can cause total failure in load balancing.

Process Migration: Process migration parameter provides when does a system decide to migrate a process? It decides whether to create it locally or create it on a remote processing element. The algorithm is capable to decide that it should make changes of load distribution during execution of process or not.

Proposed New Algorithm

As a result we can conclude that when the virtual machines is heavily loaded and also the other virtual machines overloaded then it will not send any incoming jobs to the remote processor as it is overloaded and it will process it locally. our idea is when a virtual machines is overloaded, the algorithm can still send to the most respectable virtual machine in terms of physical hardware specifications, this will lighten the burden of one virtual machine to the other as it will make the strongest virtual machines handle the load while the others processing until the others will finish the jobs and back to the original state. This will help solving some the metrics that should be found in the load balancing algorithms like overload rejection (Abhijit A. et.al, 2012). This modification will make a queue of new incoming jobs for the strongest virtual machines respectively as the load on one overloaded processor can be much higher than on other overloaded processors, causing significant disturbance in load balancing, and increasing the execution time of an application.

Table 1: Analysis of Throttled algorithm (Abhijit A. et.al, 2012)

Parameters	Threshold Algorithm
Nature	Static
Overload Rejection	**Yes**
Reliability	Less
Adaptability	Less
Stability	Large
Predictability	More
Forecasting Agency	More

Cooperative	Yes
Fault Tolerant	**Yes**
Resource Utilization	Less
Process Migration	**Yes**
Preemptiveness	Non-preemptive
Response Time	Less
Waiting Time	More
Turnaround Time	Less
Execution System	Decentralized
Throughput	Low
Processor Thrashing	No

Simulation and Results

In this section, this paper will try to show some the simulations conducted to choose the throttled algorithm as the algorithm to modify. First simulation was conducted to test the throttled algorithm with the closest data center as the service broker whereby it chooses the closest data center to the user request. The second simulation was conducted for the throttled algorithm but in regard to the best response time of the data centers the request was made to. In the third round the simulation was tested for throttled in regard to reconfiguring dynamically of the data center located around the world whereby the requests can be directed flexibly according to the best data center that can serve the request.

Throttled With Closest Data Center

The first round was tested using the Throttled algorithm for the load balancing strategy with the Closet Data Center as the Data Center broker policy. The simulations were conducted for 100 virtual machine and a total of 1000 requests per user per hour, with an average of 10000 users in a peak hours and 100 in off-peak hours with 6 user bases located in different locations around the world and 6 Data Centers also located in different locations around the world as shown in figure 1.

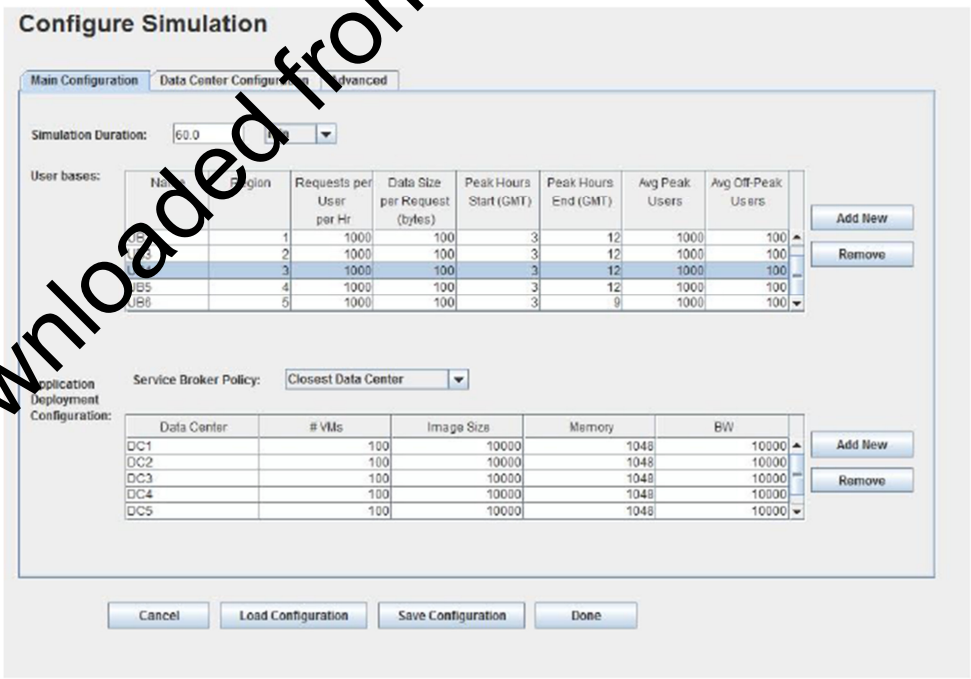

Figure 1: User base specification and service broker policy for the data center

In figure (2, 3), explanation on how to do the configuration for the simulation that is going to be tested on, Whereby the selection of the user requests that can be made per hour and whether it's a peak hour or normal hours to simulate a real world events as well as the starting and ending times for these requests. The data center broker that will govern the behavior of the data center have been identified as well ,for example in this simulation ,the closest data center which means the closest one for the requests to be entertained around the world. Hardware specifications of the data centers like the memory , CPU speed , the number of cores inside each CPU ,the operating system, the number of virtual machines inside each data centers and the cost that for each virtual machine to use the memory and CPU cores have been defined as well .

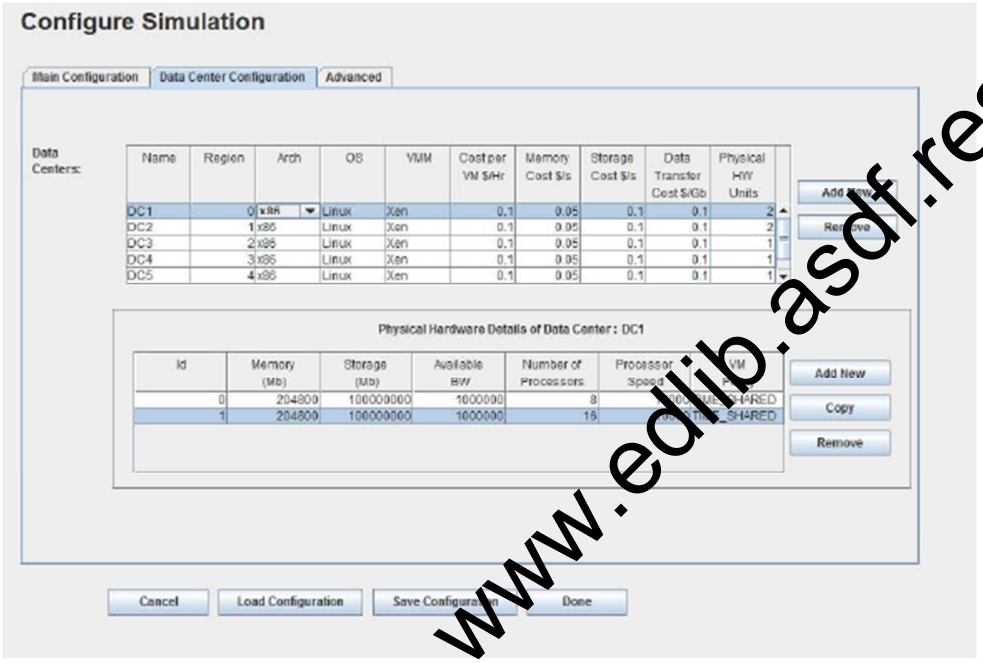

Figure 2: Data Center specifications

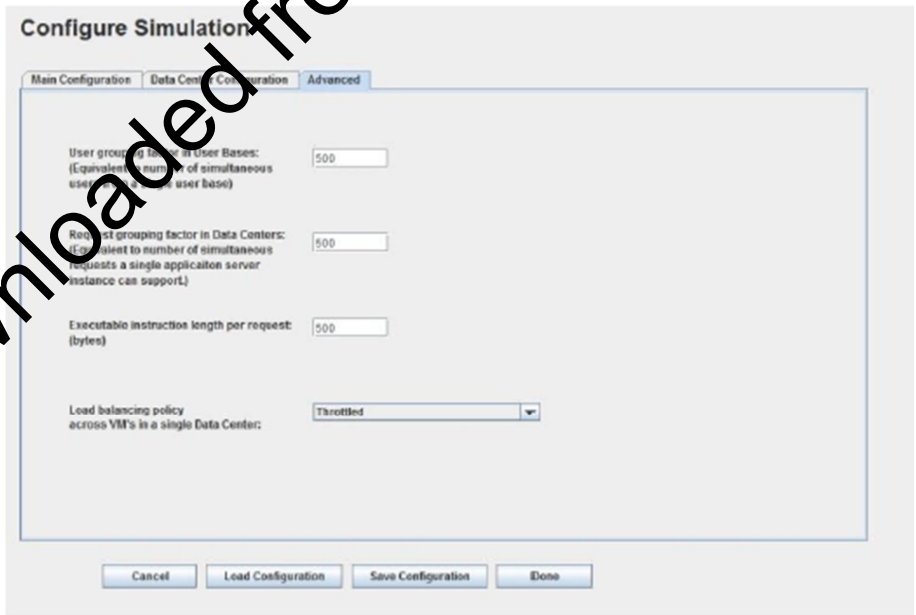

Figure 3: User requests and the load balancing algorithm

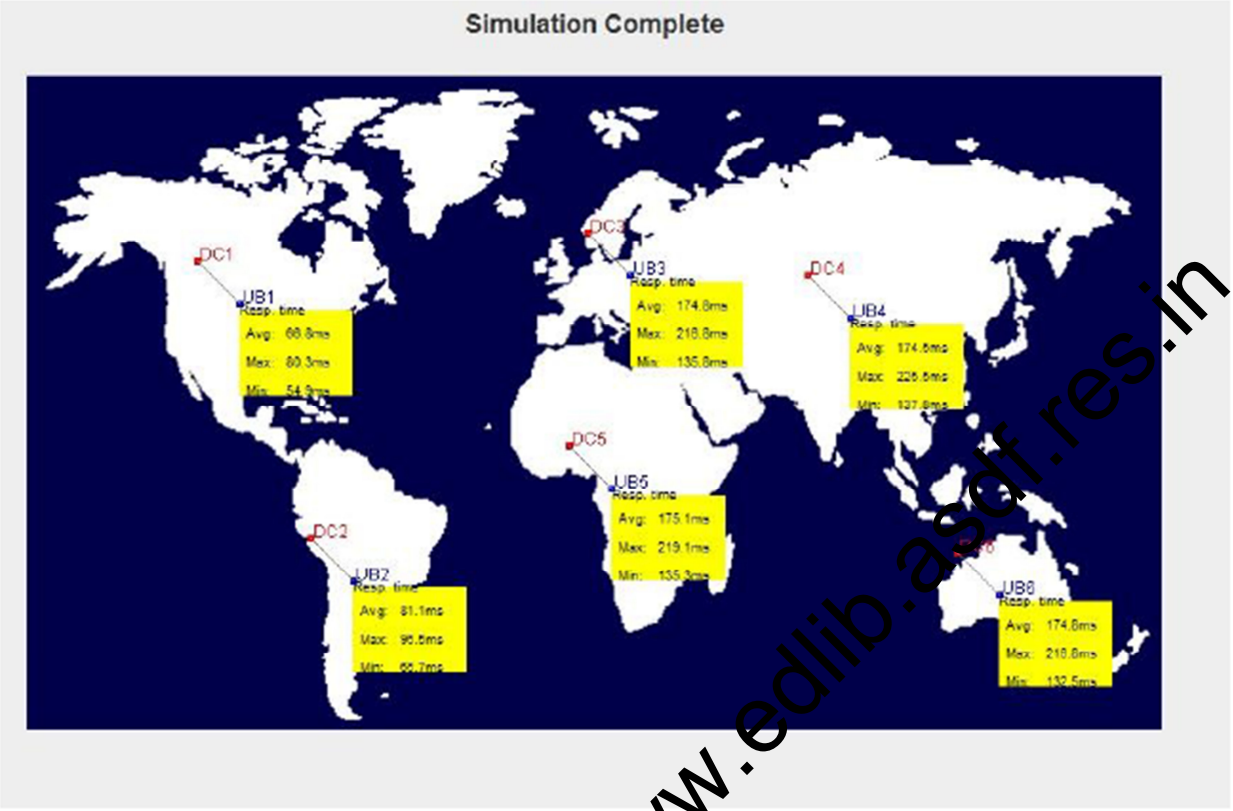

Figure 4: Data center locations and user bases requests

In figure 4, it shows the geographical location of each data center with their average, minimum and maximum execution time that can be taken in consideration when simulating with respect to each user request and whether this request is made from single user or multiple.

The results for the simulation conducted based on the specification provided in the above figures that shows the overall response time for the data centers and the cost for the virtual machines to serve the requests if the broker is set to closest data center.

Results

Avg (ms)	Min (ms)		Max (ms)
Overall response time	141.35	54.87	225.52
Data Center processing time	91.72	12.65	167.76

Cost

Total Virtual Machine Cost ($)	Total Data Transfer Cost ($)	Grand Total ($)
60.00	5.76	65.76

Throttled with Optimize Response Time

The second round was tested using the Throttled algorithm for the load balancing strategy with the Closet Data Center as the Data Center broker policy. I have conducted a simulation for 100 virtual machine and a total of 1000 requests per user per hour, with an average of 10000 users in a peak hours and 100 in off-peak

hours with 6 user bases located in different locations around the world and 6 Data Centers also located in different locations around the world as shown in figure 5.

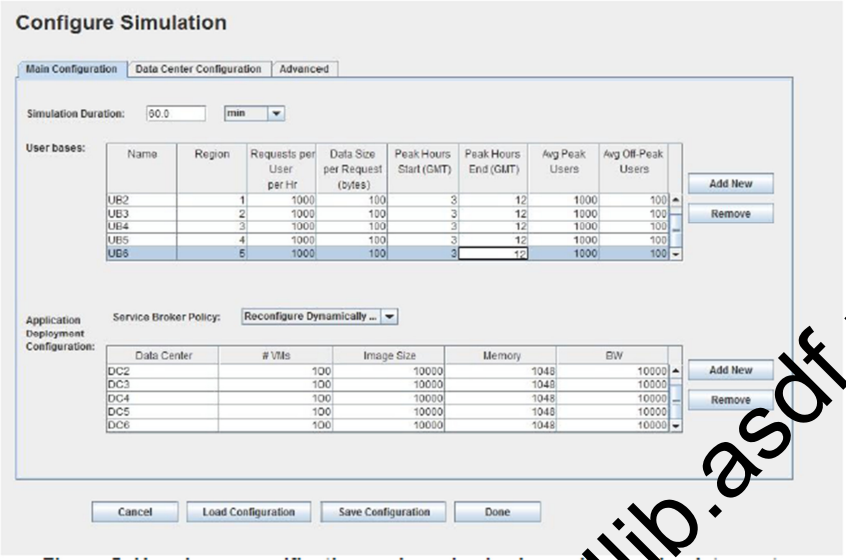

Figure 5: User base specification and service broker policy for the data center

In figure (6, 7), explanation on how to do the configuration for the simulation that is going to be tested on, Whereby the selection of the user requests that can be made per hour and whether it's a peak hour or normal hours to simulate a real world events as well as the starting and ending times for these requests. The data center broker that will govern the behavior of the data center have been identified as well ,for example in this simulation ,optimize response time which means the best data center that responded to the request to be process around the world based on the hardware specifications of the data centers like the memory , CPU speed , the number of cores inside each CPU ,the operating system, the number of virtual machines inside each data centers and the cost that for each virtual machine to use the memory and CPU cores have been defined as well .

