

An Online Departmental Fee Management System

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Abstract-In Universities Nationwide, there are a large number of students who pay all their fees through cash deposits, electronic cash transfer or bank drafts to the University's account in specific bank branches. These methods have proven inefficient in more ways than one. It was upon such background that the researchers embarked on a paper aimed at developing an alternate system that enables students as well as sponsors to securely pay fees using valid credit and debit cards. Object Oriented Analysis and Design Methodology (OOADM) was employed in the design of the new system. The system was developed using hypertext preprocessor (PHP), hypertext markup language (HTML) and MySQL database. The new system assist students in paying their fees and issues them a receipt automatically.

Keywords- HTML, PHP, OOADM, Management System

I. INTRODUCTION

Fees is defined as money regularly paid to a school or similar institution for continuing services. Simply put, departmental fee is that fixed interval payment made by a student(s) to the department for he or she's continued stay in the institution and for the smooth running of the department. From the definition above, one can pinpoint that departmental fee ought to be paid bi-semester. In university systems, there is a need for automated method of storing data, so a greater need for an automated online departmental fee management system. This will go a long way in alleviating the various problems and stress involved in the manual method of departmental fee payment. Also the issue of delay in being issued a receipt as a result of inability to complete the tedious manual processing of bank draft will be curtailed. The focus of this research therefore is to provide a reliable and transparent system devoid of personal inclinations and interest, to eliminate the stress of queuing for long hours during departmental fee payment in the study university. Using computer based system for fees payment necessitated this research in order to help solve these problems of either delayed payment, or the students not paying at all. Using university systems as the case study, the research has the intention of creating a software that could process students school fees payment to the university's bank accounts and electronically lodging individual students fees indicating name, department, matriculation number, level, date of payment, amount of money paid, academic session/semester, bank details, phone number and some other personal records. This will enhance prompt payment and safe delivery and automatically stop the management and students from being frustrated financially and otherwise. University systems have a large number of students who are

supposed to pay all the university fees through cash deposits or bank drafts to the university's account in various bank branches. Prior to now, students often embraced technological advancement with the fear of the unknown and as such have decided to undertake the usual rigorous, stressful and time consuming manual methods. This method of payment has not been efficient enough especially during periods of tests and examinations when most of the students are paying fees to meet the requirements for entering examination halls. The process of fees payment in such periods is characterized by long queues, too much waiting by students and congestion at banks where payments are made. Students queue to pay fees and those who do not reach the counters within the banks' working hours are advised to return the next day. This process has always resulted in students missing to sit for their tests, examinations or even lectures while they are queuing to make their payments. However, the 21st century came with a lot of challenges that only the use of computer can solve effectively. E-payment or automated payment of student's departmental fees in any school would boost the school management and therefore increase productivity thus:

- 1) Reducing the time staff in the bursary department spend cross checking and balancing cheque books
- 2) Reduced cash handling or operating a cashless economy makes the students and staff more secure.
- 3) Management can run the department without fear of financial loopholes.
- 4) Saves time for the students, making them have more time to invest on their studies.

Therefore, the payment of students' school fees in a particular school enhances the productivity of such school for both the management and students as well. Even as a

computer based system is used for such payment for easiest and fastest mode of operation as well as accurate security and good financial management; which some universities are now operating. Therefore, the paper provides an alternative method that enables secure online fees payment by students.

II. STATEMENT OF THE PROBLEM

When the need arises for a student to pay a fee in any of the banks affiliated to the university, he/she pays the cash equivalent of the fee to the bank after which (s) he obtains a bank draft from the bank. This bank draft would have to be verified and processed at various departments and units in the bursary department of the school. After the rigorous processes and during which the students queue up in a minimum of two (2) offices for unending hours, a receipt is finally issued to them. In the manual system, the records are documented in a file cabinet. Each time verification is needed, a search operation is conducted on the file cabinets to locate a particular student's data. To alleviate this problem, there is a need to develop an efficient online platform that is reliable and cost-effective, which can manage the processes efficiently. The purpose of this research is to develop an online departmental fee management system that acts as a solution to the problems of the student's tuition fee payment currently in the institution. Some of the problems encountered in university systems are:

Management problems:

- 1) Loss of student's information or errors made while processing information about their paid fees.
- 2) Non-Academic Staff Union (NASU) embarking on strike.
- 3) Miscalculations or errors made in the process of calculating the total of the fee paid to the department.

