CHAPTER I

INTRODUCTION

1.1 Background

The arrival of Nabil Bank in Nepal is on the 12th July 1984 through a joint venture with Dubai Bank Ltd. Under a Technical Service Agreement (TSA), marks a new dawn in the Nepalese banking industry. What is more admirable is with the opening of then Nepal Arab Bank Ltd, Customer Service or marketing took a U-turn. That is substance accelerated the evolution in banking products and services thereafter in Nepal. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Currently, Nabil bank is providing a full range of commercial banking services through its 47 points of representation across the nation and over 170 reputed correspondent banks across the globe.

Nabil has proved that it has through its past progressions and through different phases in the banking industry achieved two things it can take pride in: first it has a large clientele base and supportive stakeholders; secondly, it has succeeded in positioning itself robustly in the market for which the credit goes to Nabil Team.

Today the bank was able to established itself as one of the prime banks of Nepal. It is one of the largest banks in terms of the network and number of branches among the commercial banks with a wide network of ATMs and offerings including a range of diversified service products. In this span of banking operation, the bank has already distributed rich cash dividends, spectacular returns on asset and equity even during the most trying times. All of which endorses the strength and drive with which Nabil proceeds.

The bank has diversified its realms of business in the interests of customers and also being inspired by the noble cause of adding value to economic development. The bank has packaged its service products into well diversified range consisting of corporate banking, trade finance, along with customer and retail banking services specially, card products, microfinance and the like to reach out to the masses. Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it

started an era of modern banking with customer satisfaction measured as a focal objective while doing business. The values that drive the bank and its staff all the time which the bank also call its mission statement is CRISP (C-Customer Focused, R-Result Oriented, I- Innovative, S- Synergetic, P- Professional).

Nabil Bank has already introduced a computer based information system and is providing its services through fully computerized branches and well trained personnel. Operations of the bank including day-to-day operations and risk management are managed by highly qualified and experienced management team. Bank is fully equipped with modern technology which includes ATMs, credit cards, state-of-art, Internet banking system and Telebanking system. The entire branches of Nabil Banks use Finacle banking software, one of the latest banking software in banking sector of Nepal and offers Any Branch Banking Services (ABBS). Telex and SWIFT are other modes of communication for efficient and effective transmission of information and transaction. In Durbarmarg Card division is functioning well for the service of different types of cards as well as the E-banking services to the customer. The card division satisfies the diverse needs through a variety of services such as Credit Cards like MasterCard Local, MasterCard International, VISA Local, Diners Card as well as Debit Cards like VISA Electron / ATM Card, NABILPREPAID / NABILKOOLCASH Card along with their Operational Control, and Transaction Processing. The main objective of the study will be the analysis of online payment system focusing on card system of Nabil Bank and identifying and rectifying the problems associated in it.

1.1.1 MIS

Management Information Systems (MIS) are Information Systems, typically computer based, that are used within an organization. WorldNet describes information system as “a system consisting of the network of all communication channels used within an organization”. A MIS may be also defined as “a system that collects and processes data (information) and provides it to managers at all levels who use it for decision making, planning, program implementation, and control”.

In addition, information system is comprised of all the components that collect, manipulate, and disseminate data or information. It usually includes hardware,

software, people, communication system such as telephone lines, and the data itself. The activities involved include inputting data, processing of data into information, storage of data and information, and the production of outputs such as management reports.

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body, the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart works faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processes it and sends it to the destination in the quantity needed. It fulfills the needs of blood supply to human body in normal course and in crisis. (*Jawadekar, 2003:7*)

We can also define MIS by these points:

- MIS is an organized or planned effort and not the result of some sporadic attempts.
- The primary function of MIS is to provide information.
- MIS is a facilitating or supporting system to aid managerial functions and not merely help operational tasks, that is, the MIS provides information that assists managers at different levels in the organization.
- MIS is formed from a number of components, including hardware, software, manual procedures, models, and a database.
- MIS is a system of users and machines, the users are as important to the system as the machines.

Different classes of users of MIS, use it differently. Clerical users primarily provide input and data control. First line supervisors use it for operational control and detailed exception reporting. Management uses it for special reports and analysis, often employing a staff specialist to manipulate decision models and perform analysis. Because of the complexity of the process of MIS development and need for judgment, there is a need for comprehensive academic training for MIS professionals.