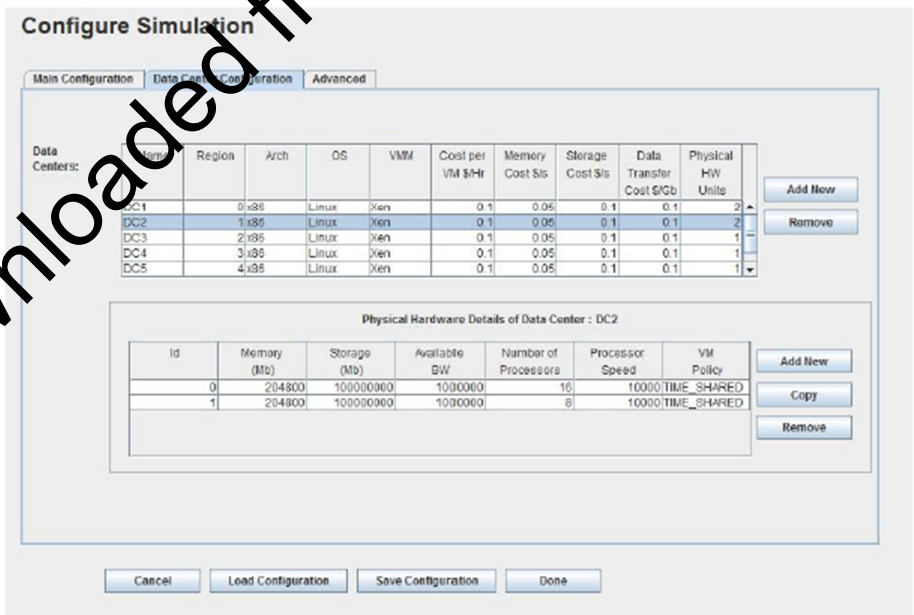

Figure 6: Data Center specifications

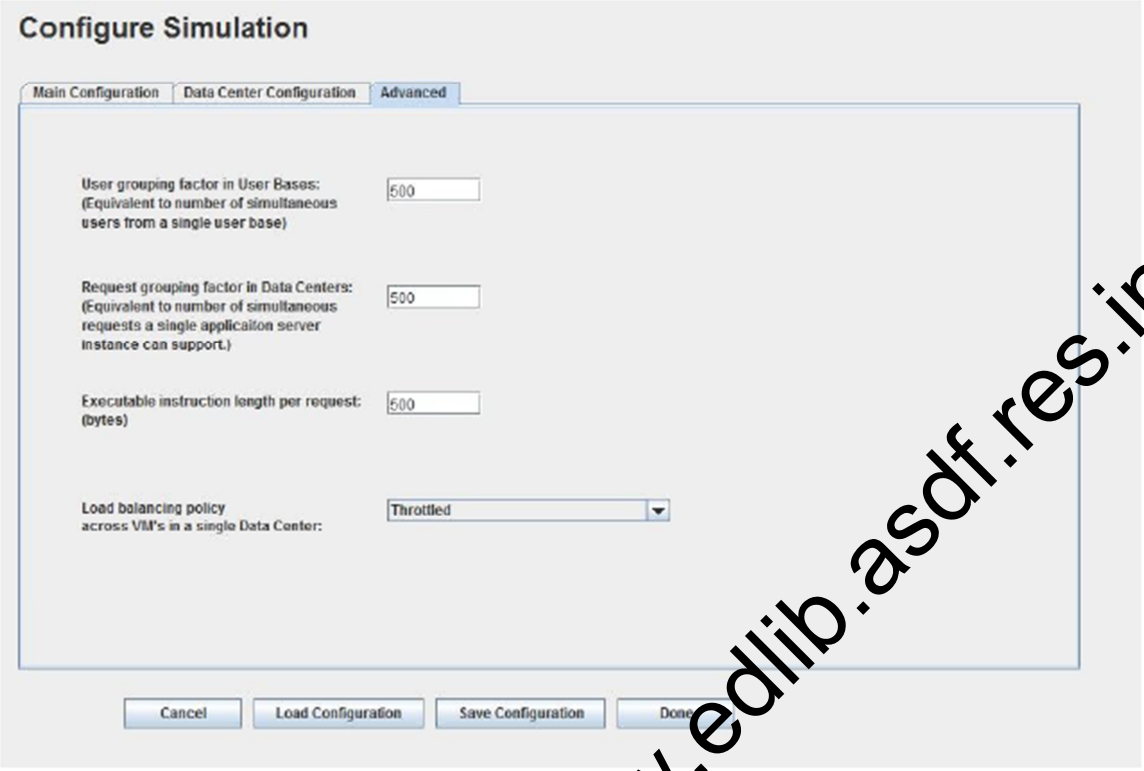

Figure 7: User requests and the load balancing algorithm

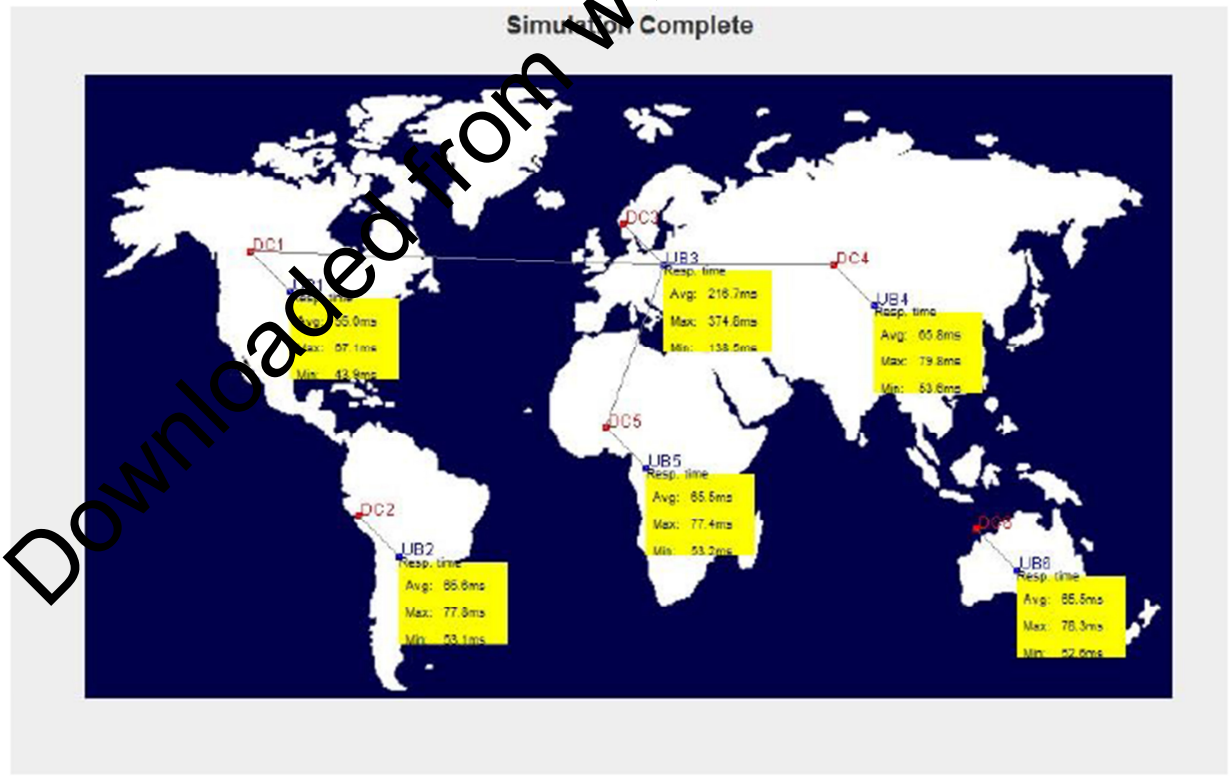

Figure 8: Data center locations and user bases requests

In figure 8, it shows the geographical location of each data center with their average, minimum and maximum execution time that can be taken in consideration when simulating with respect to each user request and whether this request is made from single user or multiple.

The results for the simulation conducted based on the specification provided for the data centers and the virtual machines shows a better results if the broker set to optimize response time in terms of data center execution time and cost of the virtual machines.

Results

Avg (ms)	Min (ms)		Max (ms)
Overall response time	89.14	43.86	374.83
Data Center processing time	26.43	3.31	162.01

Cost

Total Virtual Machine Cost ($)	Total Data Transfer Cost ($)	Grand Total ($)
50.50	5.76	56.26

Throttled with Reconfigure Dynamically

The third round was tested using the Throttled algorithm for the load balancing strategy with the Closet Data Center as the Data Center broker policy. I have conducted a simulation for 100 virtual machine and a total of 1000 requests per user per hour, with an average of 10000 users in a peak hours and 100 in off-peak hours with 6 user bases located in different locations around the world and 6 Data Centers also located in different locations around the world as shown in figure 9.

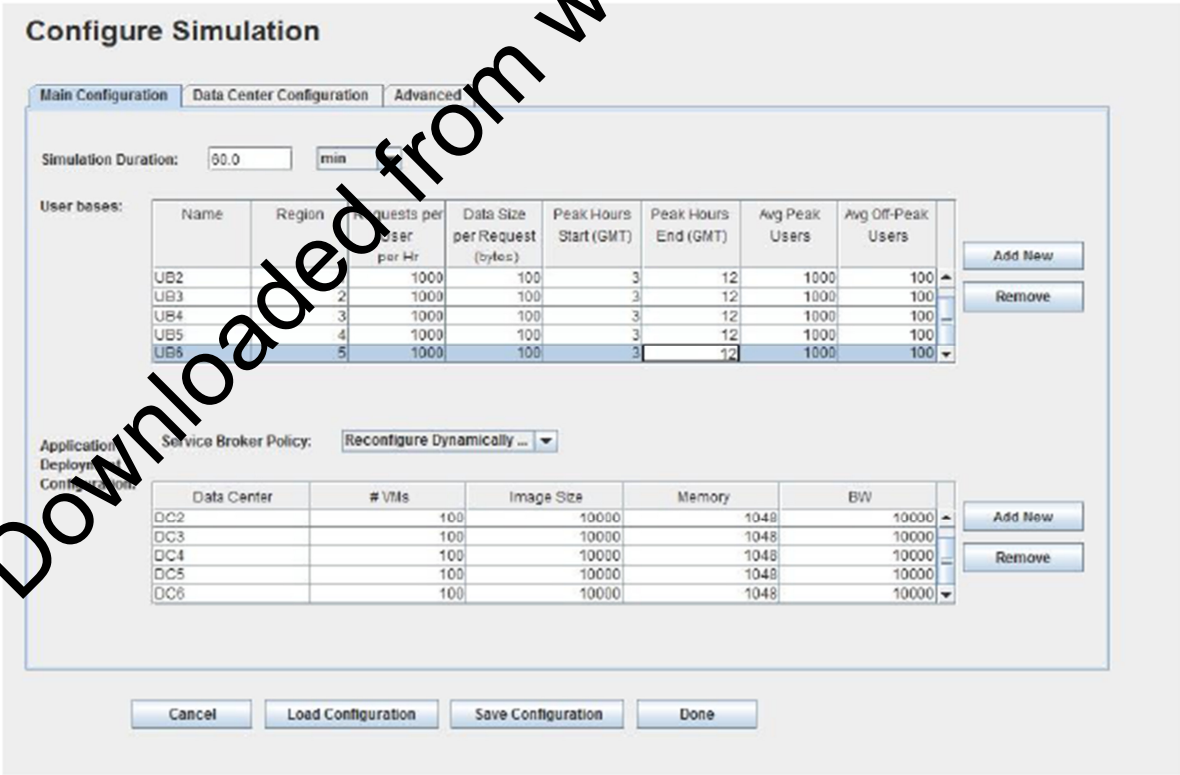

Figure 9: User base specification and service broker policy for the data center

In figure (10, 11), explanation on how to do the configuration for the simulation that is going to be tested on, Whereby the selection of the user requests that can be made per hour and whether it's a peak hour or normal hours to simulate a real world events as well as the starting and ending times for these requests. The data center broker that will govern the behavior of the data center have been identified as well ,for example in this simulation ,reconfiguration dynamically which means the data centers can serve the requests respectively but if there are other data centers available which are better than the current one, it will switch automatically to the best one accordingly. Hardware specifications of the data centers like the memory , CPU speed , the number of cores inside each CPU ,the operating system, the number of virtual machines inside each data centers and the cost that for each virtual machine to use the memory and CPU cores have been well-defined as well .

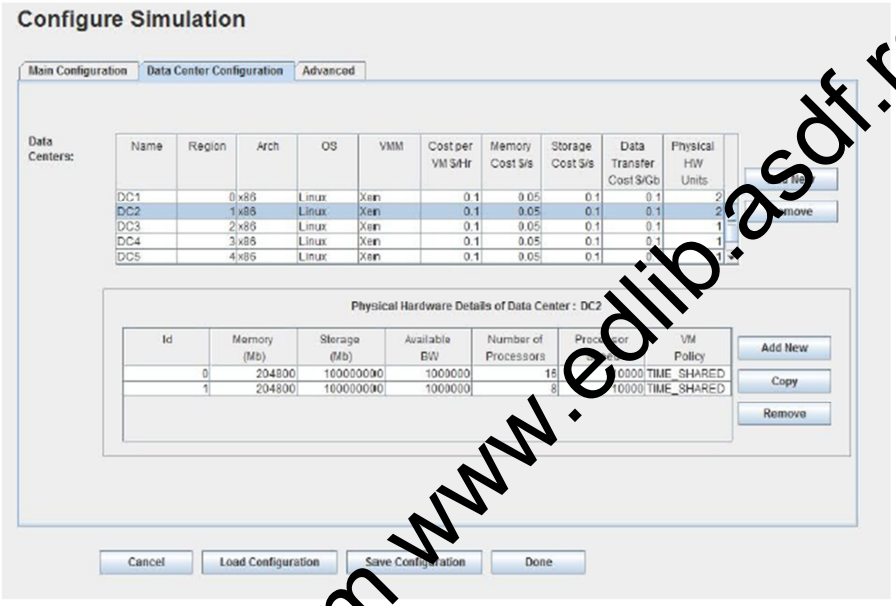

Figure 10: Data Center specifications

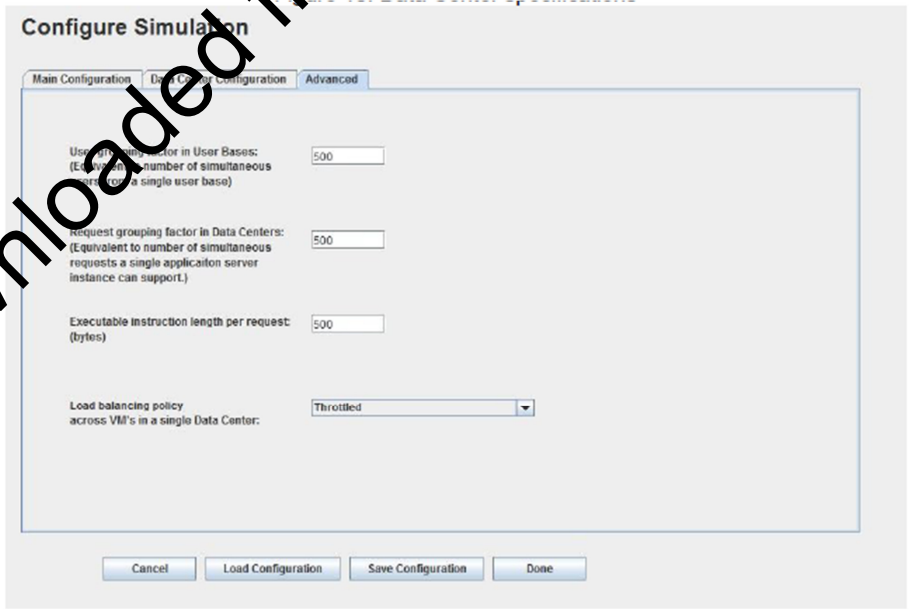

Figure 11: User requests and the load balancing algorithm

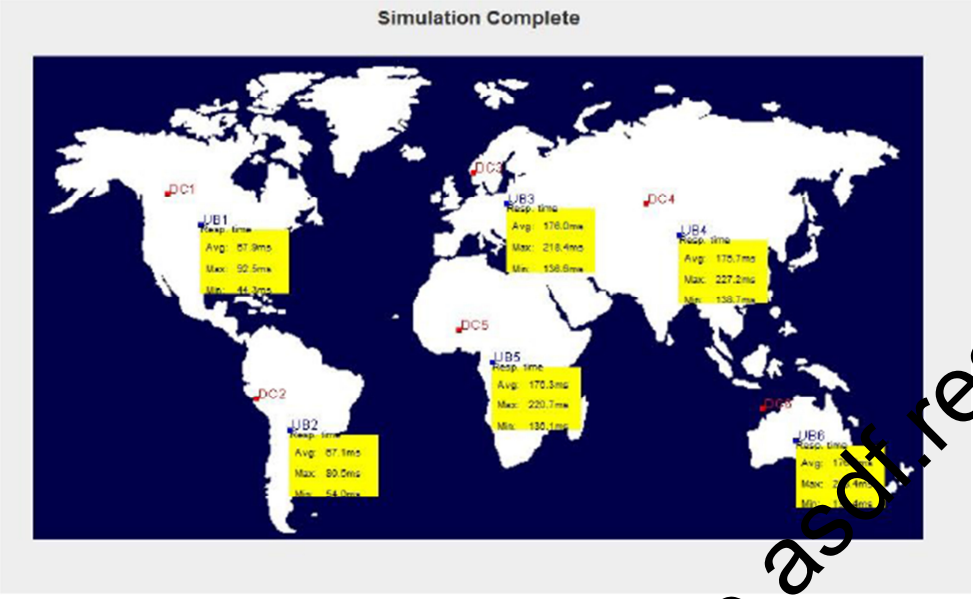

Figure 12: Data center locations and user bases requests

In figure 12, it shows the earthly location of each data center with best average, minimum and maximum execution time that can be taken in consideration when simulating with respect to each user request and whether this request is made from single user or multiple.

