

Design and Implementation of Electronic Accounting system for Sudan E-government

Alameen Eltoum mohamed abdalrahman

College of computer sciences & IT, Information system department, Alneelain University, Sudan
College of sciences, computer department, Alasmayia University, Libya

Abstract: E-government and E-accounting has become a popular focus of government efforts in many countries around the world. More and more governments around the world have implemented and introduced e-government systems such as E-accounting as a means of reducing costs, improving services, saving time and increasing effectiveness and efficiency in the public sector. E-government, Internet and ICT has made an essential change in the whole society structure, values, culture and the ways of conducting business by utilizing the potential of ICT as a tool in the daily work. The purpose of e-accounting is not only the traditional information into bits and bytes and making it reachable via the internet websites or giving government officials computers or automating old practices to an electronic platform. But it also calls for processing accounting activity rethinking ways the government functions are carried out today in order to improve processes and integration. Governments have different strategies to build e-accounting and e-government. Some have created comprehensive long-term plans. Others have opted to identify just a few key areas as the focus of early projects. In all cases, however, the countries identified as most successful have begun with smaller projects in phases on which to build a structure. One of the important system or projects is an Electronic accounting system that is a complex project, involving multiple e-government application modules of construction. It's beneficial for the e-government system integration to establish the unity basic framework. Therefore, this paper analysis, design and implementation the process, events, information flow, capital flow in accounting e-government, e-government B2B and B2c scheme to analysis the goal of e-accounting, design the whole system framework, and discusses the realization and main technology of e-accounting system.

This paper also presents design and implementation of e-accounting system for Sudan e-government and the technologies, approaches, Ict which used design and implement e-accounting. The purpose of this study is to illustrate the development E-accounting system used many technologies such as uml, mysql database, php and using ICT. We'll discuss application system such as forms and reports that produced from technologies and approaches which used in this paper research.

Keywords: Electronic accounting, ICT, E-government, Sudan E-Government, design systems, implementation systems.

1. INTRODUCTION

E-accounting and E-government is becoming one of the essential foundations of recent modern society. It represents an important part in accounting, social, economic, social, and political development of the country. "Information and Communication Technology (ICT)" has totally changed the way we live, feel, and perform. It assists to in knowing the sight of fine government. Noticed the governments in developing nations attempt to supply solutions to citizens from the elements of information technology and communications. Thus, ICT has brought several improvements to the government services, for example E-accounting, E-commerce on-line renewing a driver's license, elector registration, as well as others [1]. based on above mentioned and many accounting studies on electronic operation of accounting information, it is expected that the application of e-government will affect different accounting processes through input, operation, output and feedback of accounting information, which will lead to a change in method of accounting, financial internal controls and, government accounting reporting systems. The accountant will face in the light of the application of e-government challenges related to the amount of information and data. On the other hand the increasing importance of speed and

accuracy in preparing and operating data, subsequently, if the accountant is not prepared for the government performance development, that is accounting field he/she will miss a lot of requirements of government accounting under an environment of e-government. The commitment to new developments in IT systems and the subsequent developments of accounting information system require that the accountant should have scientific and practical expertise and knowledge of such developments information systems technology, and should use as tools to support the application through technological developments [2]. It is necessary to develop the system of operation of government accounting data that achieves the efficiency and effectiveness of government accounting information system under e-government, the government accounting still operates in a traditional manner, the shortcomings will be doubled, and it is a hindrance to the effectiveness and efficiency of e-government.

1.2-THE Problem of Research:

The basic problem that the research addresses is the study of design and implementation of E_ accounting system for Sudan E-government and how design and implementation using technologies approaches in design ,analysis and implementation because the e-government of Sudan don't have any E-accounting system match and work with e-government .

Till now the e-government in Sudan use the government accounting still operates in a traditional manner, the shortcomings will be doubled, and it is a hindrance to the effectiveness and efficiency of e-government and this effect some problem to e-government.

2. ELECTRONIC ACCOUNTING

2.1 Definition:

E-accounting or online accounting, is the application of online and Internet technologies to the business accounting function .e-accounting is "electronic enablement" of lawful accounting and traceable accounting processes which were traditionally manual and paper based.E-accounting involves performing regular accounting functions, accounting research and the accounting training and education through various computer based internet based accounting tools, various internet resources, international web-based materials, institute and company databases which are internet based, web links, internet based accounting software and electronic financial[3] .

E_accounting does not have a standard definition but merely refers to the changes in accounting due to computing and networking technologies [3]. Most e_accounting services are offered as a cloud computing.

2.2 Benefits & Problems of E-accounting system:

Some of the major benefits of e-accounting system are as under [4]:

1. Anywhere, anytime access of E_accounting application by authorized person,
2. No need of expensive in-house bookkeepers' expertise.
3. No communication difficulties between the accountant and business owner.
4. The business organization can concentrate on the revenue side of business, and spends as little time as necessary on the accounting and payroll function.
5. Online accounting through a web application is typically based on a simple charge.
6. Zero-administration approach to help businesses concentrate on core activities.
7. Low costs such as installation, upgrades, exchanging data files, backup and recovery.
8. The company's computers, its documents are still safe on the web server.

Also in the other hand there are several problems with adoption of e-accounting by any company, some of them are listed below [5]:

1. Security issue beacuse the financial information is outside the company.
2. Sharing of financial information of a company with the other (service provider) is a big mindset problem for traditional management.

3. If internet connectivity is down, work will be affected.
4. Lack of some features in the offline office suites, but they are progressively becoming available.
5. News about client information leaked by service provider is a big letdown for the progress of e-accounting adoption.
6. Lack of proper accounting standards are a big worry. Where information can be compromised and distributed, global firms need to be cent-percent as sured that their information is safe and are being safeguarded from identity theft.