In one sentence, we can define MIS as a system, using formalized procedures to provide management at all levels in all functions with appropriate information, based on data from both internal and external sources, to enable them to make timely and

effective decisions for planning, directing, and controlling the activities for which they are responsible. The actual process involves the collection, organization, distribution, and storage of organization wide information for managerial analysis and control.

1.1.2 Relation between MIS and Bank

In Western Europe and United States, it is estimated that today one-half of the Gross National Product (GNP) is attributed to the production, use and distribution of computer based information. In a bank, having knowledge how to process and analyze information using computers in often a determining for success, which requires an information system.

After the restoration of democracy, the Government of Nepal launched an economical liberalization policy. This has led to an increasing number of commercial banks in the country, due to such increment of commercial banks, competition also increased among them, which have resulted in enhanced services to the customers getting more advantage that is competitive. This is only possible through proper information technology.

Management Information System is the backbone on which logical business decisions are made in all types of business organizations. Applying this same logic to a bank, we can safely say that a bank must have good Management Information System as a minimum to survive and prosper in this exceedingly competitive world.

1.1.3 Profile of NABIL Bank Limited

NABIL Bank Limited was established in 1984 as a joint venture bank with Dubai Bank Ltd of Dubai. NABIL bank is the first joint venture bank to commence operations in Nepal. This bank is the leader in bringing the very best international standard of banking practices, products & services. Nabil launched its operation with a marketing concept, i.e, customers are living gods/goddesses – please them and get immediate blessings/results. Nabil started knocking the doors of customers breaking the then trend of knocking the door of a bank by customers. In the banking sector, Nabil set the trend of following the definition of customer given by Mahatma Gandhi:

“A customer is the most important visitor on our premises. He does not depend on us. We are dependent on him. He is not an interruption on our business. He is purpose of it. He is not an outsider on our business. He is part of it. We are not doing him a favour by serving him. He is doing us a favour by giving us an opportunity to do so.”

NABIL Bank has been operating well from its very establishment. It has been helping business communities & the government in different ways. Bank is highly successful to create banking habits among the Nepalese people. This bank has become the bank of the year 2004. Nabil Bank was able to achieved D & B Rating of 5A2 Achieved, which indicates that the subject has a tangible net worth over NPR 96,70,00,000.00 as per the latest audited financial statements. Credit Appraisal 2 indicates that the overall status of the subject is good. This rating is assigned to businesses that are financially sound and with competitive trading record. Associated risk is low & considered better than average. D&B rating is assigned on the basis of tangible net worth and composite appraisal. The bank has a network of 43 points of representation spread across the kingdom that has complimented by a network of ATM's & now Nabil Net & Nabil Tele the ease of access of accounts & information for customer has been more convenient. The bank's business philosophy is “Your bank at Your Service”.

Mission

- To be the Bank of 1st choice to all the stakeholders
- To be the first choice in meeting all the financial requirements for the customer
- To be the investment of choice for the shareholders.
- Practice total quality management and embrace good governance and be the example of model bank for the regulators.

Vision

- a full service bank providing an entire range of products / starting with deposit, Visa & Master Card,
- Customer satisfaction is the 1st priority of bank
- Employees are treated with respect, good faith & provided equal opportunities.
- The bank is transparent in their dealings & conduct.

Values

- Customer Focused, Result oriented, Innovative, Synergistic & Professional

1.1.4 Electronic Payment System (A Case Study on Electronic Card Section of Nabil Bank Limited)

Electronic Payment System is a means of making payments over an electronic network such as the Internet. Today, many users make payments electronically. Hundreds of electronic payment systems have been developed to provide secure Internet transactions. Electronic payment systems are generally classified into four categories: credit card and debit cards; electronic cash; micro payment systems; and session-level protocols for secure communications.

A secure electronic financial transaction has to meet the following four requirements: ensure that communications are private; verify that the communications have not been changed in transmission; ensure that the client and server are who each claims to be; and ensure that the data to be transferred was, in fact, generated by the signed author. To meet these objectives, every electronic payment system developed depends on some type of encryption and/or utilization of digital certificates.

Electronic card is the plastic card issued by a bank with a magnetic stripe that holds machine-readable identification code. These cards are used for electronic commerce (with magnetic stripe readers or via Internet) and for banking transactions through automatic teller machines (ATMs). Two main types of cards are credit cards (which allow drawing of funds up to an approved credit limit) and debit cards (which allow drawing of funds up to the available balance in cardholder's account).