The results for the simulation conducted based on the specification provided for the data centers and the virtual machines shows a higher results if the broker set to reconfigure dynamically in terms of data center execution time and cost of the virtual machines than the optimize response time.

Results

Avg (ms)	Min (ms)		Max (ms)
Overall response time	139.98	44.29	227.18
Data Center processing time	90.35	3.90	169.44

Cost

Total Virtual Machine Cost ($)	Total Data Transfer Cost ($)	Grand Total ($)
53.47	5.76	59.50

Conclusion

Cloud computing is a new edge technology that is versatile, fast and developing at a fast rate. In this report, different models of implementation of cloud computing has been studied. It is obvious that the cloud concept is a way to-go method of technology implementation these days. The trend of development is high, though much has been accomplished there is still a lot to do in this field of cloud computing for the future generation. One of the biggest buzz terms in technology today is cloud computing? Companies all over the world are utilizing the cloud for their businesses, allowing users to access their technology anytime, anywhere. Essentially, organizations who are using the cloud, or cloud computing, have their files, software, information and resources available anywhere in a virtual network. A modification for throttled algorithm has been identified to increase the efficiency of its response time and data center processing execution time and cost. Implementation of this modification in the CloudSim and Cloud Analyst will conducted as a

future work. Cloud analyst has been chosen to simulate the current throttled algorithm in respect with different service broker. The results show that throttled algorithm is the chosen algorithm to modify as it has better results in terms of overall response time and data center processing.

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The Link between Leaders' Wasteful Management Practices and Employees' Engagement (A Case study of Deber Tabor Hospital, Ethiopia)

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Abstract: The purpose of this study is to assess the perception of medics of their Superiors' wasteful managerial practices and their own engagement to the hospital. All medical staff of Debr-Teabor Hospital,South Gondar, Ethiopia was taken as a sample of the study and 73 percent of them participated in the study. Adapted standard instruments were used to measure both variables. Cronbach's Alpha was used to test its reliability. The result of the study shows that about 47 present of respondents confirmed the manifestation of wasteful managerial practices. If these figures are an accurate representation of employee behavior, it means that energy and enthusiasm of 85 percent of medical staff (a tremendous amount) are not available to their Hospital .they are disengaged or are not engage. Wasteful Managerial Practices has significant negative relationship with Employee engagement (r=-.272**) and it explained only12.2 percent of the variation in Employees' Engagement. Regarding to components of Wasteful Managerial Practice only "Confusing message" and "Hypocrisy" are significantly and negatively correlated with "Employee Engagement

Key words: Wasteful Managerial Practices, Engagement, no Engagement, Disengagement

Introduction

In most of organizations, leaders' perform wasteful management practices which do not contribute to organization's objectives (Gupta C.B. 1992). These wasteful practices are mostly unproductive and occur slowly and silently. However, leaders fail to recognize and control them (Ibid). Employee emotional exhaustion is common in many organizations (Maslach, Schaufelli, & Leiter, 2001). Consequently, researchers have been studying correlates and consequences of employees' emotional engagement for decades. It is further understood that employee emotional detachment has a negative impact not only upon individual workers but upon entire organizations, including other organization's employees and the people they serve (Garner, Knight, & Simpson, 2007). However, although there is a growing body of literature that describes how good leadership practices and employees' feel belongingness contribute to the overall success of an organization. There is none or few academic and empirical researches are done about the effect of leader's wasteful managerial practices on employee engagement. Therefore, this descriptive study is designed to assess the extent and relations among leaders'. Wasteful Managerial Practices, level of employee Engagement particularly in DebreTabor Hospital, Ethiopia.

Objective of the Study

The main aim of this study is to examine the extent of leaders' Wasteful Managerial practices and its impact on employees' engagement.

The specific objectives are

1. To assess the extent of Wasteful Managerial practices (in terms *of* organizational politics, confusing message, unproductive meetings, hypocrisy, and withholding information)
2. To Identify the level of employees engagement in the Hospital;
3. To assess the effect of leaders' Wasteful Managerial practices on employees' engagement;

Literature Review

Wasteful Managerial Malpractice

Good collection of small efforts that leader should follow to the best of his ability for his organization are Best Management Practices (BMPs). Each practice will take only a small investment in time and/or moneyto implement it http://www.pprc.org**.** However, in the majority of organizations, management practices, which do not contribute to the achievement of organization's objectives, are common. Such practices are wasteful. But people fail to recognize and control them. Quite often these practices are taken for granted as a normal feature of organizational life (Gupta,1992). According to Denis Donovan, (nd), *Waste* means to expend uselessly; to squander; to neglect. *Practice* – performance or execution, as opposed to theory; custom or habit. Placing these terms together gives *Wasteful practices* which mean to habitually squander or neglect. In terms of organization operations, wasteful practices occur so frequently that we become blind to them. They are "custom or habit" (Ibid). According to Gupta ,(1992),the basic cause of Wasteful Management practice is that individuals tend to pursue their own personal objectives without contributing to organizational goals. In this study, Wasteful Management practice is treated in terms of *organizational politics, confusing message, unproductive meetings, hypocrisy, and withholding information.* These dimensions are the most common counterproductive practices that have crept into an organization and come part of its normal operations. These counterproductive practices or demodulators exist because they are allowed to and they remain because little has been done about them (Ibid). These wasteful practices in work places are briefly presented below.

Organizational politics: Organizational politics is actions by individuals, which are directed toward the goal of furthering their own self-interests without regard for the well-being of others or their organization (Kacmar and Baron, 1999). This behavior was frequently associated with manipulation, defamation, subversiveness, and illegitimate ways of overusing power to attain one's objectives (Ferris & Kacmar, 1992). Organizational politics is a general method for getting things and using power for personal gain in an organization (Barton,et al.,1999).It usually operates according to unwritten rules of success that send subtle, ambiguous and anxiety-producing messages to employees about politically "correct" behaviors such as whom to fear, whom to applause, whom to avoid, whom to blame (Ibid). It involves competition for owner, for influence, and favor and of course promotions. Employees are too scared to go against their own bosses, even when they know that their bosses are wrong and they have feasible and sometimes brilliant ideas to improve productivity. This is why there is no innovation and status quos remains for years, producing inefficient and ineffective (Barton et al., 199**).**

Confusing message: Mangers must hold nothing back of interest to employees except those very few items that are absolutely confidential. But in reality one of the most counterproductive rules in organizations is distributing information selectively and do not make their expectations known .This create a huge. Workers' frustrate with the absence of adequate communication (Barton,et al., (1999).The problem with confusing messages is that after a while, workers realize that when everything is a priority, nothing is a priority; they waste large amount of energy and time working on the wrong task, accomplishing the wrong results, and becoming extremely frustrated in the processes and de-motivated (Ibid).

Unproductive meeting: Meetings are vital to corporate success and no one is against them. But in reality most practices show that managers in organizations attend too many meeting weekly which sometimes become a reason for resentment in the part of the managers as well as employees (Hackman &Johensin,

2004). Meetings provide a controlling factor in achieving the organizational objectives. But they can be major wasteful management practices when the attendees have nothing except being a part in the room to listen the leader on what he wants, and does not want any feedback or opinion. Most meetings are poorly planned and ineptly led anyone with responsible must make meeting short and satisfying (Ibid)

Hypocrisy*:* Hypocrites are people who publicly uphold strict moral norms; expecting and demanding others to follow them, but who privately violate these espoused standards in their own behavior Valdesolo, P., & DeSteno, D. (2007) and Adam, D. et.al nd). Hypocrisy is the discrepancy between what respondents think is normative and how they actually behave. The discrepancy between what respondents believe other people should do and what they actually would do themselves in such a situation (Batson & Thompson, 2001).

Withholding information: some managers feel powerful by not sharing information with their staffs. They do not take the time or care enough to pass on the information the staff need to know, or they deliberately hold back information (Barton, et al, 1999).

Employee engagement

Employee engagement has been defined using many different ways. for example, Employee engagement was identified as emotional and intellectual commitment to the organization (Wellins and Concelman 2005). The Gallup Organization,(2006), defines engaged employees as those who, "work with a passion and feel a profound connection to their company" and "drive innovation and move the organization forward. The talent study of Towers Perrin,(2003), used the following names for types of employees; level of engagement, highly engaged, moderately engaged, and *disengaged*. According to Towers Perrin, moderately engaged employees demonstrated signs of disengagement, providing from neutral to negative points of view about their company, but in some areas they were quite positive.For the purposes of this study, the following definition and characterization of engagement of the Gallup Organization (2006) are used. *Engaged employees*, who do their job with passion and enthusiasm and who are aware of being strongly connected to their organization. They provide emotional and physical input to the company's performance and development, and facilitate onward movement; *Not-engaged employees* who are actually "checked out". They put their time into their work, but there is no energy, passion or enthusiasm from their side; it looks like "sleepwalking" during the workday, and disengaged *employees*, who are unhappy at work and who spend their working time actively acting out this feeling. The negative influence of such workers constantly affects other people and destroys achievements of engaged workmates are used.

Methods of Study

Population and Sample: The population of the study is 74, the total of medical staffs of Debretabor Hospital, South Gondar, Ethiopia. Questionnaires were distributed to all 74 medical staffs, and 54 workable questionnaires were returned.

The study instruments: To measure "*Wasteful Management practices*" an instrument, containing 22 items is developed from literatures of (C.B.Gupta, 1992, C.N.parkinson, 1957, Barton,et al,1999, Hackman &Johnson, 2004). The item was presented to the respondents as a statement to which they were asked to indicate the extent to which they agree/disagree along a five-point Likert response scale *(*1 = strongly disagree, 5 = strongly agree). For the sake of analysis strongly disagree and disagree as well as strongly agree and agree are combined. The reliability of the instrument is Cronbach's Alpha iso.914.

Employee engagement instrument" was adapted from Gallup survey (2006) and Towers Perrin (2003), containing 12 items. The item was presented to the respondents as a statement to which they were asked to indicate the extent to which they agree/disagree along a five-point Likert response scale *(1 = disagree(Disengaged), 2= nether disagree nor Agee(not engaged), 3 = Agree(Engaged)*. Reliability Statistics of Reliability Statistics of job stress is.0.615).

Data Analysis and Discussion

Extent of Wasteful Management practices

As it is revealed in Table 1 26(47 %) confirmed the manifestation of wasteful managerial practices while 12(22%) do not agree. The rest 16 (29%) of the respondents are preferred not to voice their agreement or disagreement. when we see the prevalence of the individual dimensions of wasteful managerial practices; Organizational politics 229(55%), Confusing message 21(42 %), Unproductive meeting 24(43%), Hypocrisy 27(49%) and Withholding information 26(50%) of the respondents perceived the existence of these practices .

Table1: Wasteful Management practice

	Agree		neither Agree nor disagree		Disagree	
	F	%	F	%	F	%
Organizational politics	29	55	13	24	12	21
Confusing message	21	42	15	28	12	19
Unproductive meeting	24	43	17	31	16	30
Hypocrisy	27	49	15	28	13	24
Withholding information	27	50	19	35	9	16
wasteful Management malpractice	26	47	16	29	12	22

Extent of Employees Engagement

Table2 shows that 48 percent of the respondents confirm as they are disengaged; 37 present of the respondents are "Not engaged", while the rest 15 percent of them are ***engaged*.** If these figures are an accurate representation of employee behavior, it means that energy and enthusiasm of 85 percent of medical staff (a tremendous amount) are not available to their Hospital .they are disengaged **or are not** engaged**.** This study is also in congruent with previous studies of Towers, Perrin (2003), in which the amount of engaged employees was only 17% of the respondents, the amount of moderately engaged was 64%, and the amount of disengaged workers was 19%. Findings of The Gallup Organization (2006) also showed that engaged employees 27% of the respondents, not-engaged 59%, and actively disengaged 14%.

Table 2 level of employees' extent engagement

	Disengaged		Not engaged		engaged	
	disagree		Neither Agree nor Disagree		agree	
Tota	Percent		Percent		Percent	

The relationship between Wasteful Managerial Practices and Employees' Engagement

The following Table 4 clearly reveals that *Wasteful Managerial Practices* has significant negative relationship with *Employee engagement* (r=-.372**) .Regarding to components of Wasteful Managerial Practice "Confusing message" and "*Hypocrisy*" both are significantly and negatively correlated with "Employee Engagement". But *Organizational politics* and *Withholdings information* are found not significantly correlated with *Employee Engagement*.

Table 4: Correlations among wasteful managerial malpractices, Employees' stress and intention to leave

	wasteful Management practices	Organizational Politics	Confusing Message	Unproductive Meetings	Hypocrisy	Withholding Information
Employees Engagement	-.372**	.084	-.431**	-.141	-.271*	.018

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Variance of Employees' Engagement Explained By Wasteful Managerial Practices

To see if Wasteful Managerial Practices significantly predicted employees' Engagement, *stepwise regression analysis* is used. As Table5 reveals Wasteful Managerial Practices explained only *12.2 percent* of the variation in employees' Engagement, (R2 = .139), Adjusted R2 = .122, at p .006). The Table also reveals that *Confusing Message* emerged as the major significant predictor of employees' engagement (β =-.431, P < .001), and *Unproductive meeting* is the second significant predictor of employees' engagement (β =-.279, P < .00). The other wasteful managerial practice dimensions were excluded.