3. E-GOVERNMENT

3.1 Definition E-gov strategies (or digital government) is defined as "The employment of the Internet and the world-wide-web for delivering government information and services to the citizens." [6]

Electronic government (or e-government) essentially refers to "The utilization of Information Technology (IT), Information and Communication Technologies (ICT s), and other web-based telecommunication technologies to improve and/or enhance on the efficiency and effectiveness of service delivery in the public sector." [7] e-Government promotes and improves broad stakeholders contribution to national and community development, as well as deepen the governance process. E-governance is the digital use of information technology utilized for completing administrative transactions, providing services and communicating with citizens with more democracy and automate the interaction between government departments on the one hand and government departments, business sector and citizens on the other hand [8].

E-Government (short for electronic government, also known as e-gov, Internet government, digital government, online government, or connected government) consists of the digital interactions between a government and citizens (G2C), government and businesses/Commerce (G2B), government and employees (G2E), and also between government and governments /agencies (G2G) [7].

3.2 Advantages of E-Government Implementation:

Advantages and benefits of e-government implementation are the same for both developed and developing countries [9]. However, e-government applications have many benefits for citizens, business and government entities. E-government applications allow people, businesses, and government sectors to access to available government information 24 hours a day, 7 days a week, which improves the quality of these services [9]. According to [10] implementation of e-government will reduce cost and levels of organizational processes by streamlining and re-organizing operating procedures. Moreover, the using of e-government systems will improve the performance of government agencies and that it will deliver the public service effectively and efficiently for all customers [11]. In addition, [12] declared that e-government has great benefits regarding economizing and improving of governments service operations, including efficiency, reduced transactional costs, increase the transparency and increased services for citizens. Furthermore, [13] identifies e-government benefits as follows:

- reduction of customers' and organizations' time, effort and costs
- improvement of service delivery and citizens' satisfaction
- increase of users' ICT skills , internet knowledge and computer usage.
- creation of new business and work opportunities

In addition [14] identified many advantages of e-government implementation such as:

- improves efficiency of government agencies in processing of data
- improves services through better understanding of users' requirements, thus aiming for seamless online services
- Share information and ideas between all government agencies and department to build one mega data base.
- assists a government's economic policy objectives by promoting productivity gains inherent in ICT and e-commerce
- Improving transparency, accuracy and facilitating information transforming between government and customers.
- Helps in building trust between governments and citizens, an essential factor in good governance by using internet-based strategies to involve citizens in the policy process, illustrating government transparency and accountability. To

conclude, it is clear that implementation of e-government not only saves resources, effort and money but it can also extensively increase service quality levels and reducing time spent in government departments [15].

3.3 Challenges AND Problems Of E-Government Implementation [16]:

There are several challenges and barriers that can delay progress of e-government [16]implementation. The variety and complexity of e-government initiatives implies the existence of a wide range of challenges and barriers to its implementation and management. This section, will briefly introduce the most important and common challenges are listed below:

- Technical : ICT Infrastructure, Privacy and Security
- Organizational: Top management support Resistance to change to electronic ways Collaboration , Lack of Qualified and Personnel and Training.
- Social. Digital Divide and Culture.
- Financial: High Cost

4. SUDAN E-GOVERNMENT AND E-ACCOUNTING

The prospects of E-Government in Sudan The E-Government project in Sudan is the responsibility of the National Information Centre (NIC). This center was formed in 2004, and it is in charge of all ICT related projects within government [17]. Initially the center worked under the command of the Council of Ministers. After the creation of the Telecommunications and Information Technology Ministry, the NIC became one of its administrations. The E-Government project implementation will carry out the daily process automation and reengineering the existing process for optimizations to save time and cost. E-Government implementation will offer opportunities for citizens, business and others stakeholders to participate in decision making by allowing them to provide and share their own ideas and suggestion in online communities. The government of Sudan has carried out few projects for e-Government implementation comparing with others nations adopted E-Government projects.

According to UN report on E-Government development index and world E_Government development ranking in the years 2012 and 2014 Sudan index in the year of 2012 was 0.2610and the world ranking 165. In the year of 2014 the index was 0.2606 and world ranking 154.According to these figures it seem clear that Sudan has move ahead slowly while most countries in the same region has increased their E-Government value such as Tunisia Algeria and Morocco. The adaptive challenges of E-Government go far beyond technology; they call for organizational structures and skills, new form of leadership, transformation of public private partnerships [18].

4.1 E-Accounting system in Sudan E-government:

For Sudan to flourish and prosper need to become innovative users of Information and Telecommunication Technology (ICT), and have a high performing government that providing efficient electronic services to all citizens, thus there are some public sectors institutes initiated to adopt and implement web services to provide, deliver and disseminate services and information to the public such as the following two institutions:

1-EBS E- Government initiative:

CBOS (Central Bank of Sudan) in 1999 established EBS (Electronic Bank System) the company introducing technological banking solutions with aim of linking the banks electronically through the country and provide electronic payment services in and out of the country. EBS started its activity in mid-2000 and began project implementation in early 2001 [19].This initiative results in changing the old bank system to modern fast and efficient bank systems, due to EBS adopted several services such as National Electronic Cheque Clearance, Card Personalization Services and Banking Information Network Services etc.

2-NEC E- Government initiative [17]:

The NEC (National Electricity Corporation) developed prepaid electricity services to eliminate the bills loses due to the old system implementation. With the adoption of the new system the NEC provide every customer with identification card and number to make the services easy and fast, so even the customer can order the electricity through his mobile device. NEC carried out its initiative and the process of change and use of ICT was introduced in the all departments of NEC.