Student's problems:

- 1) Manual pre assessment of student tuition payment system is very slow and consumes a lot of time which causes the delay in completing the entire enrollment process.
- 2) Consumption of time and human effort due to long queues in the process of paying money in the bank and the stress of converting draft into receipt.
- 3) Late or delayed payment due to personal reasons or Non-Academic Staff Union (NASU) embarking on strike.

Documentation problems:

- 1) Everything is done on paper and these are highly prone to damages and require a good amount of security and space to store.
- 2) Editing is another level of problem in those paper documents; the only option is to make new documents if any correction needs to be made.
- 3) Manual method of documentation does not provide backup.
- 4) Any minor or major work requires to be done at a particular place (bursary).

- 5) Due to manual ways of generating report, such report can easily be misplaced or lost.

Aim and Objectives of the Study

The aim of this study is to develop an online departmental fee management system.

The objectives:

- 1) To develop a new system using hypertext preprocessor (PHP), hypertext markup language (HTML) and Object Oriented Analysis and Design Methodology (OOADM).
- 2) The new system gives a quick access to data and modification of records if necessary.
- 3) To reduce the problems and stress of queuing up of students during payment in the bursary department due to manual process of payment.
- 4) To ensure safety of the documents, because the system will be password aided to enhance security
- 5) The new system saves time and ensures accuracy in record keeping.

III. REVIEW OF RELATED WORK

In the last two decades, electronic payment systems have attracted much attention from researchers and information system designers due to their vital role in modern electronic commerce. This has led to wide and in-depth researches that produced different perspectives on e-payment among others. Shon and Swatman (1998) introduced the term electronic payment system to describe any exchange of funds initiated via an electronic communication channel, while Kalakota and Whinston (1997) showed that an electronic payment is a financial exchange that takes place in an online environment. Abrazhevich (2004) stated that electronic payment systems are summoned to facilitate the most important action after the customer's decision to pay for a product or service. Martovu (2009) in a study titled, availability and accessibility and use of ICT in management of student's academic affairs in Makerere University finds that this emerged because of the problem that there was mismanagement of student's academic records despite the technological advancement that had advanced in the University. Such problems include loss of marks, miscalculation of marks to mention but a few. The study intends to establish how ICT affected management of student's academic affair. It applied both correlation and cross sectional survey design. Data were collected using semi-structured survey questionnaires and interviews. Cao and Brodnick (2002) in a research titled, what social factors affects student's use of online registration an exploratory study, investigated factors that affect college student's use of online registration service that was then recently offered in a private university in Northern California. Findings show that during the first year 31% of students who pre-registered their courses and result show that academic and demographic factors affected students' use of online registration service. It also shows pharmacy and international studies students and

high income families had higher perception of use. However, results did not show a sign of impact of gender on the use of online registration.

Although there are more than 120 mobile money projects being undertaken in about 70 emerging markets (Beshouri *et al.*, 2010), mobile payment has only become a normal practice in a few countries, despite its huge potential. The lack of worldwide dissemination of a service with such a huge potential shows that successful cases are not clearly understood, and as a consequence, are not being easily replicated. This suggests that lessons are not being learnt from the places where the system has been successfully adopted. Furthermore, one suspects that the obstacles to its adoption in most countries are not being investigated deeply enough to allow implementation strategies to be employed on the basis of reliable business models. If these issues can be clarified, the potential social and economic impacts of mobile money can be more effectively measured and this can persuade policy makers to create favorable regulatory environments for fostering the practice of digital payments. In view of the importance of mobile money and payment initiatives, and the gaps in the current state of knowledge in the field, the objective of this paper is to provide a knowledge base on mobile money, based on a comprehensive literature review, and can be employed to identify significant experiences, together with the models being deployed around the world, especially in developing countries. Although there are literature reviews currently available both in the general context of mobile payment (Dahlberg *et al.*, 2008) and in the field of mobile financing in developing countries (Duncombe and Boateng, 2009), the present work focuses on mobile payment/mobile money (as opposed to mobile financing in general) with a special stress on local. Olanipekun *et al.*, (2013) examined the impact of e-banking on human resource performance and satisfaction.