Table 5: regression Analysis between Wasteful managerial practices and employees' engagement

Model	R	R Square	Adjusted R Square	Sig.
1	.372	.139	.122	.006

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.064	.117		17.578	.000
	Confusing Message	-.150	.044	-.431	-3.445	.001
2	(Constant)	2.350	.165		14.137	.000
	Confusing Message	-.177	.044	-.507	-4.046	.000
	Unproductive Meeting	-.072	.032	-.279	-2.226	.030

Conclusion

This the study has revealed that wasteful managerial practices is common in the hospital. Almost all of the medical staff are more or less disengaged or not engaged. The result of the study also shows that Confusing Message emerged as the major significant predictor of Employees' Engagement and Unproductive Meeting is the second significant predictor of employees' engagement.

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Cloud Technology and Performance Improvement with Intserv Over Diffserv for Cloud Computing

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Abstract— Cloud computing, which is the today's and tomorrow's brightest venture, rising on the basis of the idea of the use of the online information, software and hardware. Cloud computing providing users three kinds of different service models; infrastructure services, platform services and software services; which in the run with all together as requested and meets the needs of users. With the transition to cloud computing we are able to have a chance to take advantage of many benefits of cloud computing. Increased security, monitored and maintained by the provider of a technical infrastructure; cost-saving, efficient use of resources, high flexibility, accessibility and device independent, you are able to benefit from the these opportunities as the possibility to give the desired performance every time. This paper describes the cloud computing technology with its features and continues with using advantages in business life. Traffic of a medium size company is examined in two different scenarios; LAN network and cloud computing network; and compared according to ftp, email, HTTP traffics using OPNET. In second part of the study, DiffServ and IntServ quality of service terms are studied over cloud computing model. A new approach is studied in order to improve the performance of cloud computing network in a medium sized company by combining IntServ and DiffServ in same network model. This model serves an improvement in business applications using cloud computing technology.

Keywords—Cloud Computing;Cloud Computing Service Models; OPNET; Cloud Computing QoS parameters; DiffServ; IntServ

I. Introduction

Especially lately information technology and social media internet sites often include articles about the benefits of cloud computing and their products. What is this technology, using without even realizing in our business and daily lives?

If we simply define the Cloud Computing, Cloud Computing: It is the only accessible architecture to the data, applications or services without any extra software, hardware or service infrastructure, which regardless of location [1].

According to the U.S. National Institute of Standards and Technology (NIST); "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [2].

Cloud computing brings us a new platform to realize data sharing which is done previosly on web services such as social networking sites, file sharing portals by moving them to another dimension to be accessed anytime, anywhere. In this way, the world has shrunk even further, personal or corporate information has become much easier to achieve.

Cloud computing is not just about sharing the data at hand, but also the common use of infrastructure services or hardware sharing brought us the biggest advantage of cloud technology. In this way, by

providing remote access to an infrastructure service, it is possible to have more efficient infrastructure resources available under our hands. Only limited activities are possible to do with a computer which is a low-cost and its hardware features are weak. But by connecting this computer to another strong computer, we have increased capabilities of the computer and we can do with these new features. In this way, users find the software they need already installed on the internet that are ready for use. Also by this way, they save thousands of dollars by depending on the amount they use and pay the appropriate amounts.

When it comes to services provided by in this new structure, it is estimated that three different service model: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). These three basic service models can be serving separately or both can be formed by bringing together depending on the structure.

Cloud computing is one of the most important technologies of future and adaption of this technology to our lives with maximum benefits is the main goal. Almost every major corporation in the IT industry now has some interest the area of cloud computing. For this reason, the aim of this study is to show the effective usage of cloud computing technology in business and daily usage rather than standard network infrastructure. The lack of research on active usage of cloud computing on business life is motivated us to work on this subject. The main idea behind our study is to show efficiency gained with using cloud computing in business area. In addition, more researches on this cloud computing will cause improvement in performance, security, scalability, development of applications compatible with cloud and usage area of cloud computing.

There were several whitepapers and general introductions to cloud computing, which provide an overview of the field but yet there is not an enough research on business or daily usage of cloud computing. We are well aware that a survey in such a fast moving field will soon be out of date, but such a survey like this would provide a good base for the Cloud Computing to set new work in context with, and that it can act as a resource for researchers new in this area. Another thing that is hoped to be accomplished with this paper is not only a clear picture of what the cloud does extremely well and a brief overview of them, but also a short survey on usage in real life, its performance and improvement of performance.

Today, emergence of the real-time applications demands more resources. The main challenge is to maximize the resource utilization by QoS mechanisms. The contribution of this work is to analyze QoS performance metrics such as end-to-end delay, delay variation, throughput, packet loss and queuing delay for real-time applications such as video and voice conferencing, e-mail traffic, ftp download in cloud computing networks. One of the main difficulties in cloud computing is the routing problem due to frequently change in topology causing more time in route setup and increasing the delay. The study explores how well the declared cloud protocols reply to various QoS performance metrics against different network scenarios.

In this paper we discuss the main parts of cloud computing, deployments and advantages for building clouds. Research in this field appeared to be split into two parts. One investigates the performance comparison between normal network and cloud network. Second one is to try to improve efficiency of cloud network by using performance metrics.

This paper is structured as follows: the service models of cloud computing are shown in the Section 2 outlines the work done in this area; Section 3,4 discusses deployment of cloud computing; Section 5 outlines the advantages that brings with cloud computing; Section 6 expresses the quality of service in cloud computing; Section 7 defines the problem, offers the solution and simulates the models; finally Section 8 concludes the review by summing up the research entire paper.

II. Related Work

To accomplish the objectives of our work, an evaluation of work done by other authors related to our objectives was studied. Several researches have concentrated on the Cloud computing network performance and also Quality of Service over the last decade. But there are few researches are realized in QoS effect on cloud computing area. Following papers in particular were considered.

The authors in [20] state the current state of the affair with respect to quality of services in the cloud computing environment. The paper also describes the key challenging areas that how resources are allocated to clients and what the roles of cloud providers are. Finally, it is observed that how the performance can be increased by improving various components in a scalable way with low cost, better performance and QoS.

The authors in [21], highlights DiffServ based QoS analysis in a wired IP network with more realistic enterprise modeling and presents simulation results of a few statistics. Four different applications are used in this work, i.e. FTP, Database, Voice over IP (VoIP) and Video Conferencing (VC). Two major queuing disciplines are examined i.e. 'Priority Queuing' and 'Weighted Fair Queuing' for packet identification under Differentiated Services Code Point (DSCP).

In [18], the authors were focussed on the enhancements of mapping between IntServ and DiffServ as a solution to provide a more scalable and efficient end-to-end QoS architecture in a radio access network. They observed that IntServ over DiffServ interoperation model had shown noticeable improvements in respect to the two mechanisms when used alone and provided satisfactory QoS guarantees even in an extreme congestion situation.

In [17], they evaluated the QoS that can be obtained by real applications when Integrated Services (IntServ) sub networks are connected together using Differentiated Services (DiffServ) network. Traffic from various IntServ classes with different priorities is mapped into appropriate DiffServ services such that QoS can be guaranteed to individual applications.

III. Cloud Computing Service Models

A. Infrastructure as a Service –IaaS

Inside cloud computing infrastructure, the bottom layer of the stack is used to refer these services. In this model, users configure the CPU, storage, network memory, and other essential information resources their selves which are needed and users able to install the operating system and applications which they desires. Although management and control of the infrastructure is not on customer, some operations on operating system level and some network components (Firewall, etc.) can managed by customer [4]. The users do not know where these computers are, how they are configured or how they are maintained. They only demand the services inside determined quality standards. Amazon's EC2 service can be shown as an example to this service model.

B. Platform as a Service –PaaS

Infrastructure is used to develop the application. Platform is offered as a service in this model. The users are able to install their self-developed applications or provided applications on cloud service. Except the user's own established application, there is no any control and management on the components on platform infrastructure by the user [4]. Google App. Engine service can be shown as an example to this service model.

C. Software as a Service –SaaS

In this model, the service provider's applications running on a cloud infrastructure, is made available to users. Applications can be accessed through any device with an internet connection by web browser, without any limitation as to time and location. Users do not have any control or management capabilities on components such as network, server, storage devices or operating systems. However, the application settings can be configured and specified by the user [4]. Email accounts can be shown as an example to this service model.

IV. Deployment of Cloud Models

There are different types of clouds available, each with benefits and drawbacks.

A. Public Cloud

The cloud service which is provided with servers on the Internet. Global cloud applications, storage, and other resources will be offered by a service provider to public users. These services are accessible for free or by the pay-per-use model, users will be charged. As an example, Microsoft and Google operate their own infrastructure and only provide access via the Internet [5].

B. Private Cloud

The cloud service is generated within the company servers. Private cloud is just a single run organization as a cloud infrastructure and managed by the built-in or third-party and hosted internally or externally [6]. The private cloud may at any other place as may be in institution's own building.

C. Community Cloud

A community cloud is a collaborative effort in which infrastructure is shared between several organizations from a specific community with common concerns (security, compliance etc.), whether managed internally or by a third-party and hosted internally or externally [1]. Community members have access to applications and data. As an example, by using a community cloud computing, State agencies can meet their needs on a joint cloud [6].

D. Hybrid Cloud

According to a company's data security and such reasons, hybrid cloud structure is the result of using both private and public cloud. Hybrid cloud is a combination of two or more cloud, these are different, separate clouds but they are interconnected to each other so that they offer multiple docking model possibilities [6]. On the private part of the hybrid cloud, critical applications can be found. Public part of the hybrid cloud owes the applications where security concerns are less [3]. Hybrid cloud architecture needs both in-house resources, as well as the remote server-based cloud infrastructure. Inside Hybrid clouds, in-house applications shall be flexible, secure [7]. Businesses use their private cloud in their normal company activities; in case of a sudden increase of capacity, they meet their high peak load requirements from public cloud [3].

V. Advantages of Cloud Computing

Cloud computing provides so many features to us. In addition to the advantages for individual users, it brings many advantages for corporate implementations. With the transition to cloud computing, institutions can provide a more secure infrastructure that can be monitored by specialists, cost-efficient systems, efficient use of sources, high degree of flexibility and high performance any time needed [2].

Moreover, it also brings features like remote teleconference and meeting services for companies with multiple offices, ability to manage contact lists, projects, and personal documents and reach up-to-date documents regardless of where you are [8].

A. Scalability

If the need for purchasing computers differs frequently or there is a progressive upgrade in computers, cloud technology will help you to manage about this situation. Instead of buying new devices, installing and configuring them, you can buy a third party CPU cycles or an external storage device [9]. Since cost depends upon the consumption, purchase of new equipment is more costly. If you think you fulfill your needs or you have stuff more than you need, then you can easily request your service provider to revise your needs and lower down unnecessary things [9]. Hardware development in this technology also prevents you from extra update costs.

B. Simplicity

Costs for buying new equipments and the IT costs for configuration and management of these equipments results as lack of technical knowledge in companies [9]. In the general distribution model of cloud computing, capital costs has become operational costs. Cloud eliminates all IT infrastructure costs which cannot be afforded by especially small and medium-sized companies.

C. Security

Security is enhanced by data centralization. With the help of improved security focused resources, active and passive cryptography, strong ID authentication, cryptography and secure algorithms, effective security services are provided [10]. Security is much more superior to traditional systems because service providers are able to allocate resources for security problems instead of customers [11]. In addition if multiple redundant areas are to be used, security will be improved. Our data in different data center locations of the world will be accessible in case of any emergency status by their backup [12].

D. Performance

Service proving companies are trying to meet the needs of business life with the help of latest technological hardware and higher bandwidths. In order to prevent the system from connection failure or overload, extra routes and load balancing techniques are being used for nonstop service [13]. When needed, performance increase in user activities is also provided. Effective use of resources, distribution and instant performance monitoring are useful for multiple user systems and especially for companies [1].

E. Flexibility

It is not essential to connect to any platform so as to access cloud services. Location of service providers are not considered in cloud technology. Service can be provided at any time and in anywhere as long as there is an internet connection. It is able to be used in any device or operating system like Windows, Mac, iPhone, iPad, Blackberry, Windows Mobile or Android [12].

VI. Quality of Service in Cloud Computing

QoS for clouds is already a necessary and hot topic in research community. Quality of service is the ability to provide different priority to different applications, users, or data flows, or to guarantee a certain level of performance. QoS criteria are numerous and are highly dependent of the application, such as throughput, delay, jitter, loss rate [13]. In our research we implement two main services; IntServ and DiffServ into our network model.

In our work, we propose a new model leads to a proposal to combine the DiffServ and IntServ, using the IntServ control mechanism at the edge of the network and DiffServ within the core network.

A. Differentiated Service (DiffServ)

DiffServ is a computer networking architecture that specifies a simple, scalable and coarse-grained mechanism for classifying and managing network traffic and providing quality of service (QoS) on modern IP networks [14]. With Differentiated Services, the network tries to deliver a particular kind of service based on the QoS specified by each packet. Differentiated Services is used for several mission-critical applications and for providing end-to-end QoS. By using DiffServ, traffic is classified based on priority. Then the traffic is forwarded using one of three IETF-defined per-hop behavior (PHB) mechanisms. This approach allows traffic with similar service characteristics to be passed with similar traffic guarantees across multiple networks [15]. The DiffServ architecture is composed of a small set of per-hop forwarding behaviors, packet classification functions, and traffic conditioning functions this architecture provides Expedited Forwarding (EF) service and Assured Forwarding (AF) service in addition to best-effort (BE) service as described below.

1) Expedited Forwarding (EF)

The Expedited Forwarding (EF) model is used to provide resources to latency (delay) sensitive real-time, interactive traffic.The EF service provides a low loss, low latency, low jitter, assured bandwidth, end-to-end service [16].

2) Assured Forwarding (AF)

The assured forwarding (AF) model is used to provide priority values to different data applications. This service provides reliable services for customers even during network congestion. Classification and policing are first done at the edge routers of the DiffServ network. In-profile packets should be forwarded with high probability.However, out-of-profile packets are delivered with lower priority than the in-profile packets [17].

3) Best-Effort (BE)

This is the default service of DiffServ and it is also name default Per-Hob-Behaviour (PBH). It does not guarantee any bandwidth to customers but can only get the available bandwidth. Packets are queued when buffers are available, and dropped when resources are over committed [17].

B. Integrated Service (IntServ)

The idea of IntServ is that every router in the system implements IntServ, and every application that requires some kind of guarantees has to make an individual reservation. IntServ provides services on a per flow basis where a flow is a packet stream with common source address, destination address and port number. Because of routing delays and congestion losses, real-time applications do not work very well on the current best-effort Internet. Video conferencing, video broadcasting, and audio conferencing software need guaranteed bandwidth to provide video and audio of acceptable quality. To support these service requirements it has been necessary to modify the Internet infrastructure to provide control over end-to-end packet delay and bandwidth administration [18]. Resource Reservation Protocol (RSVP), Guaranteed Service and Controlled-Load Service are the widely used protocols inside integrated services. We will examine RSVP in our proposed model.

1) RSVP

The Resource Reservation Protocol (RSVP) is a Transport Layer protocol designed to reserve resources across a network for an integrated services Internet. RSVP can be used by either hosts or routers to request

or deliver specific levels of quality of service (QoS) for application data streams or flows. RSVP defines how applications place reservations and how they can relinquish the reserved resources once the need for them has ended. RSVP requests resources for simplex flows: a traffic stream in only one direction from sender to one or more receivers [19].

VII. Problem Definition and Solution

Based on the above described advantages of cloud technology,a remote multiple office company will be created and simulated on both LAN network and cloud network in order to compare the performance of the network in this section. In the second part, by adjusting the QoS parameters, performance improvement will be simulated.

General impression has been reached with the performance measurment criterias consedering the different usage scenarios for groups of 8-hour daily office work in accordance with the traffic density of the simulation results.