5. METHODOLOGY

This paper is based on the following two stable approaches in scientific research, namely:

1- The descriptive approach, it is used to observe and analyze the real situation, and to show shortcomings by means of relevant scientific sources: E-accounting systems, e-government, information and communication technologies (ict) and Sudan E-government.

2- The second approach was developed E-accounting system using different software development methodologies, approaches, models, and techniques. In this paper, the software development methodology adopted to develop the E-accounting system. With respect to industry standards, Unified Modelling Language (UML) approach was used to capture the system requirements and design exactly star uml . The E-accounting system developed is a web application. The system was implemented using Personal home Page (PHP) , Hypertext Markup Language (HTML) ,JavaScript and css .while The database management system (DBMS) used MySQL. The web server used is Apache.

6. E-ACCOUNTING SYSTEM DESIGN AND IMPLEMENTATION

6.1 E-accounting System Design:

Generally use case diagrams graphically depict the interactions between the system and external system and users. In other words, it graphically decides who will use the system and in what ways the user expects to interact with the system. the use case diagram illustrates system requirements of one of the actor (user) of the E-AS system among others . Figure 1 shows the class diagram for E-Accounting System (E-AS) that consists of classes of the system, their interrelationships, attributes and the methods ,operation ,type of relation of the classes.

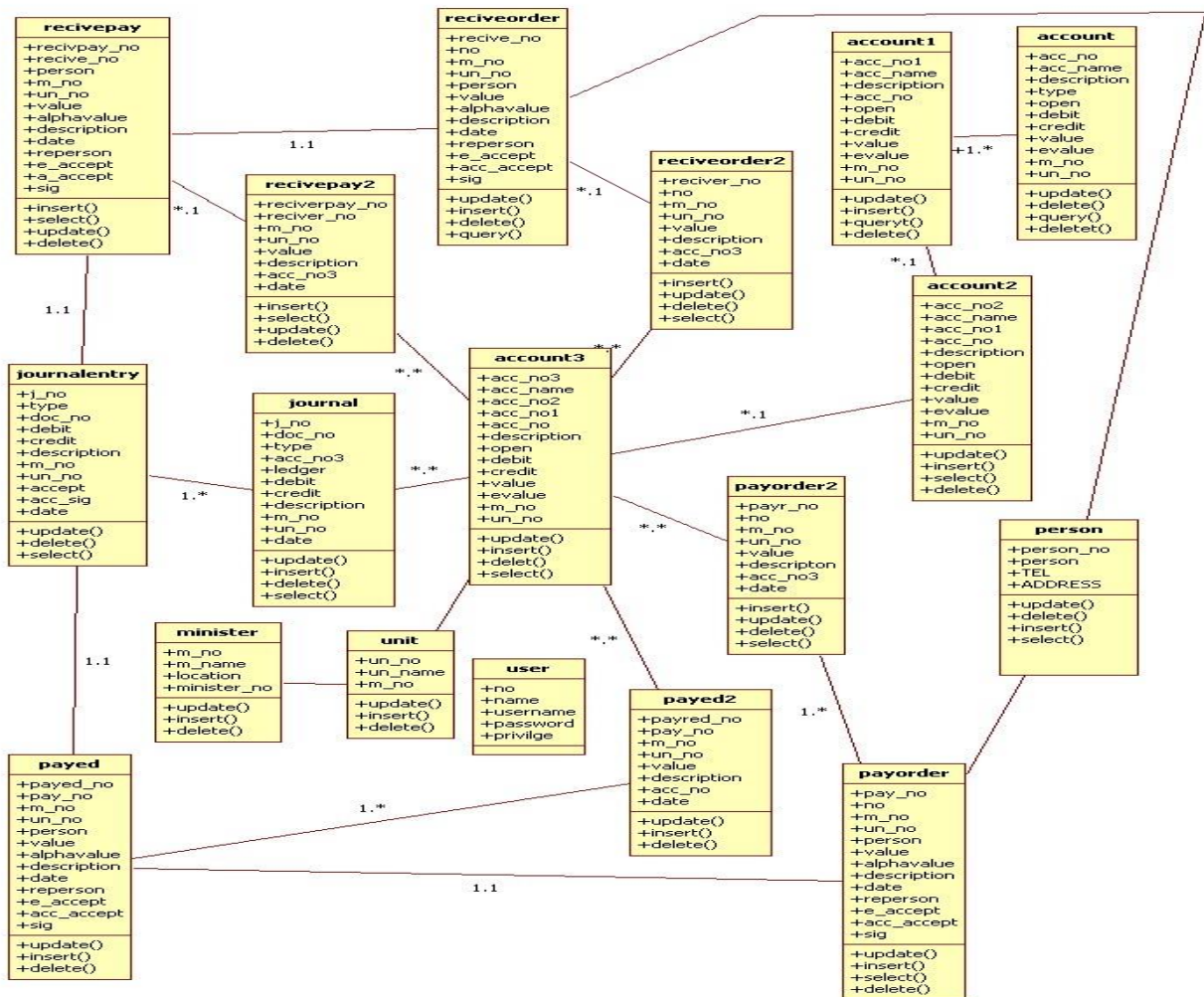


Figure 1: uml(class diagramm for E- accounting system)

6.2 E_accounting System Implementation:

Few database, interfaces and reports from the software application development are captured in the figures below. In figure 2 is the database of the system are that shows a list of tables in the system using mysql by apache server . In figure 3 the main home page that shows a list of new general transaction, expenses and revenue in the system. It also displays links to other pagesof the E-AS. the E_AS procedure ,process, steps and setting are shown in figure4.

