IMPLEMENTATION OF AUDIT STAFF INFORMATION SYSTEM BASED ON THIN CLIENT TECHNOLOGY

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Abstract

Thin client can be used in business application areas with centralized-managed manner and has no other moving parts in it. The system provides thin client users to view the information of the auditors' list under Banmaw District, including Banmaw, Moemauk, Mansi and Shwegu. Moreover, the transfer order for a particular staff is managed according to the service period (duration) of the staff in a particular township. Concerned with staff information, the important facts - Date of Birth, start date of Occupation and the Arrival dates, are used to know the transfer date of the staff. Searching the information of all of the staffs is absolutely time consuming process with manual procedure. As a consequence of this, the system is implemented by managing the server oriented manner and also intended to use online service by creating the specific domain for this site which is one of the strategic plan of e-government in Myanmar. The voluminous documents have been reduced by using client server audit staff information system. It also favors the waste of time as well as money for all of the audit offices and can lessen human labor intensive works.

Keyword: Audit office, thin client, server oriented manner, e-government, labor intensive works

1.INTRODUCTION

Most of the offices today are driving from document based into computer based. So, creating the based office applications can provide the best achievements to the users. The followings are significant aims when implementing the whole system. They are to reduce paper-based office information system, to eliminate human errors as much as possible and to provide faster access about the auditors' important information.

Any organized information system can be collected, organized, stored and communicated as accessible information system (IS). Moreover, people and organizations can collect data, filter them, create and distribute these data based on the complementary networks. In the computerized information system, people and computers can interact with each other by processing and interpreting information. The software is used to run the computerized database and the other system functions. From the academic study point of view, information system is simply the combination of hardware and software to transfer data and information from one another [6].

The operations, management and decision making process can be done with any information system. The Information and Communication Technology (ICT) components are focused only on the end use of information technology. Contrary to business processes, information systems are used to handle the business process performance. A work system is composed of humans and machines to produce the required products or service for customers under the defined performance and activities. Furthermore, an information system is devoted to capture, store, retrieve, transmit, manipulate and display the activities of information [11].

By this way, information system is interrelated with data systems and activity systems [4]. It is also called communication system where data can be represented and processed as the type of social memory. Sometimes it is referred to as the semi-formal language in which human decisions are made into actions and they are also targeted on studying the organizational informatics.

The organization's critical system functions, technology related architectures and processes performed should be protected, reliable, available and complaint by the Information System (IS) audit group to

make sure the organization's policies, procedures, applicable laws and even regulations. By integrating with IT governance audits, the impact on the organization's processes and abilities about the achievement of goals can be evaluated. The COBIT (Control Objectives for Information and Related Technology) can be used as the evaluation framework concerned with good IT control practices internationally.

2. RELATED WORKS

ISA (Information System Audit) support the IT Governance and Integrated Audits facilities. The reviewing of the organization's responsibility and the satisfaction of quality IT delivery services to establish the adequate systems of internal controls are performed under the IT Governance [9]. Integrated Audits just performs reviewing the dependency of automated business operations to support the business process [3]. The technology perspective of the
audit, the application controls including user access administration, change control application, backup and recovery to assure the reliable, integrated and data availability.

The taxonomy of the audits includes three specific approaches to do the task of IT audit such as constructing the technological innovation process of existing risk profile and for new systems. It also needs the testing of company's research and development facilities and tracking record of producing new products [10]. Another task of the technological audit reviews the requirements to apply in the business. They are characterizing as base, key, pacing or emerging technologies.

The description of the IT audits spectrum includes five categories [12]: namely systems and applications, information processing facilities, systems development, Management of IT and Enterprise Architecture. It is important for an audit to verify the appropriate and efficient applications and the reliable, timely input processing and at all the system's activity levels at the systems and application level [7]. An audit must be verified the processing facility to control the timely, accurate and efficient processing of applications without interrupted conditions at the information processing facilities. At the systems develop stage, an audit is verified to ensure the focused objectives are obtained and accepted with the accordance standards for systems development. At the final level, information passing is verified by the audit to manage the IT related organizational structure and procedures.