Questionnaire was used to source for data from fifty randomly selected respondents which constitutes the sample while Chi-square analysis was used to analyze the collected data. The study demonstrated that introduction of electronic banking has impacted positively on the bank's human resource performance. It has also resulted to improved efficiency and effectiveness of service delivery by bank workforce and has enhanced customers' satisfaction. The study recommended that critical infra-structures that aid the usage of e-banking products should be provided. Hamid and Cheng (2013) identified young adult's perception of e-payment risk and their behavior towards different payment methods. Survey questionnaire was distributed to gather data from the students of tertiary institutions in a metropolitan city of Malaysia. The findings showed significant difference in perceived risk between cash and e-payment but less significant in terms of volume of purchase. Tella (2012) synthesized the technology acceptance model (TAM) to explain and predict the success of e-payment system using

users' satisfaction as dependent variable. Data was collected using a modified e-payment questionnaire. The sample for the study consisted of 74 teaching and non-teaching academic staff from the Faculty of Communication and Information Sciences, University of Nigeria, Nsukka. The results revealed correlation among perceived benefits, perceive enjoyment, speed; service quality, perceive ease of use and actual use and e-payment success. Moreover, the entire seven e-payment constructs together made 69% of e-payment system success. In addition, perceived benefits, perceive enjoyment, speed; service quality, perceive ease of use and actual use are good predictors of e-payment system success. The study pointed out that instead of making use of self-reported measure, future research should consider developing more objective and accurate measure for the determining the e-payment success. Adeoti and Osotimehin (2012) investigated the consumers' satisfaction with adoption of e-payment system in Nigeria. Data for the study was collected from bank customer. Generally, the result indicated that less than 10% of the consumers were satisfied with the speed of transaction, extent of service provided by the merchants, awareness, and security. The study called for improvement of the consumer interface in order to achieve the objective of the cashless economy which the country is aiming at. Chavosh *et al.*, (2011) investigated bank customers' satisfaction with e-payment services in Malaysia. Through a review of literature, the research considered issues associated with electronic payment and discussed its advantages. Thereafter, a comparative analysis was provided by looking at the satisfaction rate with e-payment services in Malaysia's Banking Industry between two sample groups in Penang. These two groups consist of respondents who are holders of Degree and Non-Degree users of electronic payment bank services. The results of the study demonstrated that in spite of inconveniences, cost and some security concerns both groups of respondents indicated high level of satisfaction with e-payment services. The study found in-convenience to be the most important challenge identified by Non-Degree Holders, while Degree Holders were more concerned about security issues. The study concluded by pointing to the fact that the outcomes from the research can be used as platform for bank manager and e-payment companies to improve their systems and services. This study differs from the current research in terms of setting. The former was conducted in the banking sector while the later was conducted in an academic environment. Ayo *et al.*, (2010) in a review and evaluation of the state of e-Banking implementation in Nigeria and the influence of trust on the adoption of e-Payment from the perspective of extended technology acceptance model (TAM). The study considered factors such as organizational reputation, perceived risk and perceived trust in the management of banks as they enhance customer loyalty. The results show that perceived ease of use and perceived usefulness are not only antecedent to e-banking acceptance, they are also factors to retain customers to use e-banking system, boost