A. Scenario Design

1) Standard Network Infrastructure (LAN Model)

Scenario creation is implemented in OPNET Modeler 14.5. Figure 1 shows us the normal network infrastructure for multiple office company. This company includes a head office (Istanbul) and 2 remote offices (Ankara, Budapest). In this topology, PPP_DS3 links are used between offices and 10BaseT LAN connections are used inside offices.

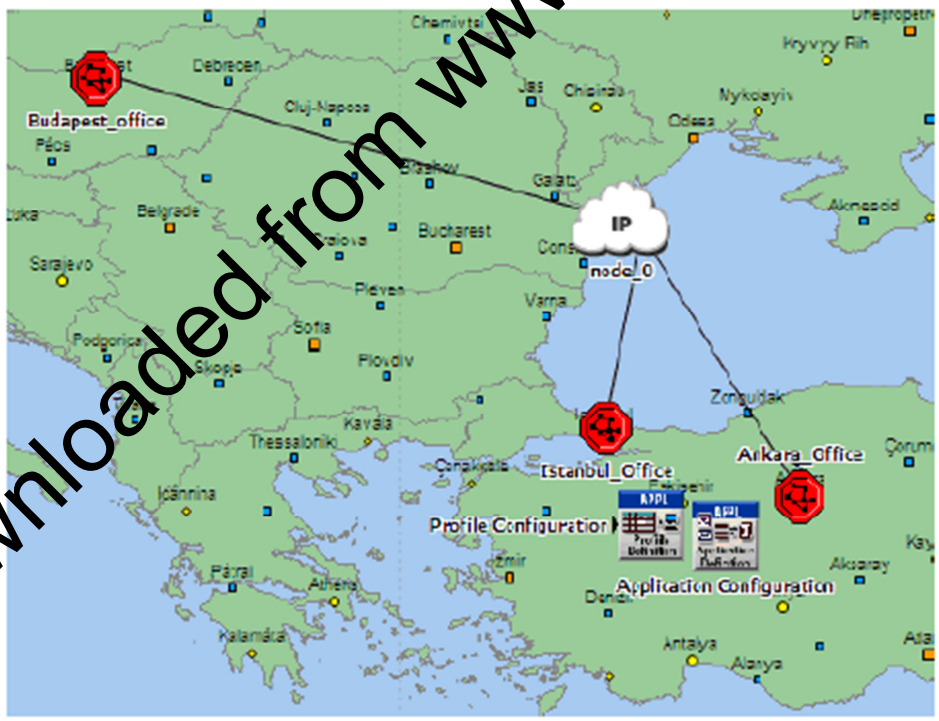

Figure 1 – Standard Network Infrastructure (LAN Model)

Figure 2 expresses us the design of head office. Head office consists of 3 servers (Ftp, Email, and Web) and has 3 floors with offices. Remote offices include manager and researcher groups same as head office and 3 floors as head office.

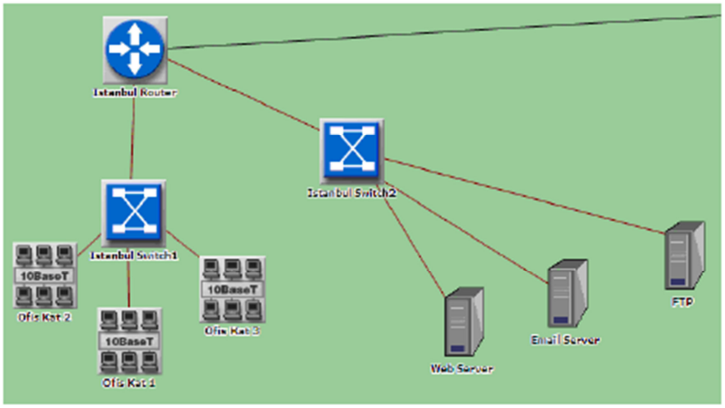

Figure 2 – Head Office

2) Cloud Network Infrastructure

Figure 3 shows us the network infrastructure of same company designed with cloud computing technology. In this topology, PPP_DS3 links are used between offices and 10BaseT LAN connections are used inside offices.

Figure 3 – Cloud Model

As opposed to other scenario, servers are located inside remote cloud service provider's server farms instead of inside company in this cloud model scenario. Figure 4 shows the design of the headquarters for us in this scenario. Remote offices design stay same as previous model.

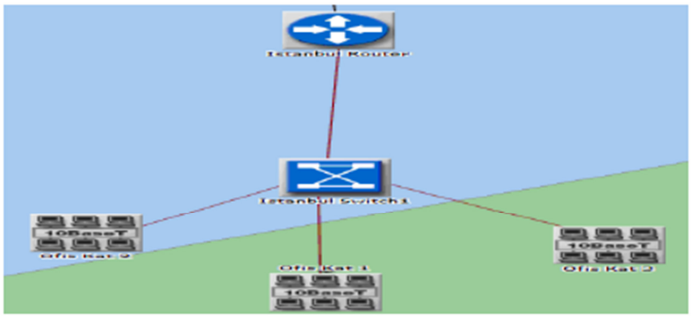

Figure 4 – Head Office

3) Proposed IntServ over DiffServ on Cloud Network

Figure 5 shows us the IntServ over DiffServ model implemented on cloud network subnet. As it seen in the figure 5, IP cloud subnet is designed again. There is a DiffServ zone contains DiffServ routers and outside of that zone the conversion to IntServ is done on border routers. Black lines pass through the routers represent the border routers. The cloud server router, Istanbul router, Ankara Router and Budapest Router is configured with IntServ features.

Router Name	QoS Profile	Queuing Profile
Istanbul Rtr	RSVP / IntServ	PQ
Budapest Rtr	RSVP / IntServ	FIFO
Ankara Rtr	RSVP / IntServ	PQ
Cloud Server Rtr	RSVP / IntServ	WFQ
BorderRtr1/Cloud	EF / DiffServ	WFQ
Border Rtr2/Ist	AF / DiffServ	PQ
Border Rtr3/Bdpt	BestEffort/DiffServ	FIFO
Border Rtr4/Ank	AF / DiffServ	PQ

Table 1 – Router Profiles

Every IntServ router connects the Ip Cloud Network (DiffServ Zone) via Border Routers. Table 1 shows us the configuration profile of the routers.

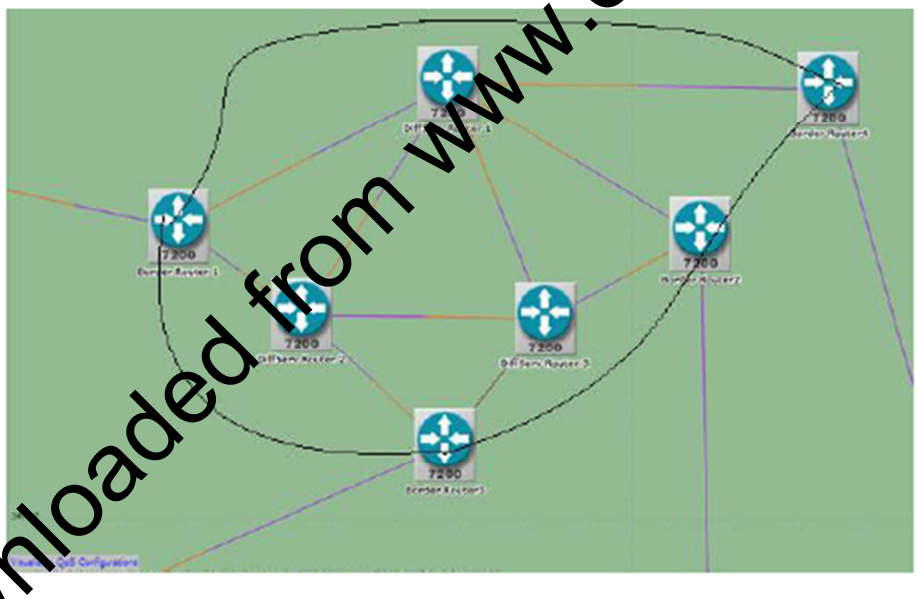

Figure 5 – IP Cloud Subnet with DiffServ Zone

B. Simulation Parameters

Before starting the simulation, we focus on simulation parameters. The users inside the offices are divided into two groups. Managers and Researchers. Inside one office, there are 10 manager profiles and 50 researcher profiles.

Application	Manager	Researcher
Email	Heavy	Low
VOIP	GSM	None

Web Browsing	Low	Heavy
File Transfer	Low	Heavy
Video Conf.	Heavy	None

Table 2 – User Profiles

C. Simulation

1) Comparision of Standard Model and Cloud Model

These two scenarios were simulated based on real working hours (8 hours- 1 day) in order to observe the daily traffic and compare these models using OPNET modeler. E-mail traffic, web page response times, ftp download response time, Ethernet delay were used in order to carry out performance analysis.

In figure 6, we are able to see the ftp download response times of both models. Compared to the responses time, cloud model is much better than LAN model. Time dependent increase in download traffic causes slowdown in LAN model. On the other hand, cloud model show stable and better performance during the simulation period through its strong infrastructure.

Another comparison criteria in our simulation is HTTP page response time. Figure 7 tells us the page response time is faster than LAN model.

Figure 8 shows us the email download response time of two models. It is easily seen that cloud model has much better performance than a LAN model. Increasing email traffic causes slowdown in LAN model by the time. Cloud model performance does not effect from any increasing traffic in this period.

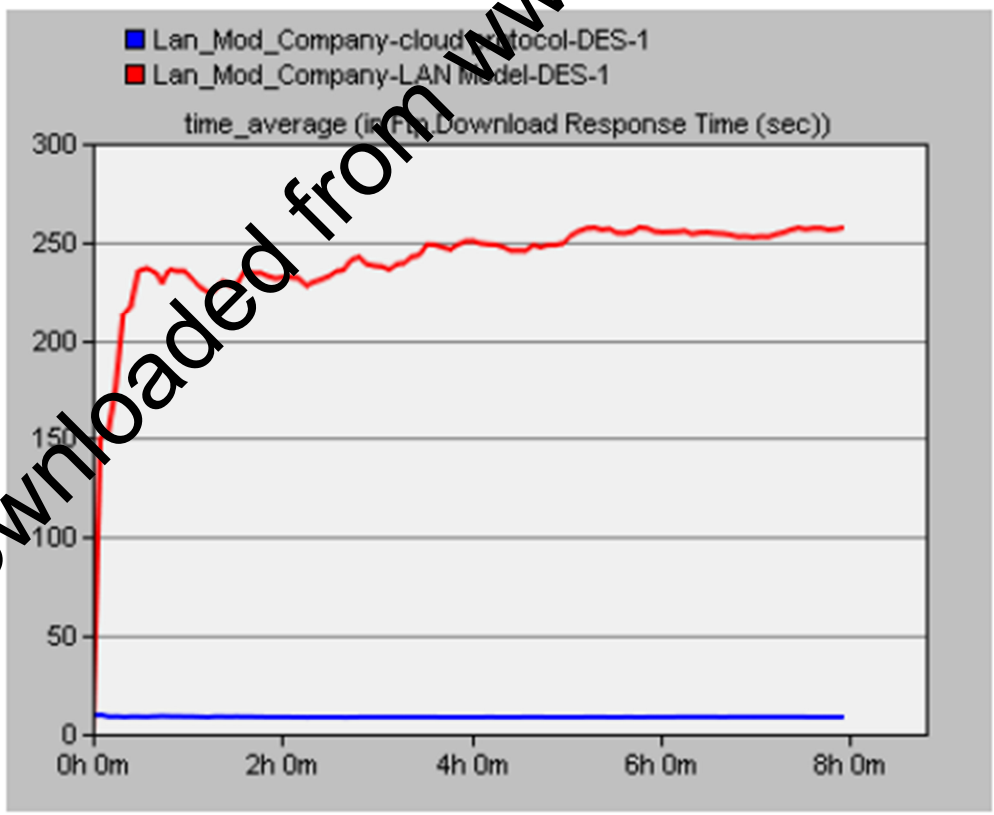

Figure 6 – FTP Download Response Time

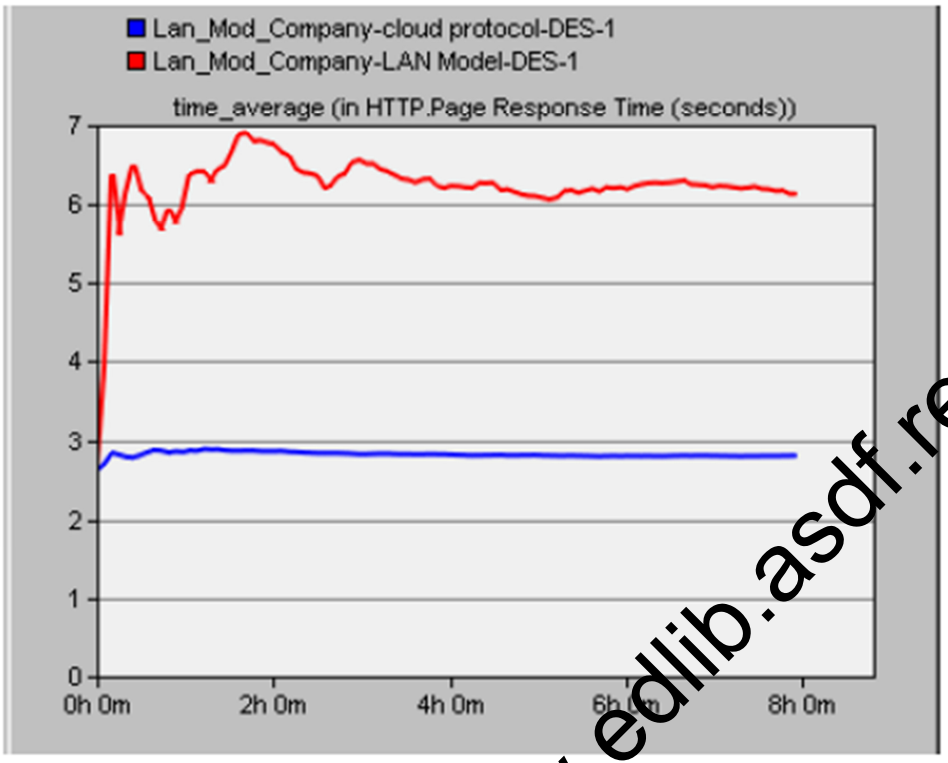

Figure 7 – HTTP Page Response Time

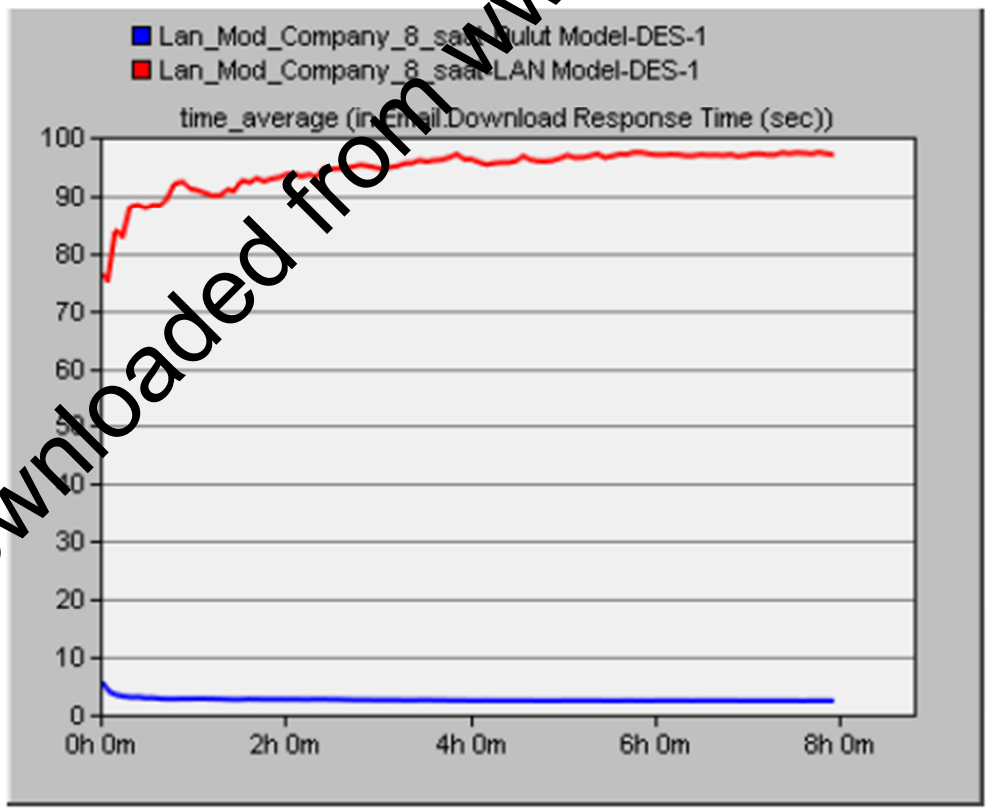

Figure 8 – E-mail Download Response Time

2) Performance Improvement of Cloud Model Using QoS

As mentioned in the quality of service of cloud computing section in order to improve the performance of cloud model,IP Cloud network is designed again with a DiffServ zone and existing routers are configured according to IntServ profile. In our simulation we used Priority Queuing (PQ), Weighted Fair Queuing (WFQ), and First-In-First-Out (FIFO) to examine the effect of different queuing disciplines on packet delivery. Each router has some queuing discipline that governs how packets are buffered while waiting to be transmitted as expressed in table 2.