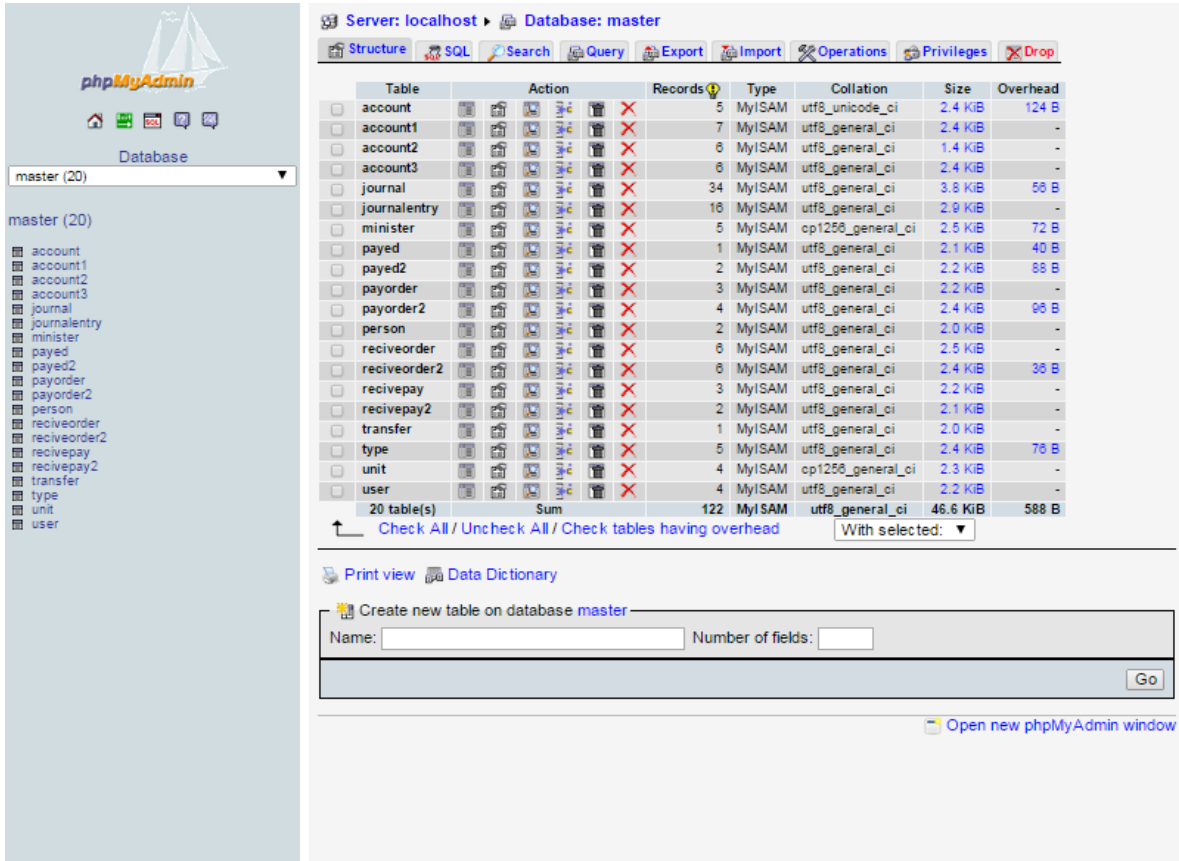


Figure 2: E_accounting system database(tables and users)

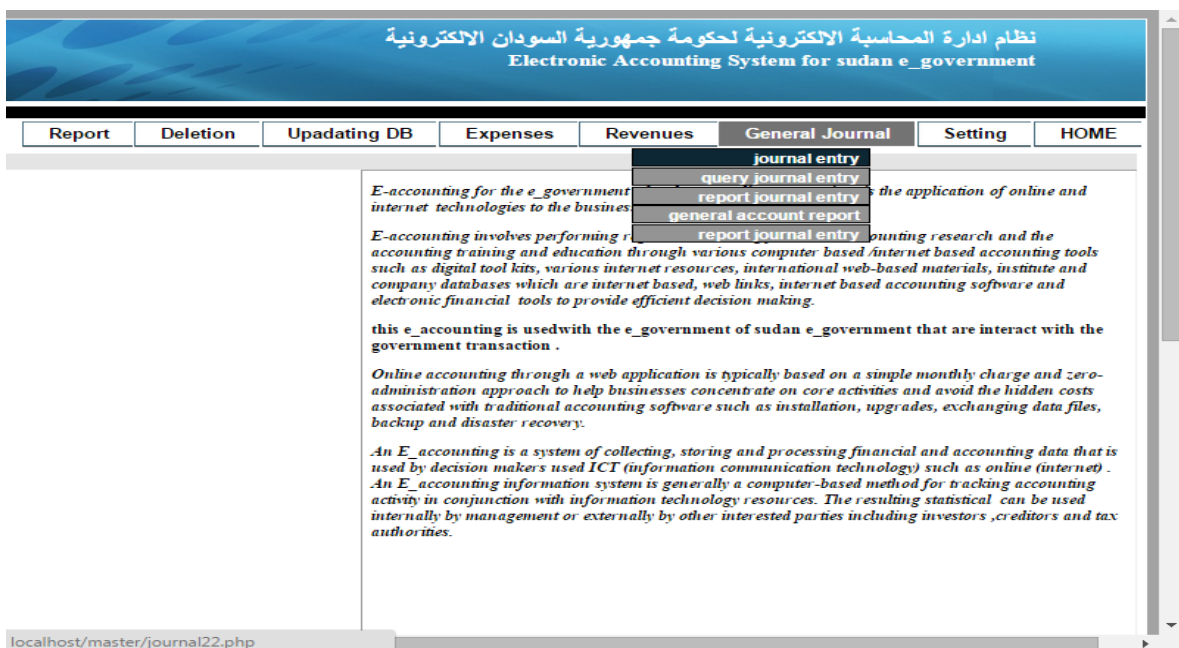


Figure 3: E_accounting system home page (tables and users)