organizational reputation, perceived risk and trust. Compare to the current study, Ayo *et al.*, (2010) only focus on review and evaluation of e-banking from the perspective of an existing model (TAM). However, the current study focuses on satisfaction with e-payment system and the likely factors that determines it. Singh (2009) said that, payment systems that use electronic distribution networks constitute a frequent practice in the banking and business sector since 1960s, especially for the transfer of big amounts of money. In the four decades that have passed since their appearance, important technological developments have taken place, which on the one hand have expanded the possibilities of electronic payment systems and on the other hand, have created new business and social practice, which make the use of these systems necessary. Arkalgud (2012), says e-payment involves trading using the latest electronic equipment and software between the sellers and the buyers. The trade in e-commerce is conducted in a slightly different way than the traditional trading. The earliest form of automation in the financial industry was done to automate the functions of clearing house in bank associations. In 1968, group of California bankers formed Special Committee on Paperless Entries (SCOPE) which led to the formation in 1972 of California Clearing House Association. This was the first regional automated Clearing House. The first form of automated payments was to disburse salaries to employees from an employer's account. Gradually, the information revolution changed the outlook of the banking sector and computerized majority of the functions.

Addressing the rapid growth of internet access in United Kingdom, Credé (1998) stated that the proliferation of the volume of business transacted through the internet would have exponentially growth in the first decade of the third millennium. He mentioned the effect of e-payment systems on the UK economy, and examined the pros and cons of the common e-payment systems in the UK, like debit and credit cards. Furthermore, they suggested some alternative e-payment systems that they believe outperform the current systems. Khiaonarong (2000) examined the creation of modern electronic payment systems in Thailand and concluded that this creation has helped facilitate the turnover of funds in the economy, while the use of information technology in current payment arrangements helped reduce human intervention and default cheques and has helped strengthen the country's capabilities and competitiveness in providing financial services. Yu *et al.*, (2002) explored the advantages and limitations of several different electronic payment systems including online credit card payment, electronic cash, electronic checks and small payments. After analyzing and comparing these types of payment systems, they concluded that in the future, the use of virtual credit cards would escalate. Furthermore, smart cards will replace traditional electronic cash in the market. They also proposed that electronic checks are suitable for corporations and governments because their direct cost is high. In addition,

they concluded that pay-per-click and per-fee-links would definitely become online trends for transactions. Tsiakis and Sthephanides (2005) studied concept of security, trust and their affects in electronic payments. Their study implicated that these issues are essential for every electronic payment mechanism in order to be accepted and established as a common medium of financial transactions. Hung *et al.*, (2006) surveyed the factors that determine the publics' acceptance of online tax filing and payment system (OTFPS) in Taiwan. Investigating relevant previous studies, they identified the determinants for acceptance of the OTFPS. Then, they examined the casual relationship among the variables of acceptance behavior for the OTFPS. Using data collected from 1099 usable responses, they indicated that the proposed model explained up to 72% of the variance in behavioral intention. In addition, the important determinants of user acceptance of the OTFPS are perceived usefulness, ease of use, perceived risk, trust, compatibility, external influences, interpersonal influence, self-efficacy and facilitating condition. Jing (2009) examined the security of on-line payments. He, also, surveyed the common on-line electronic payment system and focused on the internet bankcard payment system, electronic-cash internet payment system, e-purse internet payment system and electronic check internet payment system. In his attempt, he counted the safety factors as the integrity of the information, the validity of information, the non-repudiation of information, the authenticity of the transaction status and the reliability of the system. Finally, he proposed a strategy of e-commerce security. In another perspective, Peter and Babatunde (2012) viewed e-payment system as any form of fund transfer via the internet. Similarly, according to Adeoti and Osotimehin (2012), electronic payment system refers to an electronic means of making payments for goods and services procured online or in supermarkets and shopping malls. Another definition suggests that e-payment systems are payments made in electronic commerce environment in the form of money exchange through electronic means (Kaur & Pathak, 2015). Vassiliou (2004) defined electronic payment as a form of financial exchanges that takes place between the buyer and seller facilitated by means of electronic communication. Cobb (2004) posits that the value of electronic payments goes way beyond the immediate convenience and safety of cards to a greater sphere of contributing to overall economic development. Humphrey *et al.*, (2001), on the other hand defines electronic payment as cash and related activities executed electronically. Pariwat and Hataiseere (2004) postulate that considerations should be given to expediency, dependability and safety of the payment method. Peirce (2001), debit and credit cards are the fastest increasing mode of payments in any electronic transactions. Balachandher *et al.*, (2001) also said Telephone banking also known as telebanking is a form of artificial banking which provides financial services with the help of telecommunication devices. With this device, the customer is able to do business by dialing telephone which is linked to