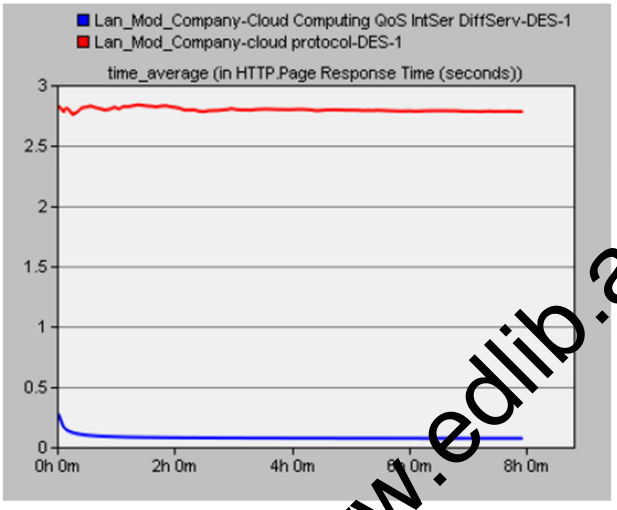

Figure 10 – HTTP Page Response Time with Qos Profiles

It is observed that with newly designed cloud topology in accordance with QoS profiles, we gathered improved performance from the cloud model. As it is easily seen from figure 10, HTTP page response time highly decreases with the new configuration as well as email download response time.

QoS profiles have a big positive impact on email download response time in figure 11. Finally, Ftp download response time become much smaller with this new QoS profiles which is observed from figure 12.

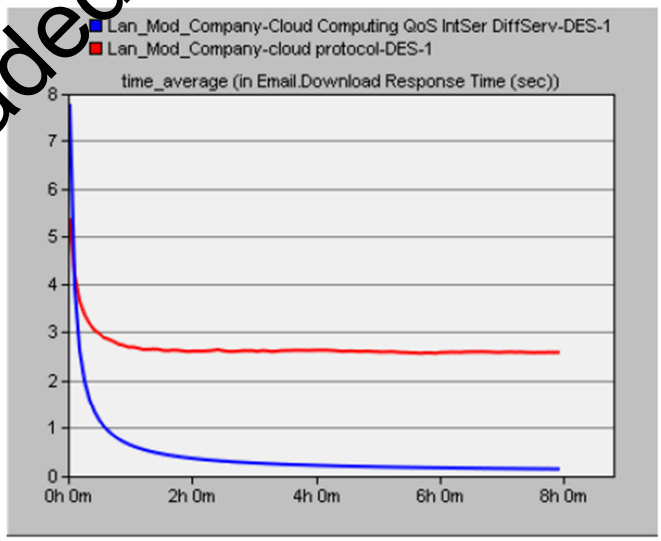

Figure 11 – Email Download Response Time with Qos Profiles

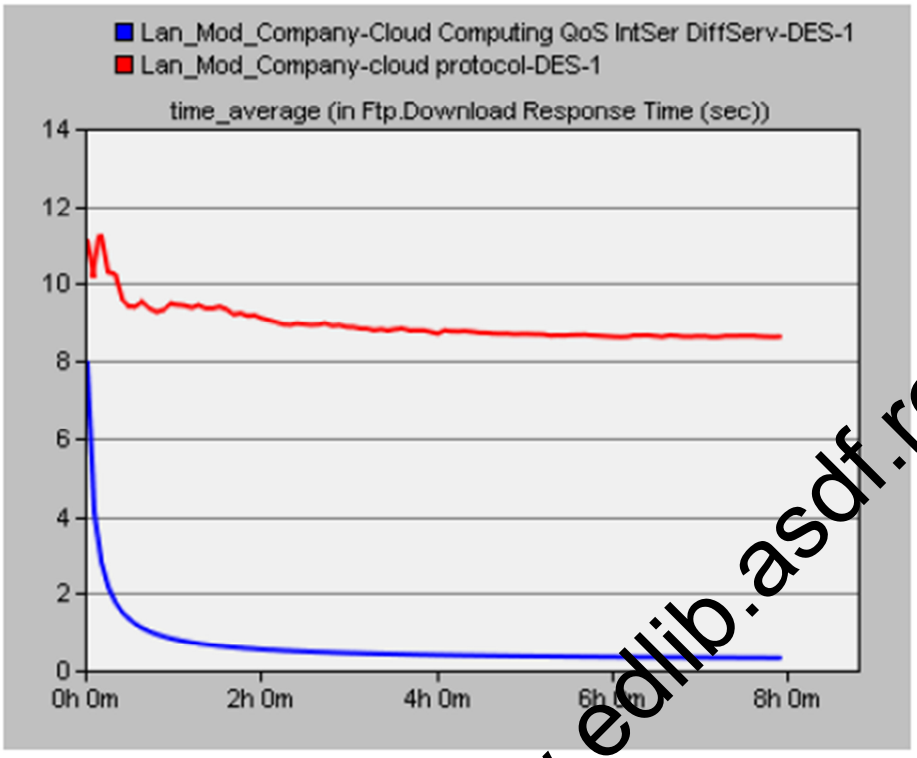

Figure 12 – FTP Download Response Time with Qos Profiles

The applied queuing disciplines are able to be used to control which packets get transmitted and which packets get dropped . The queuing discipline also affects the latency experienced by a packet, by determining how long a packet waits to be transmitted. We are able to see the reflection of these feautres from the graphs above. Positive improvement is achieved with the newly applied design into cloud topology.

VIII. Conclusion

Cloud computing allows all kinds of user profiles to use same software, same database, same infrastructure at any time from any local point that has internet connection. At the same time, complaints or satisfactions of clients are immediately detected and be answered as soon as possible. Thus, the quality and flexibility of the services to be provided and the cost advantages can be obtained. With this application, it is possible to avoid waste of unnecessary performance, electricity use and labor. Savings can be reached on global scale.

In first part of the study, two network infrastructures are designed (Cloud and LAN model) and their performances are compared in HTTP, E-mail and Ftp traffic. As a result, cloud model indicated better performance in all three traffic type under specified conditions. In second part, we evaluated the QoS that can be obtained when Integrated Services (IntServ) sub networks are connected together using Differentiated Services (DiffServ) network. Results of different queuing for QoS management of IntServ/DiffServ networks, is reported. With this work, assigning QoS profiles to the cloud model, performance improvement is gathered in cloud model in all three traffic conditions.

As a future work, it is possible to study on data routing algorithms and load balancing algorithms in order to improve performance of the cloud network and the studies can be implemented on big scale networks. Likewise, using other QoS profiles, different combinations and methods better performances can be reachable. The advantages of the using cloud computing technology widely in business and daily life shall encourage researchers to spend time on cloud technology.

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Attitude towards ICT Integration and Level of Computer Competence among English Teachers of Iligan City: Basis for ICT Enhancement Program

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Abstract—This study aimed to analyze the attitude of English teachers towards ICT integration as well as their level of computer competence. The results of this study have been made as the basis of making ICT enhancement Program for the English Language teachers. This study is also very important to all school administrators, educational planners, teachers , parents, learners and the people in the community. Through this study, the performance of the English teachers in elementary, secondary and tertiary, in the integration of ICT in the English Language Teaching, will be improved. Thus, quality education can be achieved considering that the English teachers will become competent in the integration of ICT in the English Language Teaching pedagogy. As a result, the performance of elementary pupils, secondary students as well as the college students in learning English as a Second Language, will be also improved. Hence, the results of the study have been used as basis in making ICT Enhancement Program for English teachers.

Keywords-Attitude, Computer Competence, English Teachers

Introduction

Learning the English Language is very important in the age of information technology. Users of ICT need communication skills in English in the application of computer technology. In fact, listening, speaking, reading and writing skills are the most important in learning the English Language. These skills should be learned thoroughly by the learners because these are very relevant in the application of computer technology. The terms in computers are in English terms which can be universally understood by all people in the world. Hence, it is really in hands of the English teachers to develop the English Language Competence of the students through the aid of ICT integration in the teaching pedagogy. So, English teachers should integrate ICT in teaching English as a Second Language. It is therefore a must for them to upgrade themselves on the computer applications for the global competitiveness. These things could be attained if the school administrators, and curriculum planners give importance to the integration of ICT in the school curriculum. Thus, upgrading the computer competence of the English teachers, as well as upgrading the ICT facilities and providing enough classroom computers are the great avenue of realizing quality education.

This study is very important to all school administrators, educational planners, teachers , parents, learners and the people in the community. Through this study, the performance of the English teachers in Iligan City Division, in the integration of ICT in the English Language Teaching, will be improved. Thus, quality education can be achieved considering that the English teachers will become competent in the integration of ICT in the English Language Teaching. As a result, the performance of elementary pupils as well as the secondary students in learning English as a Second Language, will be also improved. Thus, the learners of today who will become competent in communication using English Language, the medium of instruction, are the great avenue of solving the problems of the country, Philippines through communicative competence, linguistic ability, which will maintain its competitive edge in all aspects of economic

environment be it administration, education, trade or finance in the Philippines. Thus, integration of ICT tools in the teaching and learning of English, has found to bring other benefits too. Besides motivating students and raising self-esteem and confidence, ICT can enhance students interaction, verbalization and involvement in collaborative learning.

Literature Review

The educational theory of progressivism often associated with John Dewey's pragmatism or experimentalism, stressed the view that all learning should center on the child's interests and needs. This theory is very relevant to this study because this principle is motivating the students to expose themselves to learning activities wherein they interact with their environment. Hence, students' projects will be based on their common shared experiences thereby rejecting barriers of class, race, or creed. The teacher serves as facilitator while the students will work on their projects through cooperative learning particularly on doing their research through the use of ICT.

The theory of reconstructionism is very useful in this study because the educational philosophies are culturally based and grow out of a specific cultural pattern conditioned by living at a given time in a particular place. They believe that culture is dynamic, that man can re-shape his culture so that it promotes optimum possibilities for development. This theory helps a lot with the teachers in teaching English as a second language because through this theory they will be guided on improving their teaching strategies through the integration of ICT in teaching English as second language. According to San Mateo (1997), society has to reconstruct its values, and education has a major role to play in bridging the gap between the values of culture and technology. It is the school's task to encourage the critical examination of the cultural heritage and find the elements that are to be discarded and those that have to be modified. Hence, English teachers must improve their teaching-learning process by means of integrating ICT in the English Language Teaching.

The theory of existentialism is very much significant to this study because this theory is a way of viewing and thinking about life in the world so that priority is given to individualism and subjectivity. Education is the process of developing awareness about one's freedom of choice and meaning and responsibility for one's choice. Education should be concerned with affective experiences, with these elements of experience which are subjective and personal. Thus, in connection to this present study, ICT integration in English Language Teaching is very much fitted as a teaching strategy in the teaching-learning process because students will be experiencing in using ICT in their daily lives.

Furthermore, this study is also supported from the idea of Hennessy Sara (2005) stated that "evident commitment to incorporating ICT was tempered by a cautious, critical approach, and by the influence of external constraints. Teacher accounts emphasized both the use of ICT to enhance and extend existing classroom practice, and change in terms of emerging forms of activity which complemented or modified practice. A gradual process of pedagogical evolution was apparent; teachers were developing and trialling new strategies specifically for mediating ICT-supported learning. In particular, these overcame the potentially destructive role of some forms of ICT by focusing pupils' attention onto underlying learning objectives."

Moreover, according to Mark Warschauer(2001),"language has always played an important role in the formation and expression of identity and plays an important role in cyberspace with the use of the Internet as a tool for promoting language revitalization. If language is becoming an increasingly important identity marker in the age of information, what then is the role of language in cyberspace? On the one hand, the Internet highlights the role of language while simultaneously masking the role of other identity markers such as race, gender, or class. As the saying goes, nobody on the Internet knows that you're not a dog, nor can they easily determine if you're Black or White, male or female, gay or straight, or rich or poor. But they can immediately notice what language and dialect you are using - and that language is usually English."

In addition, "both language and technology are tools for individual and societal development. The developmental approach to integrating technology in language education, based on consideration of both product and process; a teacher education program on computers in English language teaching and a basic English methodology course taught via videoconferencing. It indicates that a developmental approach is critical to successful integration and use of technology in language education programs".

Further, in a study conducted by Demetriadis et al.(2003) published in Computers and Education Volume 41 Issue, indicates " that although teachers express considerable interest in learning how to use technology they need consistent support and extensive training in order to consider themselves able for integrating it into their instructional practice. Teachers are interested in using ICT (1) to attain a better professional profile, and (2) to take advantage of any possible learning benefits offered by ICT but always in the context of the school culture. They are willing to explore open and communicative modes of ICT-based teaching whenever school objectives permit, otherwise they appear to cautiously adapt the use of ICT to the traditional teacher-centered mode of teaching (strongly connected to the established student examination system). Teachers' attitude to adapt ICT mode of use is supported by research evidence that emphasize the situational character of knowledge and expertise. Introducing ICT into schools can be understood as initiating a "negotiation" process between cultures and the way that technological tools are used reflects school "single context" epistemological stance."

Furthermore, according to Terry Anthony Haydn and Roy Barton (2008),stated that "some important determinants of progression in the ability to deploy ICT confidently and effectively in subject teaching were common to both subject groups, but that there were differing views

Research Methodology

Participants of the Study

The participants of the study were the English Language Teachers of elementary and secondary levels of Iligan City Division as well as the English teachers of MSU-IIT. Some of the respondents are not major in English but they are handling English subject. There were 44 respondents from Iligan City National High School, Maria Cristina National High School, Dalipuga National High School, Iligan City Central School, City East Central School and MSU-IIT.

Research Design

The study used quantitative and qualitative survey method which aimed to determine and analyze the attitude and level of computer competence among English teachers of Iligan City Division as well as the English teachers of MSU-IIT. The study assessed the level of ICT Integration in English Language Teaching among English teachers in terms of the level of computer generalized self-efficacy, level of teaching and learning in terms of changes, incentives, barriers, and methods, adequacy infrastructure facilities in school to support ICT integrated activities, obstacles faced by the English teachers in carrying out ICT integrated teaching and learning activities and school administration support in the endeavour to utilize and integrate ICT tools in teaching and learning activities.