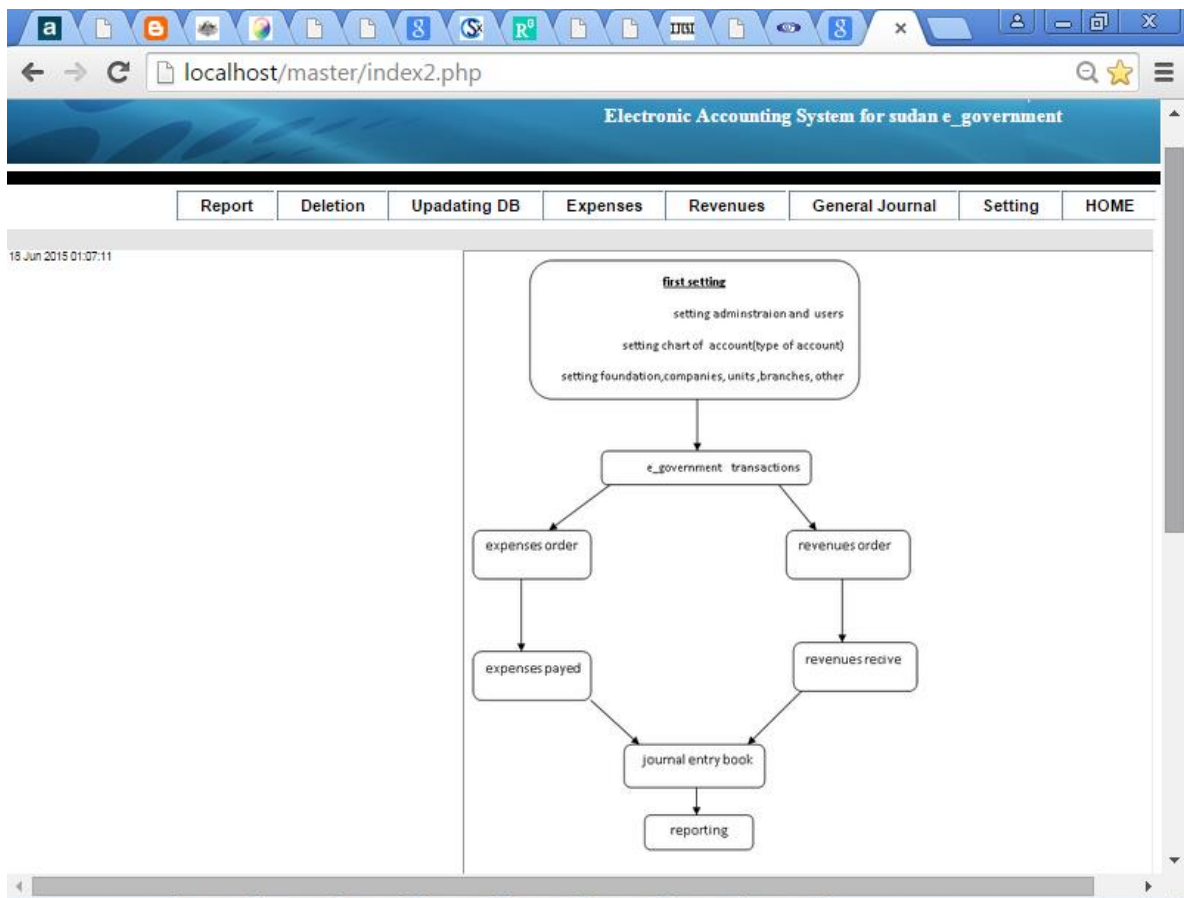


Figure4: procedure, steps and setting diagram interface

In blow we figure 5,6,7 capture in the revenues cycle begin with form e-government transaction ,Receive order interface ,recive payment interface and finally register all in general journal entry interface to produce report also the cycle of expenses is look like revenues cycle.

The screenshot shows the 'Receive Order' interface (امر قبض الايرادات) in the system. The page title is 'نظام ادارة المحاسبة الالكترونية لحكومة جمهورية السودان الالكترونية'. The navigation menu is the same as in Figure 4. The main content area contains a form with the following fields and controls:

- company: alneebin university (جامعة النيلين)
- unit/branch: (اختار)
- total: [input field]
- transaction_no: [input field]
- Reiveorder_no: [input field]
- value in alpha: [input field]
- customer: [input field]
- date: [input field]
- DESc: [input field]
- account: [dropdown menu]
- description: [input field]
- value: [input field]
- total: [input field]

Buttons at the bottom include 'save', 'query', 'update', and 'delete'.