the bank’s system and aided by Automated Voice Response Technology. According to the authors, this speeds up productivity and the customer has an expanded access and also saves time used to visit the bank or an ATM. Leow (1999) the customer gets services at their work places and in the comfort of their homes. “In Ghana, telephone banking is gaining control as most banks such as Barclays Bank, Societe General (SG) Bank all provides telephone banking. For instance, “Sikatel” or SG call centre telephone banking makes it possible for clients to make enquiry relating to the bank’s products and services and also lodge complaints” (Abor, 2004). Humphrey and Hancock (1997) are in the opinion that electronic payments refer to cash and associated transactions implemented using electronic means. E-payment is also defined as payment by electronic transfer of credit card details, direct credit or other electronic means other than payment by cheque and cash (Agimo, 2004). Antwi *et al.*, (2015) defined e-payment as a payer’s transfer of a monetary claim on a party acceptable to the beneficiary. Lin and Nguyen (2001) defined e-payment as payments made via the automated clearing house, commercial card systems and electronic transfers. Gans and Scheelings (1999) defined e-payment as payments made through electronic signals linked directly to deposit or credit accounts. Hord (2005) also sees e-payment as any kind of non-cash payment that does not involve a paper cheque. As noted earlier, in Nigeria, cash is the main mode of payment and a large percentage of the populations are unbanked (Ajayi and Ojo, 2006). This makes the country to be heavily cash-based in its economy.

IV. METHODOLOGY

The Object Oriented Analysis and Design Methodology (OOADM) was adopted for the analysis and implementation of the design of an e-payment system.

ANALYSIS OF THE EXISTING SYSTEM

Due to the rigorous processes of paying fees in universities (because of the number of students making use of the services in the bank at the same time), there are endless queues which is a very time consuming process. To overcome this problem, a system were developed in which the students can pay the fees online without going to the university’s bank. This process is easy as one can directly transfer the amount from our account to the university’s bank account. In this system, the user withdraws the cash equivalent of the departmental fee to be paid. Pays it in, in the university’s approved bank. Thereafter, the bank issues the payer a draft. The user is expected to duplicate the draft at any cybercafé of choice after which one goes to the bursary and registers the draft with his personal and payment information I the appropriate office. After the registration, the user is directed to another office where one submits the original copy of the draft and it’s duplicate. The signature of the finance officer in charge of the office may be signed on the copies of the draft. The date (couple days or weeks) for the collection of the receipt is made known to the user by the finance officer in charge. Fig 1.1 below shows the analysis of the existing system.