As the internet becomes very popular, the uses of online services are also useful in various fields. So, the Web based applications are replaced in traditional systems [5]. The audit system is essential for every sector of the country in order to know the detail information of the transaction as well as business. In office management, the audit routine is used to enable the progressive integration of worldwide manufacturing, to keep track of inventory level and to control financial processing [2].

According to [13], quantified the Hybrid Remote Desktop Protocol on Quality-of-Experience in the thin client system. The model is used to fit with the estimated functions to monitor how the data's changing well. The [8] showed that the given point of a thin-client is used in certain time flow over the other thin-client.

3. SYSTEM DESIGN

The system designs the server site as admin and the thin client site as user or member.

3.1. Thin clients Connected Banmaw Office Server

The detail information about all of the audit staff is stored at Banmaw district server. And the four townships are acting as thin clients to access server information.

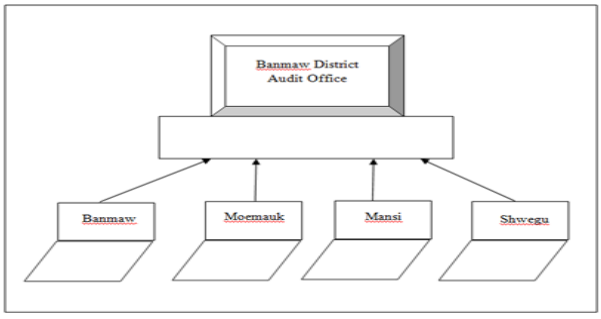


Figure 1 Four thin clients are connected to the server computer

3.2. Server Side Administration

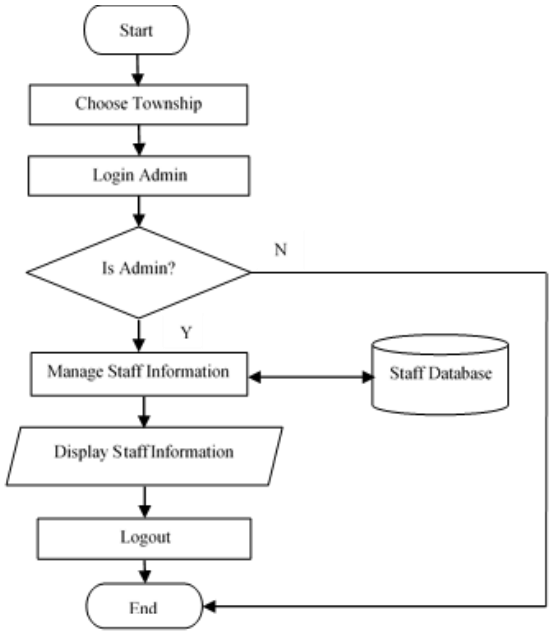


Figure 2 Server site information storage

All of the staff related information is stored and managed at server side Banmaw District.