Figure5:receive order revenues interface

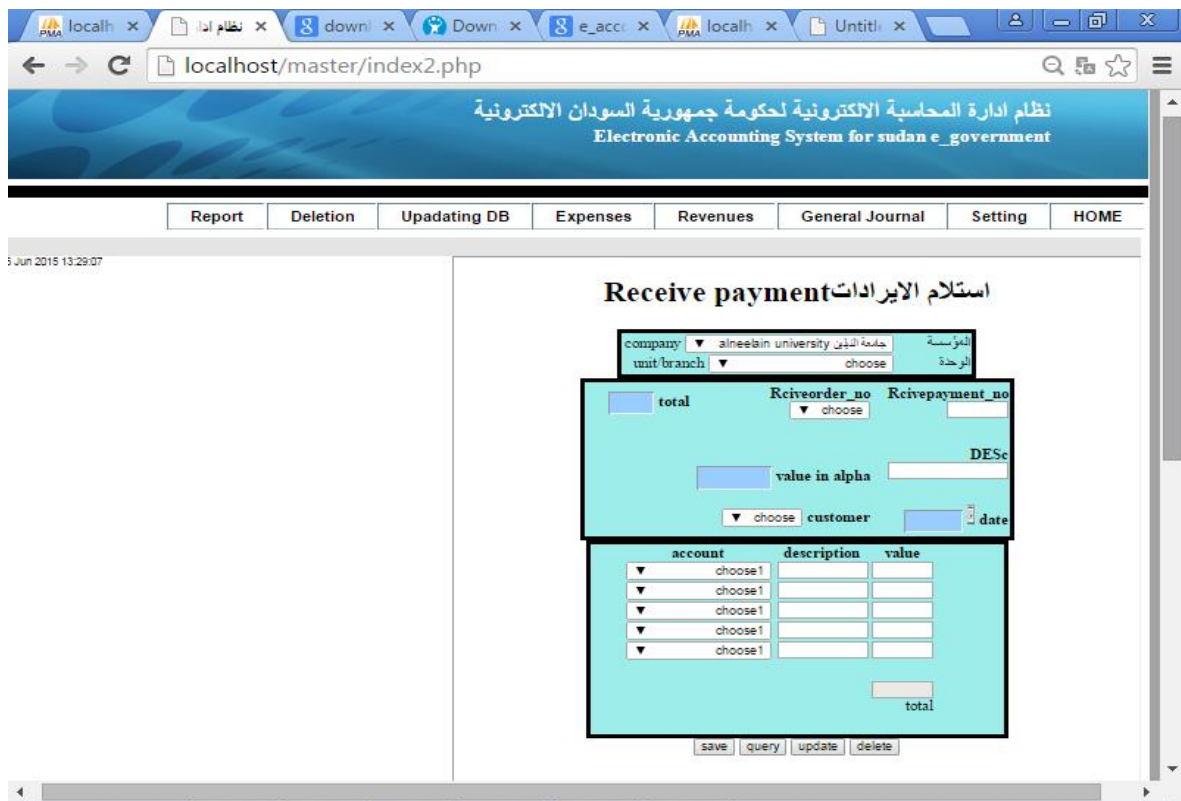


Figure6: receive payment revenues interface

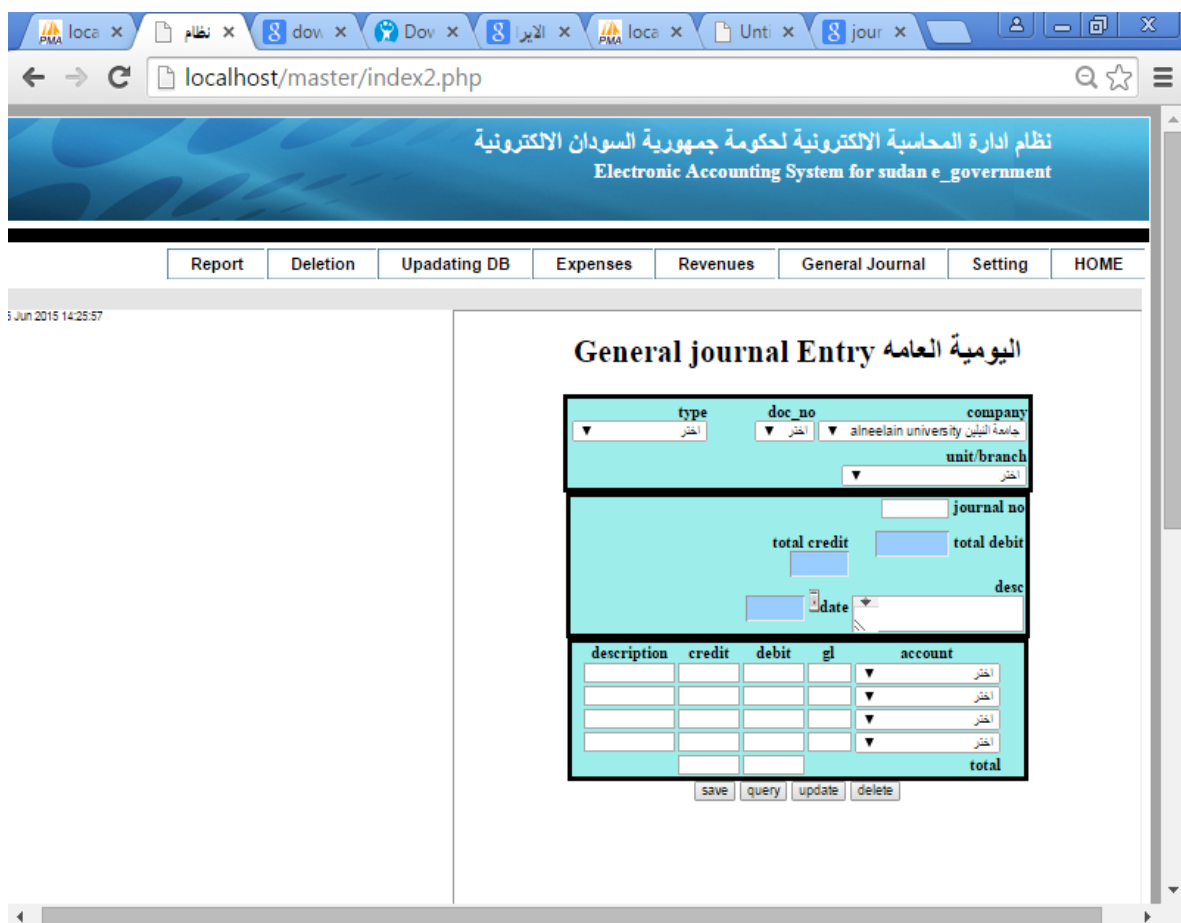


Figure7: journal entry interface (main form)