Nabil Bank is the pioneer in introducing credit cards in Nepal. This bank is a principal member of Visa and MasterCard International since early 1990. Nabil Bank is the bank having the widest range of services in cards, which includes acquiring of all kinds of cards under Visa and MasterCard brands. The bank also acquires Diners Cards being a sole agent for the country and has arrangement of POS sharing with American Express Cards. Similarly, the bank issues the widest range of credit and debit cards under the brands of Visa and MasterCard to their account holders as well

as non-account holders. Nabil Bank has the state of art technology in cards to provide online services.

1.2 Focus of the Study

Since Nabil Bank provides banking facilities and services to rural and urban areas of the country through its 37 branches. In this Competitive world of Banking System, it is very challenging job for the Banks to Stand on the Top Position. One of the key factors for the Bank to achieve or retain the Top position is the electronic Payment system and electronic card transaction. Thus, the significance of this study is to improve, strengthen the existing Card division in order to deliver the best Quality Services to its Customers.

The main focus of the study are as follows:

- To know about the current functioning of the Electronic Payment System and Card Division of the Nabil Bank.
- To gain the depth knowledge of Electronic Payment System and Electronic Card System
- To identify the problems faced by the users in the functioning of ATM & POS
- To give suggestion to the bank for the betterment.

1.3 Statement of Problem

Electronic Payment System is an important function of any banks because it is the determinant of whether the entity will be in operation in the foreseeable future. Electronic Payments and Card Section is even more crucial as the lifeline of bank sector. For a bank, along with others Management Information System, Electronic Payment System and Card Section in particular reveals the wider market as a whole that the bank is prudent, profitable and well managed. NABIL bank is one of the leading joint venture banks in the Nepalese economy providing wide variety of services. So, being the leading bank of Nepalese economy and a bank providing large categories of bank cards there exist a lot of questions that are related with Electronic Payment System and Card Division of NABIL bank.

- In this regard, NABIL a foreign joint venture commercial bank being the first private bank issuing largest types of Cards and fully computerized, along with the Banking software "Finacle" they are also using other tools like excel to process data from the database system and generate various management reports. These tools do not have any means to avoid the Data Replication.
- Electronic transaction process should be implemented at optimum level.
- User friendly ATM should be implemented and User's problems at POS & ATM terminal should be reduced during the cards transaction process.

1.4 Objective of the Study

This study of Electronic Payment System and Card division of NABIL Bank Limited is essential to analyze performance of the bank, to outlet new ideas, provide sources of livelihood to the professionals of all sector from management team, investor, customer, policy maker.

The main objectives of this study are as follows:

- To analyze the weakness in functioning of the Card division of Nabil Bank
- To analyze the effectiveness of Electronic payment system in the transaction process
- To identify the problems faced in ATM and Electronic card management

1.5 Rationale of the Study

The Underlying principles of study are as follows:

- With this study we can find out the defects of the system of organization which may be difficult for them to identify themselves.
- This can be the secondary research data or the reference to our followers.
- This study will clarify me about the Electronic Payment System and application of different types of cards in real application. This also enhances our knowledge about the topic.
- When the performance of Card Division in the banking system deteriorates, the level of dissatisfaction rise and banks may face large problem. So this

research study also focuses to explore both merits and demerits of the card division of NABIL Bank.

- This study also highlights the relationship of investment through cards and return of NABIL Bank.

1.6 Limitation of Study

The limitations of study are as follows:

- This research study only analyze the current information system to present the current role of Electronic Payment System and Card Division of bank placed at Durbarmarg, Kathmandu and tries to recommend a suitable suggestion and that recommendation may not be applied for other branches.
- Another limitation of this research study is that Secondary data is also used in this study. Some primary data is collected from observation, questionnaire, and interview method and it is assumed to be accurate and reliable.
- The time constrain is one of the prime factor of the study.
- At present Load shedding system of Nepal is also affecting the research work.
- Being a Technical subject all may not understand this easily.

1.7 Organization of the Study

The research Study entitled “Electronic Payment System (A Case Study on Electronic Card Section of Nabil Bank Limited)” includes the following chapters:

Chapter I: Introduction

The first chapter provides the background information of the study, focus of the study, statement of the problem, objective of the study, significance of the study, limitation of study, and organization of the study, therefore, this chapter provides summary of overall study.