Instruments Used

Both quantitative (selected-response survey items) and qualitative methodologies (open-ended survey response items adapted from Silor (2001) was utilized to determine the generalized self-efficacy(attitude),agreement as to how the integration and use of technology for teaching and learning changes the environment, extent as to how computer used as important incentives and motivators, problems encountered by the English teachers in the integration of ICT for teaching and learning in the

campus environment and the level of computer competence adapted from Armel Espiritu (Magazine Quality Teacher Volume 10 Issue 3.)

Results and Discussions

Table 1: Length of service of respondents

	Frequency	Percent
1year - 3years	17	38.63
4years - 6years	9	20.45
7years - 9years	6	13.63
10 years above	12	27.27
Total	44	100.00

Table 1 presents the length of service of the respondents. As shown in the table there are 17 or 38.63% have 1 to 3 years' experience, 9 or 20.45% have 4 to 6 years' experience, 6 or 13.63% have 7 to 9 years' experience and 12 or 27.27% have10 years and above experienced in teaching. The results show that majority of the respondents have 1 year to 3 years' experience in teaching.

Table 2: Generalized Self-Efficacy

Generalized Self - Efficacy	Mean	Description
I can always manage to solve difficult problems if I try hard enough	3.05	Often True
if someone opposes me, I can find means and ways to get what I want	2.42	Often True
it is easy for me to stick to my aims and accomplish my goals	2.79	Often True
I am confident that I could deal efficiently with unexpected events	2.78	Often True
thanks for my resourcefulness, I know how to handle unforeseen situations	2.75	Often True
I can solve most problems if I invest the necessary efforts	3.16	Often True
I can remain calm when facing difficulties because I can rely on my coping abilities	2.80	Often True
when I am confronted with problems, I can usually find several solutions	3.02	Often True
if I am not in trouble, I can usually find several solutions	3.05	Often True
no matter what comes my way, I'm usually able to handle it	2.91	Often True

Grand Mean: 2.873

Scaling

3.25 – 4.00 Level 4 Almost Always True
2.5 – 3.24 Level 3 Often True
1.75 – 2.4 Level 2 Sometimes True
1.00 – 1.74 Level 1 Not at all true

Table 2 presents the attitude generalized self-efficacy of the English teachers in Iligan City. As can be gleaned in the table the highest statement which reflects the attitude of the English teachers in Iligan City is "I can solve most problems if I invest the necessary efforts" with the mean of 3.16, "I can always manage to solve difficult problems if I try hard enough" with the mean of 3.05 and "if I am not in trouble, I can usually find several solutions" with the mean of 3.05. The findings show that English teachers of Iligan City have optimistic self-beliefs to cope with a variety of difficult situations and have a broad and stable sense of personal competence to deal efficiently with a variety of stressful situations. In fact according to Ralf Schwarzer (2008), stated that the teacher self-efficacy is a personal resource factor that may protect from the experience of job strain and, thus, make the escalation of burnout less.

Table 3

	Mean	Description
faculty can spend more with individual students	2.56	Neutral
faculty can expect more from students in terms of their pursuing and editing their work	2.82	Disagree
faculty can be more comfortable with students working independently	2.02	Agree
faculty are better able to present more complex material to students	2.18	Agree
faculty are better be able to tailor students' work to their individual needs	2.34	Agree
faculty spends less time lecturing to the entire class	2.81	Neutral
faculty will spend more time working with smaller groups who are pursuing project - based work	2.62	Neutral
faculty will spend more time acting as a guide and facilitator with individual students	2.07	Agree
faculty spends less time with the whole class practicing or reviewing materials	2.96	Neutral
faculty will spend more time preparing materials and resources for instruction	2.62	Neutral

Grand Mean: 2.5

Scaling
4.2 – 5.0 Level 5 Strongly Disagree
3.4 – 4.1 Level 4 Disagree
2.6 – 3.3 Level 3 Neutral
1.78 – 2.5 Level 2 Agree
1.00 – 1.79 Level 1 Strongly Agree

Table 3 presents the level of agreement as to how the integration and use of technology for teaching and learning changes the classroom environment. As shown in the table, "faculty can be more comfortable with students working independently" has the mean of 2.02 which means "agree", "faculty will spend more time acting as a guide and facilitator with individual students" has the mean of 2.07 which is "agree", and "faculty are better able to present more complex material to students" has the mean of 2.18 with means "agree". As depicted, the results show that through the integration of computer technology in teaching, there is really a change of classroom environment because teachers act as facilitator, helping the information flow. In fact according to Strickland (1985) in his research conducted at ERIC Education Resources Information, entitled "Computers and the Classroom: A Look at Changes in Pedagogy", stated that "Computers in the classroom change the location of authority, directing focus away from the teacher and the chalkboard and onto the screen, onto the text generated on the computer. In this setting, the teacher acts as facilitator, helping the information flow. Finally, computers in the classroom change the way teachers teach, encouraging veteran teachers to reconsider old ways of teaching composition while they cope with the new technology".

Table 4

	Mean	Description
computers are a tool that help students with learning tasks, such as writing, analyzing data, or solving problems	1.60	Strongly Agree
students are enthusiastic about the subjects for which they use computers	1.40	Strongly Agree
computers enable me to make subject more interesting	1.47	Strongly Agree
technology tools enable me to better diagnose learning problems	1.60	Strongly

		Agree
I get personal gratification from learning new computer knowledge and skills	1.64	Strongly Agree
computers provide means of expanding and applying what has been taught	1.67	Strongly Agree
computer tools enable me to communicate and interact more within students	1.87	Agree
by integrating technology, I am helping students to acquire the basic computer education they will need for future careers	1.44	Strongly Agree
I enjoy figuring out how to use computers effectively for a variety of teaching situations	1.69	Strongly Agree
computers provide more opportunities for gifted students	1.87	Agree
technology tools enable students to help each other and cooperate on projects	1.53	Strongly Agree
computers provide an environment that appeals to a variety of learning styles	1.51	Strongly Agree

Grand Mean: 1.616

Scaling

3.25 – 4.0	Level 4 Strongly Disagree
2.5 – 3.24	Level 3 Disagree
1.75 – 2.4	Level 2 Agree
1.00 – 1.74	Level 1 Strongly Agree

Table 4 presents the statements that made computers as the important incentives and motivators in the teaching-learning process. As reflected in the table, "students are enthusiastic about the subjects for which they use computers" has the mean of 1.40 which means strongly agree, "by integrating technology, I am helping students to acquire the basic computer education they will need for future careers" has a mean of 1.44 which means strongly and "computers enable me to make subject more interesting" has a mean of 1.47 which means strongly agree. The results show that students are very enthusiastic in their study because of computers will really help them in doing their research. Teachers are also motivated to teach using computers because through the integration of this technology, students are also learning the basic computer education. Thus, it is very important to integrate computer in the curriculum. This is supported with the idea of Tom Curry (1995) in his research study entitled "Computer Integration as a Way to Develop Literacy in Schools" which emphasized that " Educational system must change its methods to better involve students in what they learn. One way to do this is to integrate computers into the curriculum and to use them in ways that permit students to acquire information through a more natural process. The student would be able to explore and learn through experience, process that assists in the retention of information and the development of literacy".

Table 5. Barriers of the English Teachers in using computers for teaching and learning

Statistics	Mean	Description
faculty members lack enough time to develop instruction that uses computers	2.00	Agree
there are problems scheduling enough computer time and or resources for different faculty members' classes	1.80	Agree
hardware is unstable and always breaking computers for teaching and learning	2.36	Agree
the reward structure does not recognize faculty members for integrating computers for teaching and learning	2.51	Neutral
there are too few computers for number of students	1.76	Strongly

		Agree
there are too few computers for individual faculty	1.80	Agree
there is scarcity of printers and/or other peripherals in order to effectively use computers for teaching and learning	2.00	Agree
there is no enough time in the course schedule for computer related instruction	2.18	Agree
there is limited research literature that shows significant improvement in learning as a result of computer integration	2.11	Agree
financial support for computer integration from administration is inadequate	1.73	Strongly Agree
there is inadequate financial support for computer integration from administration	1.91	Agree
there is an inadequate financial support for computer for the development of instruction uses of computers	1.87	Strongly Agree
faculty members are not interested in using computers for instruction	3.16	Neutral
I am unsure how to effectively integrate computers into instruction	2.84	Neutral
available software is not adaptable to my instructional needs	3.09	Neutral
computers manuals and materials are inadequate and unhelpful	3.00	Neutral
there are too few training opportunities for faculty members to acquire new computer knowledge and skills	2.02	Agree
computers do not fit the course or curriculum that I teach	3.18	Neutral
there is less control over classroom instruction when using computers	2.98	Neutral
there is no recognition for using computers in teaching and learning	2.98	Neutral

Grand Mean: 2.365

Scaling
4.2 – 5.0 Level 5 Strongly Disagree
3.4 – 4.1 Level 4 Disagree
1.78 – 2.5 Level 2 Agree
1.00 – 1.79 Level 1 Strongly Agree

Table 5 presents the barriers of the English teachers in using computers for teaching and learning in the campus environment. As can be gleaned in the table the "financial support for computer integration from administration is inadequate" has the mean of 1.73 which means strongly agree, "there are too few computers for individual faculty" has a mean of 1.80 which is strongly agree and there is "an inadequate financial support for computer for the development of instruction uses of computers" has a mean of 1.87 which means strongly agree. The results show that there is really an insufficient budget in purchasing computers which will be used for the teachers in the teaching and learning process.

Table 6: Level of Computer Competence

Computer competence	Mean	Description
respondents basic computer operation	2.24	Awareness
file management	2.66	Mastery
word processing	2.34	Awareness
use of spreadsheet	1.70	Pre – Awareness
use of database	2.03	Awareness
use of graphics	1.81	Awareness
use of hypermedia	1.65	Pre – Awareness
use of network	2.34	Awareness
use of students assessment	1.92	Awareness

ethical use of understanding	2.19	Awareness

Grand Mean: 2.08

Scaling
3.25 – 4.00 Level 4 Advanced
2.5 – 3.24 Level 3 Mastery
1.75 – 2.4 Level 2 Awareness
1.00 – 1.74 Level 1 Pre - Awareness

Table 6 presents the level of computer competence of the English teachers in DepEd of Iligan City and MSU-IIT. As depicted, the use of hypermedia has a weighted mean of 1.65 which means pre-awareness, the spreadsheet use has a weighted mean of 1.70 which means pre-awareness and . As reflected in the table, the results show that English teachers of the Iligan City lack their computer competence in using hypermedia and spreadsheet. This implies that English teachers in the DepEd and MSU-IIT are already knowledgeable enough with regards to the use of computers. However, there is only a need to enhance their knowledge and skills in the use of hypermedia and spreadsheet use.

Conclusion

English teachers of the Iligan City lack their computer competence in using hypermedia and spreadsheet. This implies that English teachers in the DepEd and MSU-IIT are already knowledgeable enough with regards to the use of computers. However, there is only a need to enhance their knowledge and skills in the use of hypermedia and spreadsheet use. Thus, there is a need to enhance their computer skills through seminar-workshop on hypermedia and spreadsheet.

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Voice Server with Under-resourced Acoustic Model: Application to Agricultural Extension

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Abstract- The majority of farmers in developing countries are unable to reach farming information and knowledge, and so they often rely on rudimentary methods. To enhance the agricultural life and productivity, one must ensure the flow of information to farmers; that is to bridge an agricultural info channel to farmers effectively. In this work, we move on to build an agricultural IVR system with a mission of providing agricultural info services to the farmers. However, since the underlying techniques resort to statistical approaches, a large amount of training material is demanded to reach a sustainable level of performance, especially on a new applied domain. Unfortunately, the required effort to develop such corpora is both costly and time consuming, and large scale acquisition campaigns might not be feasible. Under these restricted circumstances, subspace Gaussian mixture models and parameter synthesis are the keys to build ASR and TTS components of an IVR system. Experimental results confirm the hypothesis with 3.43% winning over conventional methods in an application of agricultural extension.

I. Introduction

The telephone — whether landline or mobile — is often the handiest, user-friendliest access device. As a result, people can increase access to their business services and applications by existing speech-enabling applications [1]. With the support achieved from spoken language processing (SLP) techniques, these applications can be promoted into a new type of human interaction: interactive voice response (IVR) [1]. Users can interact with an IVR system (technically called "voice server") as if it were a conversational partner.

However, telephone-based interactions pose several research challenges [2]. For example, telephone speech is often hard to recognize and understand due to the reduced channel bandwidth and the presence of noise. In addition, voice-based interaction relies on only the human auditory channel to receive the information, and thus potentially increases the cognitive load. Furthermore, real-time performance is necessary, since prolonged delay over the phone can be quite annoying to users and render the system unusable.

Voice Server has been insensitively researched for a long time. In 1997, Victor Zue et al [2] had begun to develop JUPITER, a conversational interface that allows users to access and receive on-line weather forecast information for over 500 cities worldwide over the phone. In addition, IBM [1] has successfully developed an enterprise speech solution, named IBM WebSphere Voice Server, which provides voice-enabled applications to give the customers, employees and suppliers more flexible access to information and services. In Vietnam, current services provided by the contact centers are mostly under-run by manpower or through an SMS protocol. In 2010, R&D group from AILab has proposed a Vietnamese spoken dialog system for the inquiry of stock information over the phone with the best accurate rate of 87.3% [3]. However, the system was just built to process only stock ticker symbols and users were not required to speak naturally. Since then there was no application of voice server in the Vietnamese industries, and its research is still on hung.

Meanwhile, in developing countries, nearly 1.5 billion people live without electricity [13] and 752 million are illiterate [14] – two constraints that make accessing information challenging. To exacerbate this problem, the majority of these people live in rural areas [13], which are often hard to reach because of inadequate roads. Information about farming techniques is particularly important because agriculture is a major source of livelihood for most rural people though they often rely on rudimentary methods [15]. To enhance the agricultural life, one must ensure the flow of information to farmers; that is to bridge an agricultural info channel to farmers effectively. Putting on this mission, we have the statement of agricultural extension [16].

Conventional approaches for agricultural extension, like extension workers and infomediaries, serve their roles well. But the current trend of ICT services is rising and proven to be more efficient [15]. As SLP technologies advance, the IVR systems are greatly enhanced, allowing for natural speaking style, domain adaptability, and robust speech recognition [9]. Thus, taking the ripe fruit, we brought our IVR framework to provide an automated information channel for agricultural extension – that is, an automatic call-center answering questions on farming techniques. Figure 1 illustrates a typical dialog session between a farmer and the system. With the agriculture domain, its ASR engine needs to be rebuilt in order to maintain a sustainable recognition performance. This involves in collecting corpora for the applied domain and adjusting the models. However, after all the hard tasks, recognition accuracy only satisfies a feasible level; errors remain quite high. The problem originates from the amount of training/adapting data available.