3.3. Thin Clients User or Member Side Information Accessing

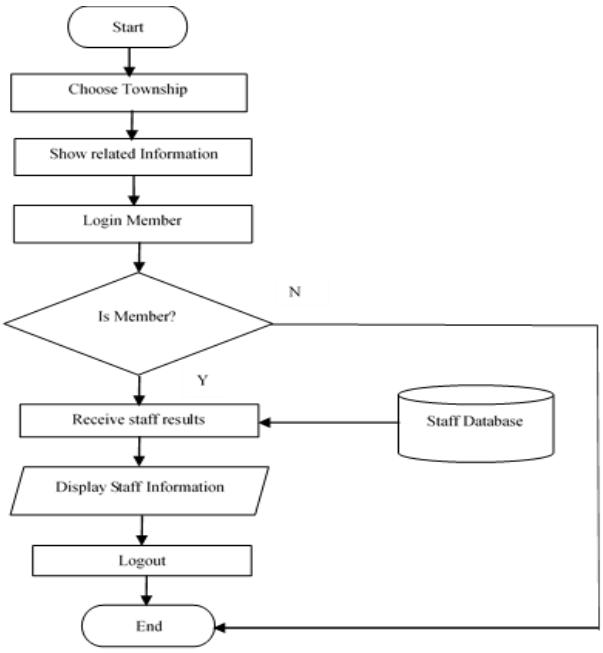


Figure 3 Client or user side approaching

Only the displaying function is given to the member or user at thin clients. The update, delete and insert functions are processed at server side.

3.4. Benefits of the System

By using this system, all of the information about the auditors' offices under Banmaw district can be accessed in one place at any time via thin clients. Furthermore, the transfer order allowance for all of the staff can be determined based on the arrival date. Not only at the auditor office but also the other offices can use this useful system, widely.

3.5. The Database Structure of the System

As the amount of 50 staffs are inserted and calculated in this system, there may be difficulties to handle hundreds of staffs' information simultaneously. The DBMS process of inserting, updating and deleting functions may take a long time in response. The most important thing is to remove the duplicate data under a proper circumstance by using the key methodologies such as primary key, foreign key and candidate key.

3.6. Thin Client Replacement Benefits

Nowadays, paper based processes are becoming obsolete and also consume significant energy (time and money). And the offices are therefore required to equip with update technology. Error correction is the most tedious manner for the customers or users when paper related applications are used. Based on these pushes, the demanding on information technology based businesses can be placed in human labors. The thin client's availability and the profits and loss of PC under different environments are shown. As a revolution of computing paradigm, the personal computers (PCs) are emerged. Thin clients become an alternative attractive including ubiquitous PCs with their own place in business organizations. A set of holistic guidelines are situated with the development of various thin client technologies.

The network administration is reduced to the administration of one server only and the simplified and old computers can simulate the running of a powerful computer. Furthermore, the cheap, simple and powerful designs have been proposed. A thin client or a lean or slim client is a computer or a computer program which fulfill the traditional computational roles by relying

heavily on the server computer. The difference between thin client and traditional client (thick) is that the role of server may vary from providing the data persistence on behalf the client's for actual information processing.

In the broader computer architecture, thin clients share the computation processes with the definite server. It can also be viewed as the infrastructure of thin client is sharing computing services through several user-interfaces. The total cost of ownership (TCO) is also reduced by maintaining computational services and so the modern thin client is becoming low-end computer terminal with the facility of graphical user interface is only delivered to the end-user. The server managed all of the operating system facilities.

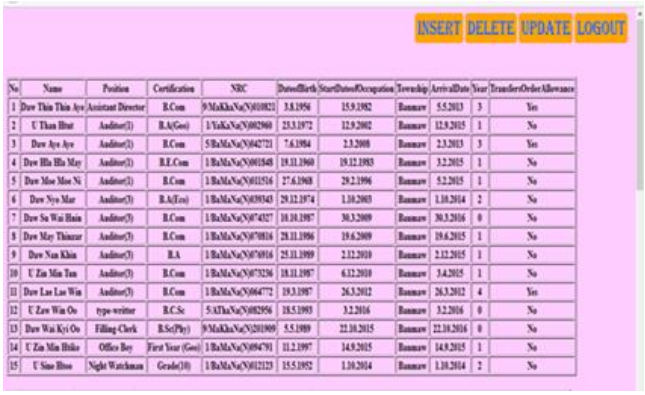
4.IMPLEMENTATION

In the implementation section, Hypertext Preprocessor (PHP) Language is used to get the desired results for users. This language is the most suitable and useful for Web based applications. Most of the previous traditional audit systems were only document-based and this system is the alternative way of computer-based application. Nowadays, in developing countries, distributing and maintaining information over online based application is vital. Sometimes, security plays a big role for online users. Keeping the detail information of the audit office is the innovative trends for all of the other office. Retrieving, updating, deleting and updating of the audit staffs are done at MySQL language usage.