IN Figure 8 and 9 are the few sample reports one of them is tabular report and another one is graph report that can be generated from E_AS are shown below:

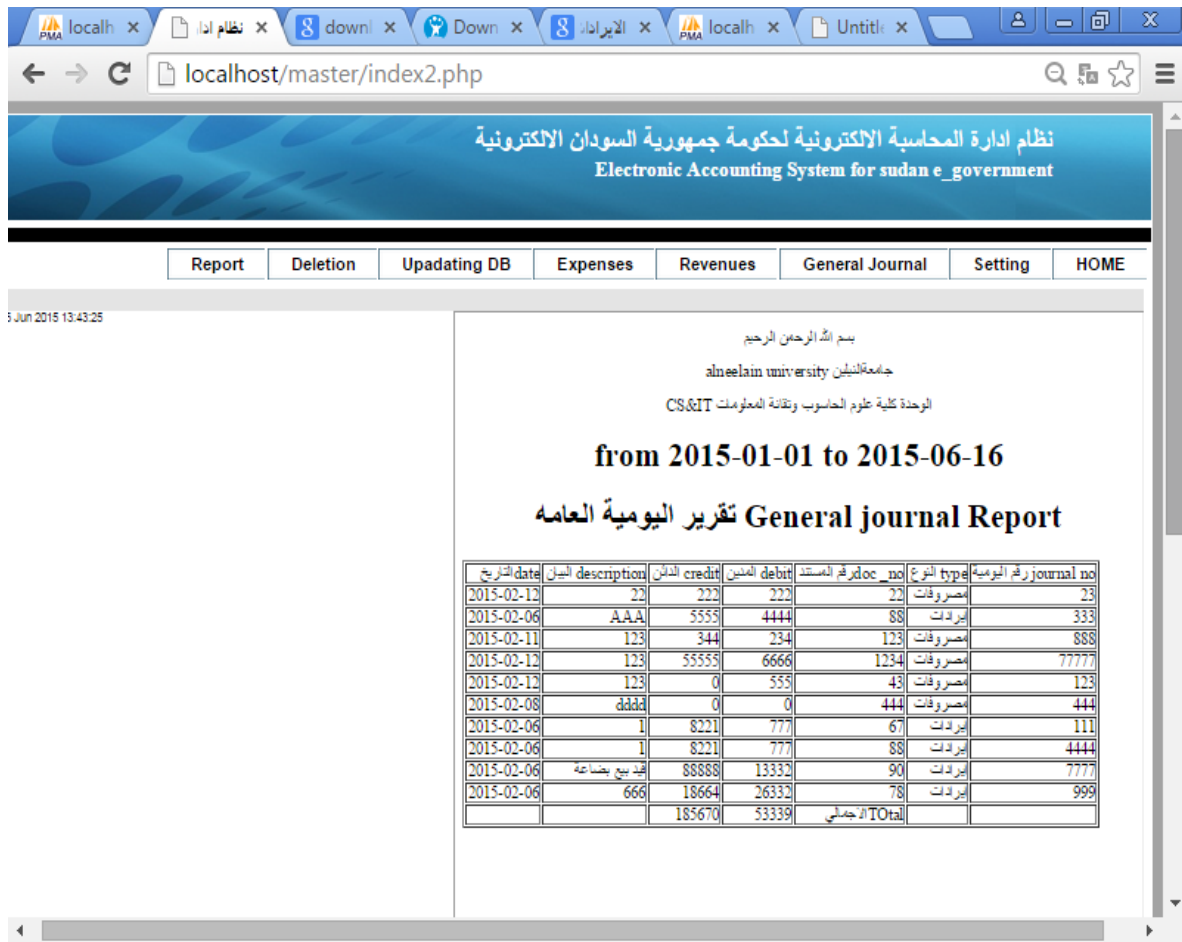


Figure8: sample of tabular report generated from E_AS

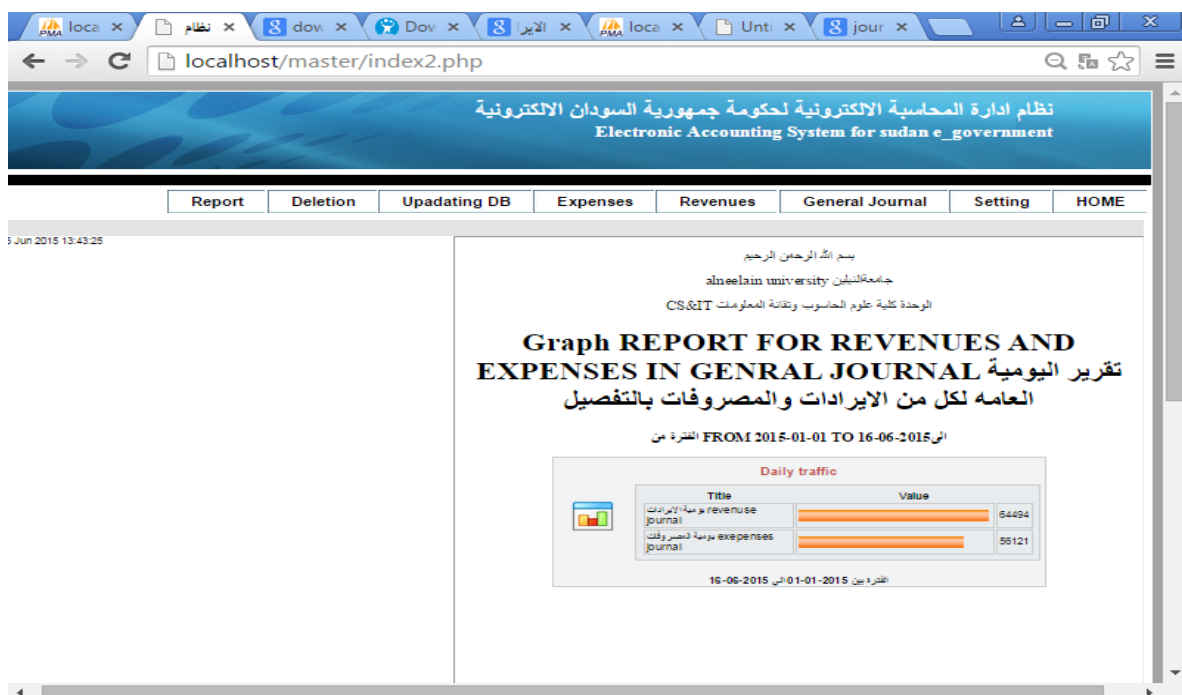


Figure9: sample of graph report generated from E_AS

7. CONCLUSION & FUTURE WORKS

There has been a great need over the years for the E_accounting activities of the Sudan government to be automated in order to be able to facilitate work effectiveness, efficiency, reduce cost, increase accountability, profitability, increase revenues and decrease expenses. There has also been an increase in the need for the freedom of information and transparency in accounting. Government and activities. The E-A system developed can lead to improve management of accounting processes and reports that E_government of Sudan are need. In future work, the integration of E-A system with other E_government that will use to a manner that even with the connivance of the system administrator, designated authority, software developer, service provider or any entity will not be possible for any other bidder or third party to view, tamper, delete, open, modify, or manipulate the confidential contents of a bidder's bid till the time of Public Tender Opening and also the issue E-A system be examined and incorporated.

In design and implementation of electronic accounting system for Sudan E_government used many useful technologies and approaches. E-A system developed as a web application. The system design by UML and was implemented using Personal home Page (PHP), Hypertext Markup Language (HTML), JavaScript and css .while The database management system (DBMS) used MySQL. The web server used is Apache these technologies is more useful to develop and design E_systems . The E_A system include main home page ,setting interfaces and forms with the tabular and graph reports that are important for E_accounting and E_government .

There no successful of E_government without E-A system. E-A system is needed for other electronic systems and integrated with other E_government projects and system.

REFERENCES

- [1] Al-Khafaji, N. J., A. J. K. Shittuline, et al. (2012). The effect of resistance to change in the application of e-Government in Iraq. ICT and Knowledge Engineering (ICT & Knowledge Engineering), 2012 10th International Conference on, IEEE.
- [2] Muhammad Mustafa al-Jabali, "new trends in the review in light of technological changes in Accounting Information Systems", Scientific Journal of Economics and Commerce, Faculty of Commerce - Ain Shams University, 2002, p 269.