Chapter II: Review of Literature

Review of literature is very important part of every research. This chapter includes the theoretical background of MIS and review how MIS can help the managers in their

decision making process in different hierarchy of organization. Unpublished Master Degree Thesis is also reviewed in this chapter.

Chapter III: Research Methodology

This chapter constitutes the methodology adopted to conduct the study, data analytical techniques, and processes. This chapter also contains research design, population and sample, sources of data, data collection methods, research software tools, data analysis tools and techniques used for data analysis.

Chapter IV: System Analysis and Data Presentation

In this chapter, system run chart, analysis of existing system, data flow diagram, entity relationship diagram, limitation of existing system, feasibility analysis, analysis of data and major findings are presented.

Chapter V: Summary, Conclusion and Recommendation

This chapter contains summary, conclusion and recommendation for the improvement of management information system in an organization.

Apart from this Bibliography and Appendix is also attached.

CHAPTER II

REVIEW OF LITERATURE

Many researchers have conducted their research in the field of card operation. Besides this, there are some books, articles, dissertation and other relevant study concerned with card operation. Some of relevant studies, there objective findings and conclusions and other literature relating to the topics have been reviewed in this chapter. This study will try to find and foretells the very worthiness of the study being undertaken. This part of study is divided into following sections:

- Conceptual Framework
- Review of Journals and Articles
- Review of Thesis

2.1 Conceptual Framework

This part of literature review focuses on the conceptual review of Electronic Payment System and Card Division of Nabil Bank.

2.1.1 Commercial Banks in Nepal

A commercial bank is a profit earning organization / institution whose major functions are acceptance of deposits, forwarding of loans, money exchange and transfer. Commercial banks also perform an extremely important function of credit creation which helps them in earning profits. They provide short-term loans, medium-term loan and long-term loans to trade and industry. Banks are classified on the basis of their functions, they are Central Bank, Commercial Bank, Agriculture Bank, Exchange Bank, Industrial Bank and Saving Bank etc.

The Commercial Bank Act 2031 also pointed out the functions of commercial banks as:

- To provide short-term debts necessary for trade and commerce.

- Accept deposits from the public and grant loans in different forms.
- To purchase and discount bills of exchange, promissory note, and exchange foreign currency.
- Credit creation, agency services, security brokerage services, assist foreign trades and providing financial advices and consultancy service.
- To discharge various other functions on behalf of their customers provided that they are paid for their services.

The main objectives of commercial banks are to mobilize ideal resources for productive use after collecting them from scattered resources. They pool scattered fund and channel them into productive use. Commercial banks can be of various forms such as Deposit Banks, Savings Bank, Industrial Banks, mixed Banks, Exim Banks etc. Commercial banks render a variety of services. In the absence of commercial banks, it will be impossible to meet the financial needs of the country. Its role in economic development is so immense; it brings about greater mobility of resources to meet the emerging necessity of the economy. The essence of commercial bank is the financial intermediation between the ultimate savers and borrowers. In other word, a bank's main function is to act as middleman between the surplus and deficit units in the economy and like any other firm in business to make profit for its shareholders. Commercial banks have become heart of modern day financial system as they hold deposits of millions of people, government and business firms. In doing so, they facilitate both the flow of goods and services from producer to consumer and to the financial activities of government. So the commercial banks are the most important institutions for capital formulations. Banks also act as a catalyst to foster industrial and trading activity within the country. Due to the development of industrial activity on the one hand people can enjoy employment opportunity and on other hand natural resources of the country can be well exploited for the benefit of all. Industrialization creates demand for agricultural goods as well and helps to uplift the agricultural sector. Thus, 'Bank' can be rightly interpreted as the promoter of economic development and catalytic agent for business and trading activities.

2.1.2 Management Information System

The initial concept of MIS was to process data from the organization and to present it in the form of reports at regular intervals. The system was largely capable of handling the data from collection to processing. It was more impersonal, requiring each individual to pick and choose the processed data and use it for his requirements.

This concept was further modified when a distinction was made between data and information. The information is a product of an analysis of data. This concept is similar to a raw material and the finished product. What are needed are information and not a mass of data. However, the data can be analyzed in a number of ways, producing different shades and specifications of the information as a product. It was, therefore, demanded that the system concept should be an individual-oriented, as each individual may have a different orientation towards the information.