The implementation of the home page of the system and then we can visit the other three townships under Banmaw district site.

Figure 4 Server Administration

The server side administrator manages the site from accessing the unauthorized user. The below Figure 4(a), 4(b) and 4(c) depict the staffs' information from the four townships.



No	Name	Position	Certification	NRC	DateofBirth	StartDateofOccupation	Township	ArrivalDate	Year	TransferOrderAllowance
1	Daw Thin Thin Aye	Assistant Director	B.Com	9/MaKaNa(N)018821	3.8.1956	15.9.1982	Banmaw	5.5.2013	3	Yes
2	U Than Htut	Auditor(1)	B.A(Geo)	1/YaKaNa(N)002960	23.3.1972	12.9.2002	Banmaw	12.9.2015	1	No
3	Daw Aye Aye	Auditor(1)	B.Com	5/BaMaNa(N)042721	7.6.1954	2.3.2008	Banmaw	2.3.2013	3	Yes
4	Daw Hla Hla May	Auditor(1)	B.E.Com	1/BaMaNa(N)001548	19.11.1969	19.12.1993	Banmaw	3.2.2015	1	No
5	Daw Moe Moe Ni	Auditor(1)	B.Com	1/BaMaNa(N)011516	27.6.1968	29.2.1996	Banmaw	5.2.2015	1	No
6	Daw Nyo Mar	Auditor(3)	B.A(Eco)	1/BaMaNa(N)035343	29.12.1974	1.10.2003	Banmaw	1.10.2014	2	No
7	Daw Su Wai Hnin	Auditor(3)	B.Com	1/BaMaNa(N)074327	10.10.1987	30.3.2009	Banmaw	30.3.2016	0	No
8	Daw May Thinzar	Auditor(3)	B.Com	1/BaMaNa(N)070816	28.11.1986	19.6.2009	Banmaw	19.6.2015	1	No
9	Daw Nan Khin	Auditor(3)	B.A	1/BaMaNa(N)074916	25.11.1989	2.12.2010	Banmaw	2.12.2015	1	No
10	U Zin Min Tun	Auditor(3)	B.Com	1/BaMaNa(N)073236	18.11.1987	6.12.2010	Banmaw	3.4.2015	1	No
11	Daw Lae Lae Win	Auditor(3)	B.Com	1/BaMaNa(N)064772	19.3.1987	26.3.2012	Banmaw	26.3.2012	4	Yes
12	U Zaw Win Oo	type-writter	B.C.Sc	5/ATkaNa(N)052956	18.5.1993	3.2.2016	Banmaw	3.2.2016	0	No
13	Daw Wai Kyi Oo	Filling-Clerk	B.Sc(Phy)	9/MaKhaNa(N)019099	5.5.1989	22.10.2015	Banmaw	22.10.2016	0	No
14	U Zin Min Htike	Office Boy	First Year (Geo)	1/BaMaNa(N)054791	11.2.1997	14.9.2015	Banmaw	14.9.2015	1	No
15	U Sine Htoo	Night Watchman	Grade(10)	1/BaMaNa(N)012123	15.5.1952	1.10.2014	Banmaw	1.10.2014	2	No