- [3] Deshmukh, Idea Group, 2006 , E-accounting ,<http://en.wikipedia.org/wiki/E-accounting>, (Accessed on 23.01.2015)
- [4] Raval Priyang D. and Maisuria Mahendra H (2009) E-Accounting: A Concept and Implementation *.International Indexed & Refereed Journal, March, 2013, ISSN 0974-2832 (Print), E-ISSN- 2320-5474, RNI RAJBIL, 2009/29954, VOL -V * ISSUE- 50.
- [5] Dr. Patel J. K.: (2011) Adoption and impact of e-accounting(2011) golden reasearch thought vol1 issue 2pp 1-4 , ISSN no 2031-5063.
- [6] Jump up to:a b United Nations Department of Economic and Social Affairs. "United Nations E-Government Survey 2014" (PDF). UN. Retrieved 2014-09-16
- [7] Jeong Chun Hai @Ibrahim. (2007). Fundamental of Development Administration. Selangor: Scholar Press. ISBN 978-967-5-04508-0.
- [8] [8] Suha Hameed, Adnan Al-Shawabkah, Role of E-Government inImproving Organizational Performance in the Civil Status and Passports Department of Jordan, Developing Country Studies , Vol.3 No.5, 2013 ,pp 50-64.
- [9] V. Ndou, E-government for developing countries: opportunities and challenges. The Electronic Journal on Information Systems in Developing Countries vol. 18, no. 1, pp.1-24, 2004
- [10] J. Seifert, A primer on E-government: Sectors,stages, opportunities, and challenges of onlineGovernance. Report for Congress, 2003. Accessed on 14 October, 2005, from <http://www.fas.org/sgp/crs/>.
- [11] B. Rubin and H. Wang, Embedding e-finance in e-government: a new e-government framework. Electronic Government, vol. 1, no. 4, pp. 362-373. 2004.

- [12] S. Cohen, and W. William, The Future of E-government: A Projection of Potential Trends and Issues. Columbia University, 2002.
- [13] NOIE, E-government Benefits Study, Commonwealth of Australia, Canberra, 2003.
- [14] OECD, OECD E-Government Flagship Report “The E-Government Imperative,” Public Management Committee, Paris: OECD, 2003
- [15] W. Seifert and G. Bonham, the Transformative Potential of E-Government in Transitional Democracies. Public Management.
- [16] M. Alshehri, S. Drew Implementation of e-Government: Advantages and Challenges IASK E-ALT2010 CONFERENCE PROCEEDINGS.
- [17] NIC, “Sudan e-government master plan”, Khartoum: National Information Centre, 2007b.
- [18] United Nations Public Administration Country Studies (UNPACS), 2014. From <http://unpan3.un.org/egovkb/en-us/Data/Country-Information/id/162-Sudan/dataYear/2014> Accessed on 08 August, 2014.
- [19] EBS website, <http://www.ebs-sd.com/en/ebs-in-figures.php> retrieved on september 2013.