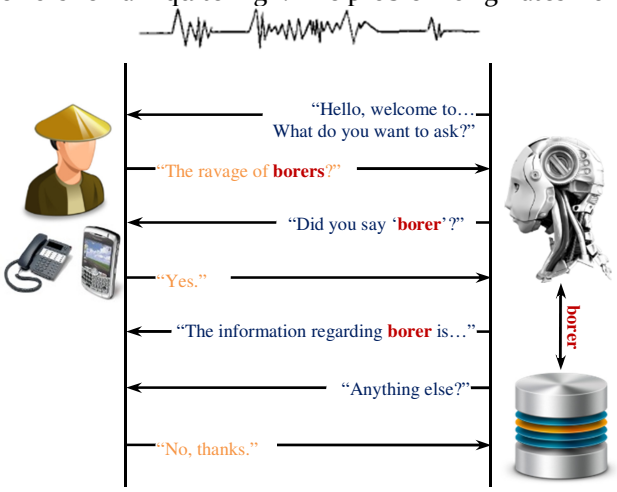

Figure 1. An agricultural session of human-machine dialog

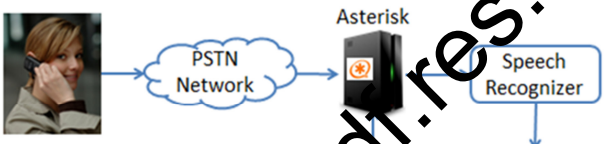

Figure 2. System design

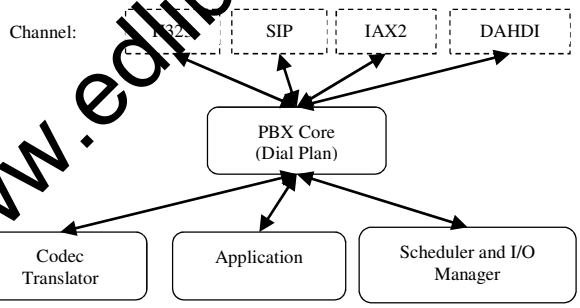

Figure 3. Overview of Asterisk architecture

Insufficient data would definitely lead to the degradation of ASR performance. In popular languages like English and Mandarin, there exist a large amount of speech corpus resources for system development. But for many dialectical variants and languages such as Malay or Vietnamese, this is not the case. Unfortunately, the required effort to develop speech corpora is both costly and time consuming. Furthermore, large scale acquisition campaigns are simply not feasible. These languages are referred to by the term "under-resourced languages" [7]. Amongst state-of-the-art techniques, Subspace Gaussian Mixture Model [11] has proved to be effective against under-resourced circumstances. Thus we resort to its mechanism for powering the IVR system's ASR component, targeting on agricultural extension service. This paper focus on refining the work of [9], altering its ASR and TTS engines to comply with the under-resourced condition. Section II presents the system architecture and its components, while Section III gives experimental results. Finally, Section IV concludes the paper.

II. The IVR System and its Components

This section describes the Agricultural IVR system. It is responsible for answering incoming calls of a specific agricultural query. Figure 2 illustrates the four main modules composing the system: an Asterisk PBX Server, a speech recognizer, a speech synthesizer, and a dialog manager. The Asterisk server manages telephone signal transmissions between users and the system over PSTN network, while dialog manager executes the tasks of query and processing information. Both the speech recognizer and synthesizer operate as a communication layer by dealing with speech-to-text conversions and vice versa. Incoming queries will then be interpreted and responded appropriately.

Each of the following subsection will describe the system's components and their underlying technologies.

A. Asterisk

Asterisk is a free software implementation for telephone private branch exchange that transforms a computer into a communication server and can be used as a telephony engine and application toolkit. It is also a framework that allows selection and removal of particular modules, allowing us to create a custom telephony system [4]. Asterisk's well-thought-out architecture gives flexibility for creating custom modules that extend our phone system, or even serve as drop-in replacements for the default modules. Asterisk flexibility allows it to be deployed as PBX, VoIP, IVR as well as Voice Mail system [5]. A PBX is a system which allows one telephone to make connection with other telephone and telephone services. Generally, it can interoperate with almost all-standards-based telephony equipment using comparatively inexpensive hardware which makes it easier to connect with traditional telephony network as well as various computer networks. This way, Asterisk PBX server can be added with a couple of new functionalities. The new functionalities can be added by writing dial plan scripts in some Asterisk's own extensions languages or by including custom loadable modules written in C or by implementing the Asterisk Gateway Interface (AGI) programs using any programming language like Perl, python, shell scripts, etc. [6]. Figure 3 depicts the Asterisk architecture.

The heart of any Asterisk system is the PBX core. It is the essential component that takes care of bridging calls. The core also takes care of other items like codec translator, scheduler and I/O manager, application, and other modules.

B. Speech Recognizer

To cope with the problem of limited training data, Subspace Gaussian Mixture Model (SGMM) acoustic modeling techniques [11] are used. In contrast to the dual approaches that deploy a set of universal phones to cover multiple languages, the approach of SGMM uses distinct phone sets but shares a large amount of parameters across languages. In SGMM, HMM-states' feature distributions are Gaussian Mixture Models (GMMs) with a common structure, constrained to lie in a subspace of the total parameter space. The parameters that define this subspace can be shared across languages/domains. Formally defined, the feature distribution of a HMM-state j is given by

$$p(x \mid j) = \sum_{i=1}^{I} w_{ji} \mathrm{N}(x; \mu_{ji}, \Sigma_i) \qquad (1)$$

where x is the feature vector and N(x; μ, ∑) is the Gaussian function. This might look a little similar to the conventional GMM, however, the difference lies in the way of representing mixtures. An intuitive illustration for both models can be seen in Figure 4. For SGMM, a particular state j is associated with a vector v_j which determines the means and weights as follows:

$$\mu_{ji} = \mathrm{M}_i v_j \qquad (2)$$

$$w_{ji} = \frac{\exp w_i^T v_j}{\sum_{i'=1}^{I} \exp w_{i'}^T v_j} \qquad (3)$$

where M_i and w_i are shared across all state distributions. In addition, the covariance matrices $\sum_i$ are globally shared as well. Together, M_i, w_i and $\sum_i$ form the set of globally shared parameters, as opposed to the state-specific vectors v_j.

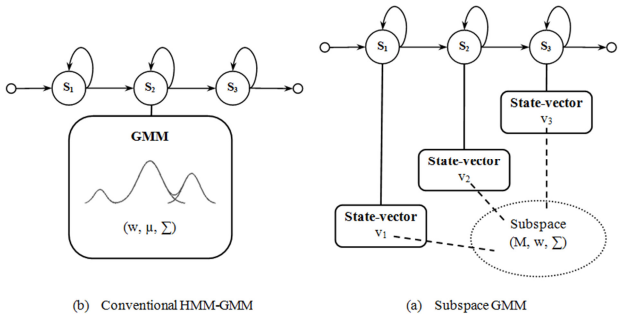

Figure 4. HMM structures.

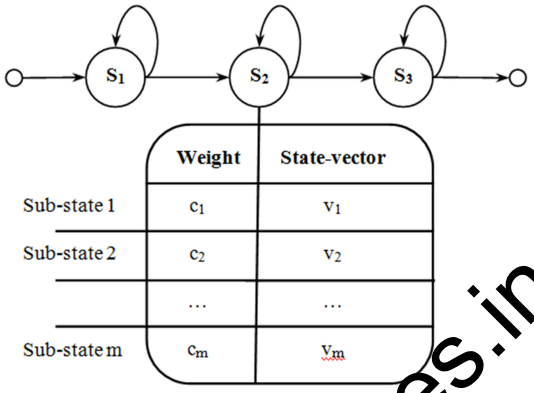

Figure 5. SGMM with sub-states.

To achieve a balance between the amount of shared and state-specific parameters, the notion of a "sub-state" [11] was introduced. Instead of just one state-vector, the feature distribution for a state can be represented by a mixture of M vectors, each with its own weight c. Figure 5 gives a clearer picture on this notion. In this case, the feature distribution of a state j is given by:

$$p(x \mid j) = \sum_{m=1}^{M_j} c_{jm} \sum_{i=1}^{I} w_{jmi} \mathrm{N}(x; \mu_{jmi}, \Sigma_i) \qquad (4)$$

$$\mu_{jmi} = \mathrm{M}_i v_{jm} \qquad (5)$$

$$w_{jmi} = \frac{\exp w_i^T v_{jm}}{\sum_{i'=1}^{I} \exp w_{i'}^T v_{jm}}. \qquad (6)$$

Utilizing SGMM, one can deal with the problem of limited training data for under-resourced condition. Indeed, the set of globally shared parameters $\{M_i, w_i, \Sigma_i\}$ can be trained on out-of-domain data, while the state-specific vectors $\{v_j\}$ can be trained on a limited amount of in-domain data. In the experiments for this paper, broadcast news and agricultural telephony are selected as the targets for well-resourced and under-resourced domain respectively (i.e., the broadcast news corpus serves as the out-of-domain data and the agricultural telephony corpus serves as the in-domain data).

C. Speech Synthesizer

The original work [9] employs VOS's corpus-based version [8] to power its TTS engine. This has the advantage of naturalness and intelligibility, but suffers from the oversize database (i.e., more than 4 GB/40h duration) and therefore lack of portability and dialect variations. In cases of under-resourced conditions, even several hours of speech are unaffordable, let alone 40h/4GB. Building a corpus-based TTS engine would therefore infeasible.

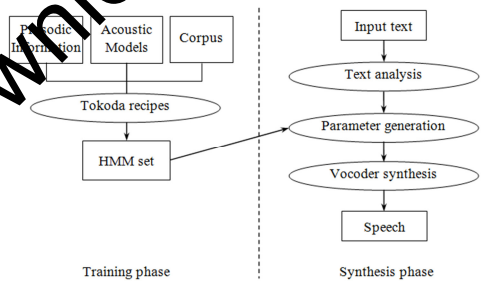

Figure 6. HMM-based speech synthesis.

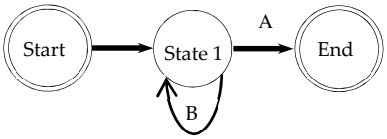

Figure 7. Keyword spotting FSM.

Complying with the condition, we adapt the TTS core to parametric synthesis – the HMM-based synthesis [12] which has the advantages of lightweight storage and smooth prosody. Figure 6 gives an outline view on

the TTS flow. Required data can be as low as 45 minutes of speech and highly natural voice could be achieved at ~2 hour level. Sample speech for training the models was collected from three candidate speakers of Saigon, Hue, and Hanoi dialects, providing 3 different voices for user options – the first Vietnamese TTS system to be capable of.

D. Dialog Manager

Acting as the brain of an IVR system, dialog manager controls the calling sessions. A preset communication script is enforced on each session. It starts with a welcome message and waits for user response. Users will ask an agricultural question in a very natural sense. The dialog manager is bound to find out and speak back an appropriate answer. Users could also choose to ask another question from this step until an end is confirmed.

In contrast to voice commands by keywords, our system provides a flexible means for voice communication by natural language interaction. One can ask a question as they would do to a person, by saying something such as "What is borer?" or "How can I fight locust?" or simply "The ravage of borers?" the dialog manager will fetch back the appropriate answer. To achieve this goal, a keyword spotting mechanism is proposed to pick out important terms from a complete sentence. Let A be the set of agricultural keywords and B stand for the set of grammar terms. The finite state machine (FSM) depicted in Figure 7 is used to render the keyword spotting functionality. In this sequence, agricultural terms (A) are always required for queries while grammar terms (B) are optional and can be disposed of. If the "end" state is not reached, a null query will be assumed.

III. Experiments

This Section focuses on the evaluations of the ASR engine, IVR online trial, and runtime response. All of them are conducted on the dataset described below.

A. Datasets

TABLE I. Speech Corpora

Corpus	*Duration*	*#Speakers*
VOH	27 hours	18
Agricultural Telephony (AT)	7.2 hours	62

We first collect the agricultural telephony speech corpus from 62 speakers of Mekong Delta which represent for the farmer dialects. Total duration is roughly 7.2 hours with a vocabulary size of 103 words (including keywords, grammar terms and confirmation words) several of which are listed in Table II. Next, we compile it together with the VOH corpus to evaluate the recognizer. Both corpora are converted to an identical format of 16 KHz, 16 bits, mono. They are further parameterized into 12-dimensional MFCC, energy, plus their delta and acceleration (39 length front-end parameters).

TABLE II. Lexicon Samples

bạc	màu	châu	chấu	cuốn
lá	cháy	vàng	úng	giống
nhiễm	khuẩn	làm	đòng	ngập
trắng	sâu	đốm	vòng	thân
cho	ừ	ok	tôi	hãy
sai	đúng	rồi	vâng	không

The corpora (shown in Table I) are then divided into subsets for training and testing 2 target ASR engines (i.e., the baseline and SGMM systems). Table III summarizes the training and test sets devised for experiments.

TABLE III. Training and Test sets

	Training		Test	
	hours	***corpora***	***hours***	***Corpora***
Baseline	6.2	6.2h Agriculture (AT)	1	1h AT
SGMM	33.2	27h VOH + 6.2h AT	1	1h AT

Language models (trigrams) for the recognizers are built by interpolating individual models trained from the Web text corpus and the training data's transcriptions.

B. Transcription Evaluation

TABLE IV. Transcription performances

	Baseline	**SGMM**
%WAR	90.26%	93.04%

In this experiment, the recognizers are evaluated on the task of speech transcription. Performances are reported for two different systems: baseline and SGMM. The baseline recognizers are based on conventional 3-state left-to-right HMM triphone models, with 18 Gaussians per state. The SGMM system's shared parameters are estimated using data from both VOH and AT, while the state-specific parameters are trained on AT data only. An SGMM configuration with 400 shared Gaussian components (I = 400), 40-dimensional state-vectors and 12 sub-states per state is used.

Table IV summarizes the performances of the recognizers. Using SGMM, an absolute improvement of 2.78% WAR over the baseline is achieved. The results confirm the benefit of SGMM in taking advantage of resources in other domains whenever only a small amount of training data is available.

C. IVR Online Trial

For online trials, the whole IVR system was deployed in a real data center which connected to a telephone network. Users use their mobile phone to dial the system number and interact with our voice server. We ask 30 volunteers each to make 10 calling attempts separately. That means users don't need to get used to the system and they can free to speak whatever they want in terms of agricultural query. Each calling session is processed by both ASR engines (i.e., baseline and SGMM) simultaneously. Results, in accuracy rates, can be seen in Figure 8.

As expected, SGMM gains the upper hand over the baseline, but subdued to its own transcription performances. For losing utterance constraints in online trials, the score decreased approximately 2.62% when compared to transcription tests. However, the average WAR of 90.42% in the online trial indicates that our proposed system could be an effective call center for agricultural extension services.

D. Runtime response

As an agricultural extension service, its response time is crucial. In order to be deployed, response timing must be real-time equivalent or even better. This experiment measures the running time for each communication session, including both ASR and TTS computations. The same 30 volunteers who participated in the online trials are asked to communicate with the server using random utterances. Processing durations are logged and an average response time of 2.349 seconds can be derived. Figure 9 plots the timing performances of the first 50 loops.

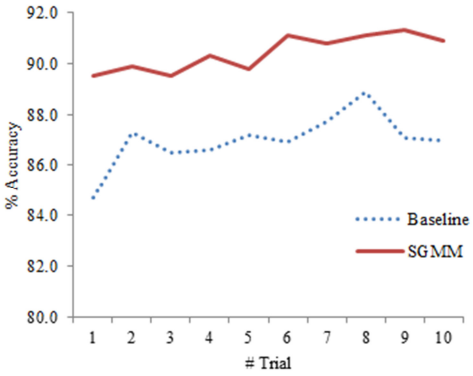

Figure 8. IVR performances.

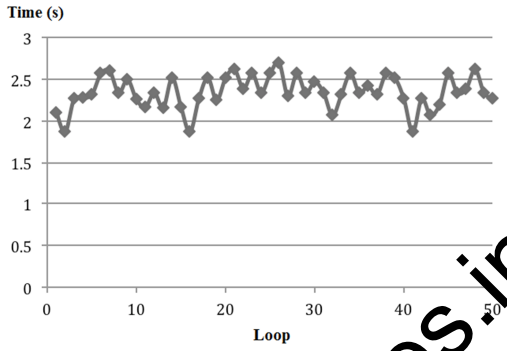

Figure 9. Runtime performances.

IV. Conclusion

This paper has presented a critical enhancement for voice server on under-resourced conditions. Should we run low on corpora, SGMM-based ASR and HMM-based TTS techniques are always there for us. Experimental results did confirm the hypothesis.

Acknowledgment

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