Figure 4(a) Banmaw Audit Staff related Information

No	Name	Position	Certification	NRC	DateofBirth	StartDateofOccupation	Township	ArrivalDate	Year	TransferOrderAllowance
1	U Kyaw Htut	Assistant Director	B.Sc(Maths)	9/MaKhaNa(N)011402	1.7.1954	15.8.1983	Moemauk	2.2.2013	3	Yes
2	Daw Hla Thein	Auditor(1)	B.Com	2/MaKhaNa(N)031625	18.9.1979	19.11.1994	Moemauk	14.11.2016	0	No
3	Daw Thein May	Auditor(3)	B.Com	1/YaKaNa(N)014981	11.5.1968	29.1.1995	Moemauk	3.5.2013	3	Yes
4	U Moe Aung	Auditor(3)	B.A(Geo)	1/YaKaNa(N)013625	21.2.1982	11.8.2002	Moemauk	9.3.2016	0	No
5	Daw Myat Mon	Auditor(3)	B.Com	1/BaMaNa(N)085547	13.12.1989	30.3.2008	Moemauk	3.5.2015	1	No
6	U Win Thun	type-writter	B.C.Sc	1/MaMaNa(N)082745	5.5.1992	6.2.2015	Moemauk	6.2.2015	1	No
7	Daw Thandar	Filling-Clerk	B.Sc(Maths)	5/ATkaNa(N)085534	5.5.1992	6.2.2015	Moemauk	6.2.2015	1	No
8	U Thein Soe	Office Boy	Second Year(Geo)	1/YaKaNa(N)001854	7.8.1996	19.2.2015	Moemauk	19.2.2015	1	No
9	U Soe Soe	Night Watchman	Grade(9)	1/BaMaNa(N)014895	17.9.1952	1.12.2011	Moemauk	1.12.2014	2	No
10	U Min Aung	Night Watchman	Grade(5)	1/BaMaNa(N)09187	14.3.1952	1.9.2013	Moemauk	1.9.2015	1	No

No	Name	Position	Certification	NRC	DateofBirth	StartDateofOccupation	Township	ArrivalDate	Year	TransferOrderAllowance
1	U Thuya	Assistant Director	B.Com	9/MaKhaNa(N)012751	18.2.1972	15.9.1982	Mansi	4.5.2015	1	No
2	U Hla Min	Auditor(1)	B.E.Com	1/BaMaNa(N)001548	19.12.1960	19.12.1984	Mansi	1.10.2013	3	Yes
3	Daw Moe Thidar	Auditor(1)	B.Com	1/BaMaNa(N)002528	27.5.1967	29.2.1997	Mansi	2.5.2014	2	No
4	Daw Aye Sandar	Auditor(1)	B.Com	1/MaNaNa(N)024528	7.6.1954	1.6.2009	Mansi	24.8.2015	1	No
5	Daw May Thu Zar	Auditor(3)	B.A(Geo)	1/MaNaNa(N)022860	23.3.1952	12.9.2002	Mansi	4.3.2015	1	No
6	Daw Moe Moe Wai	Auditor(3)	B.Com	1/BaMaNa(N)074108	10.10.1987	30.3.2008	Mansi	3.4.2016	0	No
7	U Soe Aung	Filling-Clerk	B.E.Com	9/MaKhaNa(N)010648	4.8.1989	2.10.2014	Mansi	2.10.2014	2	No
8	U Zay Yar	Office Boy	B.Sc(Phy)	1/BaMaNa(N)054516	11.2.1998	14.8.2011	Mansi	3.3.2015	1	No
9	U Lwin Aung	Night Watchman	Grade(7)	1/MaNaNa(N)023325	14.2.1953	1.10.2014	Mansi	1.10.2014	2	No
10	U Zaw Min Oo	type-writter	B.C.Sc	5/ATkaNa(N)072586	18.4.1992	3.2.2010	Mansi	5.5.2015	1	No

Figure 4(b) Moemauk and Mansi Audit Staff related Information.