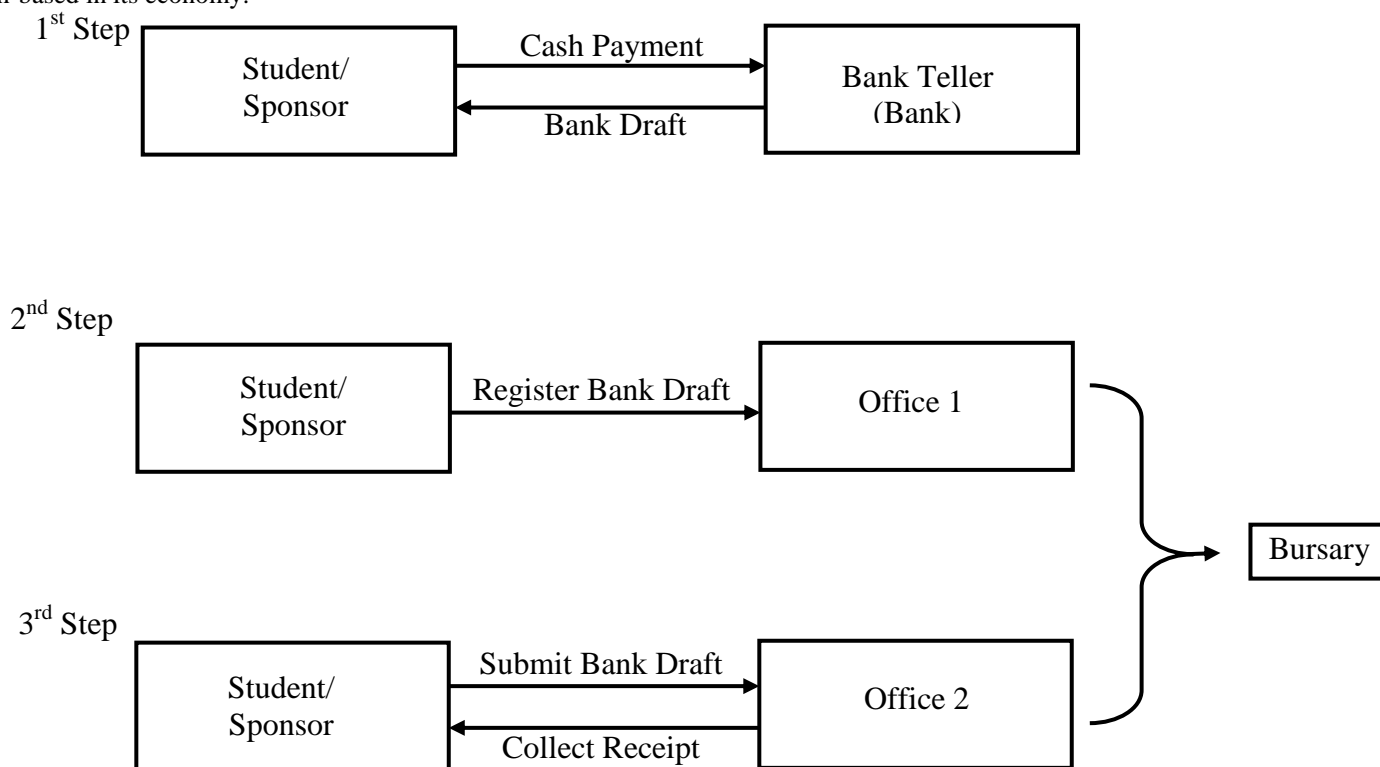


Fig 1.1 Analysis of the Existing System.

ANALYSIS OF THE NEW SYSTEM

User signs up into the system with his/her personal information. If sign up is successful, one can login into his account in order to view his personal and payment details, pay his/her fees and even edit their personal details. During login, the system compares the data input by the user with those already stored in the database. If details correspond with one of the user details in the database, the login would be successful and the user can view his/her dashboard else, an error occurs. In this situation, the user either signs-up again with new account details or tries rectifying the issue with the options provided to him by the system. Due to the signup and login processes, the system can grant access to eligible users and block unauthorized access. All users except the admin (Finance Officer) are expected to pay their fees using the system. For these payments to be made,

information such as: name, email address, amount, card name, card number etcetera is required. The system validates the payment by comparing the personal information provided with that already stored in the student’s record. If details are valid, it processes money transfer to the university account and generates receipt as proof of a payment transaction. It then stores the transaction details for the online fees payment made by students in the ‘payment records’ (which is in the database). The finance officer on the other hand, goes through the login process like the user with the exception of signing up. Rather, one is responsible for the maintenance of the system. This involves managing payment updates i.e. one can make changes to the fees to be paid by the users. The finance officer can also require the database to generate payment records if need be. Fig 1.2 below shows the analysis of the new system.