No	Name	Position	Certification	NRC	DateofBirth	StartDateofOccupation	Township	ArrivalDate	Year	TransferOrderAllowance
1	U Min Khing	Assistant Director	B.E.Com	1/YaKaNa(N)003596	29.11.1965	31.3.2008	Shwegu	3.3.2013	3	Yes
2	U Aung Ela	Auditor(1)	B.Com	1/BaMaNa(N)012256	28.1.1978	12.8.2005	Shwegu	5.5.2015	1	No
3	Daw Sandar Aung	Auditor(1)	B.Com	1/YaKaNa(N)016852	29.9.1974	1.9.2009	Shwegu	4.5.2013	3	Yes
4	Daw Zar Zar Lwin	Auditor(1)	B.A(Eco)	1/BaMaNa(N)070126	24.9.1988	2.12.2009	Shwegu	2.9.2016	0	No
5	U Myo Naing	Auditor(3)	B.A(Eco)	1/YaKaNa(N)002634	21.2.1972	12.9.2004	Shwegu	2.4.2013	3	Yes
6	Daw Mya Hlaa	Auditor(3)	B.Com	1/AthaNa(N)089265	17.5.1994	4.8.2016	Shwegu	4.8.2016	0	No
7	Daw Shwe Zin	type-writter	B.C.Sc	5/ATkaNa(N)103775	19.12.1992	3.2.2012	Shwegu	4.3.2014	2	No
8	Daw Khin Kyi	Filling-Clerk	B.A(Eco)	1/YaKaNa(N)089206	15.12.1974	16.10.2004	Shwegu	3.3.2015	1	No
9	U Ko Ko	Office Boy	First Year (Hist)	1/YaKaNa(N)004791	11.5.1997	14.9.2015	Shwegu	14.9.2015	1	No
10	U Mya Maung	Night Watchman	Grade(7)	1/YaKaNa(N)002123	15.5.1959	11.10.2015	Shwegu	11.10.2015	1	No

Figure 4(c) Shwegu Audit Staff related Information

Figure 5 Displaying Login Member's Data

Figure 6 Allowing Staff to transfer to another Township

The same update, insert and delete for the audit staffs are being done at the Moemauk, Mansi and Shwegu townships.

Computer Types	Desktop	60-250 watts
	Laptop	15-45 watts
	Thin client	15-20 watts
Monitor Types	17-19 inch LCD	19-40 watts
	20-24 inch LCD	17-72 watts
	17-19 inch CRT(old kind)	56-100 watts

Table 1. Observation of watts usage for thin client computers with related monitor types

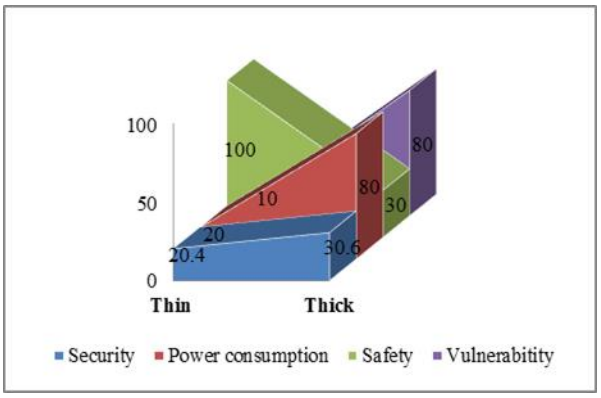


Figure 7Versatile Saving Effects on Thin vs Thick

According to figure 7, it can be seen that the power consumption of thin clients is much less than the normal thick clients when running the applications [8]. Sometimes, it is unrealistic to measure the actual power consumption and cost savings between these two types of clients. If the configuration is client-server architecture, the consumption of power may be ambiguous whether or not solely depends on client or server. When the virtualization technology is introduced and then metering power may become interesting. Moreover, converting obsolete PCs into thin clients may reduce a lot of power consumption is a debatable issue.

5.CONCLUSIONS

The system has been shaped with fully useful and applicable thin client/server manner for the audit staff information for four townships in Banmaw District. Moreover, the audit offices can reduce paper related processes such as storing, viewing and maintaining the information by using this system. All of the office works can be achieved in time and safely with the use of this system. So, it can greatly benefit to the government's economy sectors. Moreover, the probability of security, safety, vulnerability and power consumption between thin client and thick are also presented. Furthermore, the related computer types and their watts usage based on the monitor types are also discussed. In future, many other auditors information from both upper and lower Myanmar can be accessed easily with sever based information distributing systems.

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