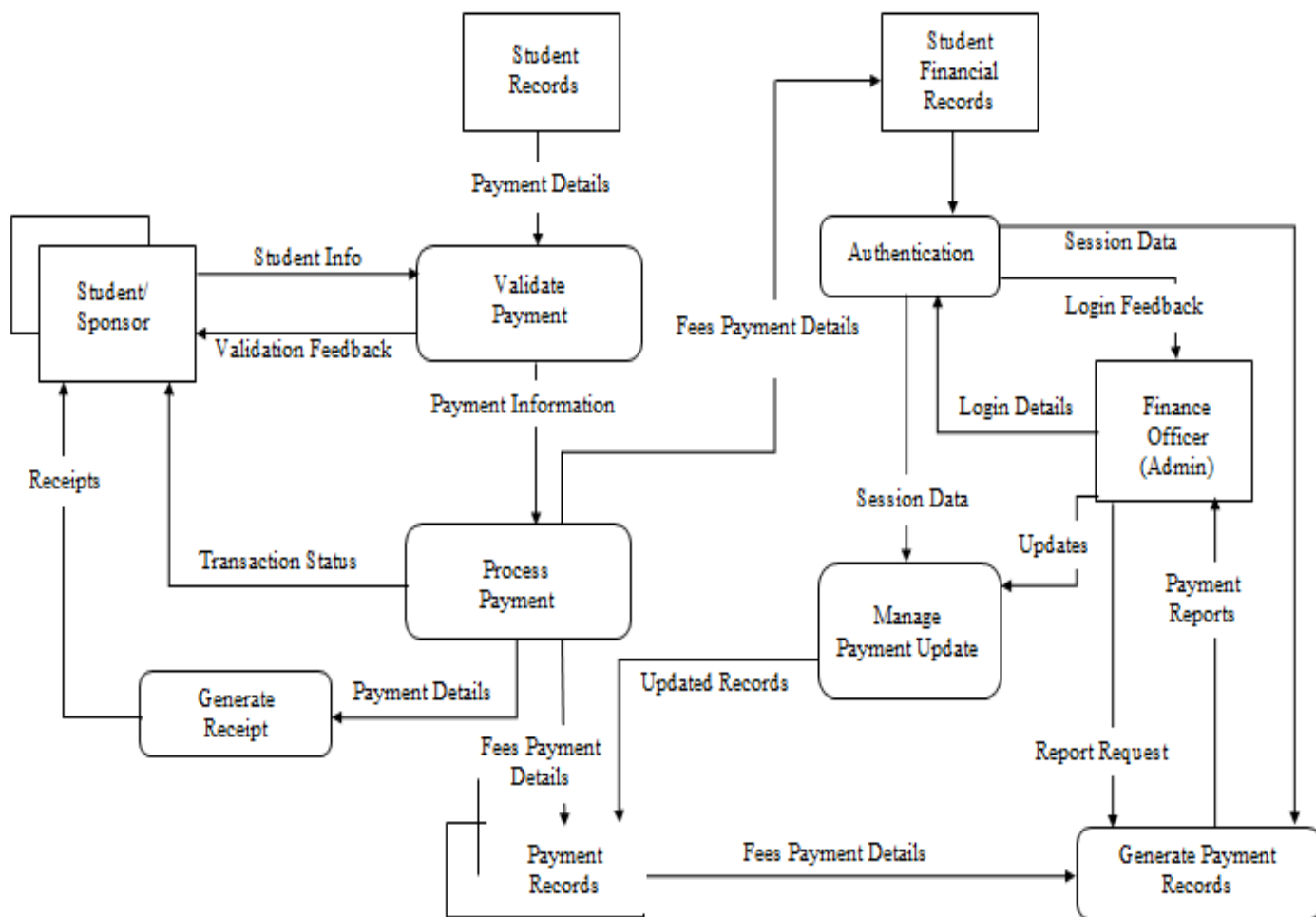


Fig 1.2 Analysis of the New System

V. CONCLUSION

A conceptual framework for an online departmental fee management system is developed, that can address the difficulties encountered by students, parents and university management regarding fee payments and collections. The study was able to achieve the stated aim. The development of a new system using hypertext preprocessor (PHP), hypertext markup language (HTML) and Object Oriented Analysis and Design Methodology (OOADM) was achieved. This new system gives a quick access to fees payment, data and modification of records if necessary.

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