This concept was further modified, that the system should present information in such a form and format that it creates an impact on its user, provoking a decision, an action or an investigation. It was later realized that even though such an impact was a welcome modification, some sort of selective approach was necessary in the analysis and reporting.

Hence, the concept of exception reporting was imbibed in MIS. The norm for an exception was necessary to evolve in the organization. The concept remained valid till and to the extent that the norm for an exception remained true and effective. Since the environment turns competitive and is ever changing, fixation of the norm for an exception becomes a futile exercise at least for the people in the higher echelons of the organization.

The concept was then evolved that the system should be capable of handling a need based exception reporting. This need may be either of an individual or a group of people. This called for keeping all data together in such a form that it can be accessed by anybody and can be processed to suit his needs. The concept is that the data is one but it can be viewed by different individuals in different ways. This gave rise to the concept of Database, and the MIS based on the Database proved much more effective.

Over a period of time, when these conceptual developments were taking place, the concept of the end user computing using multiple databases emerged. This concept brought a fundamental change in MIS. The change was decentralization of the system

and the user of the information becoming independent of computer professionals. When this became a reality, the concept of MIS changed to a decision-making system. The job in a computer department is to manage the information resource and leave the task of information processing to the user. The concept of MIS in today's world is a system, which handles the databases, provides computing facilities to the end user and gives a variety of decision making tools to the user of the system. (*Jawadekar, 2003:3-4*)

The MIS is a concept of the last decade or two. It has been understood and described in a number of ways. It is also popularly known as the Information System, the Information and Decision System, the Computer-based Information System. The MIS has more than one definition.

The MIS is defined as

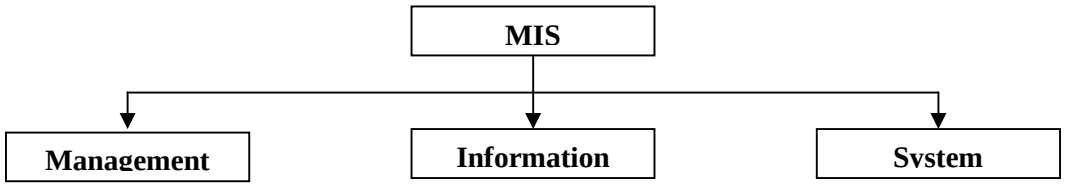
- A system which provides information support for decision making in the organization.
- An integrated system of man and machine for providing the information to support the operations, the management and the decision making function in the organization.
- A system based on the database of the organization evolved for the purpose of providing information to the people in the organization.
- A computer-based Information System

Though there are a number of definitions, all of them converge on one single point, that is, the MIS is a system to support the decision making function in the organization. The difference lies in defining the elements of the MIS. However, in today's world, the MIS is a computerized business processing system generating information for the people in the organization to meet the information needs for decision making to achieve the corporate objectives of the organization. (*Jawadekar, 2003:5-6*)

Generally, the combination of major three components namely Management, Information, and System is known as MIS. In order to make the concept more clear each part of components is examined separately.

Figure: 2.1

MIS and its Components



2.1.3 Management

Management is the art and science of getting things done through others, generally by organizing and directing their activities on the job. A manager is therefore someone who defines, plans, guides, assists, and assesses the work of others, usually people for whom the manager is responsible in an organization. According to Oxford Dictionary, management is the "process of dealing with or controlling people or things".

Management is the process of planning, organizing, leading and controlling the work or organization members and of using all available organizational resources to reach stated organizational goal. It is especially in dealing with matters of time and human relationship as they arise in organizations. It is an attempt to create desirable future keeping the past and the present in mind. It is practiced in and is a reflection of a particular historical era. It is practice that produces consequences and effect that emerge over time. (*Stoner, Freeman and Gilbert, 2000:21*)

Management can be viewed as a function, a process, a profession or a class of people. And along with material, capital and labor, management is considered as a resource. It refers to the kind of tasks and activities that are performed by managers.

The specific natures of activities are determined by such managerial functions as planning, organizing, directing and controlling. In fact, management is a process of achieving an organization's goals and objectives by making the fullest use of available resources like men, materials, machines, money, methods etc.

The various functions of management are as follows:

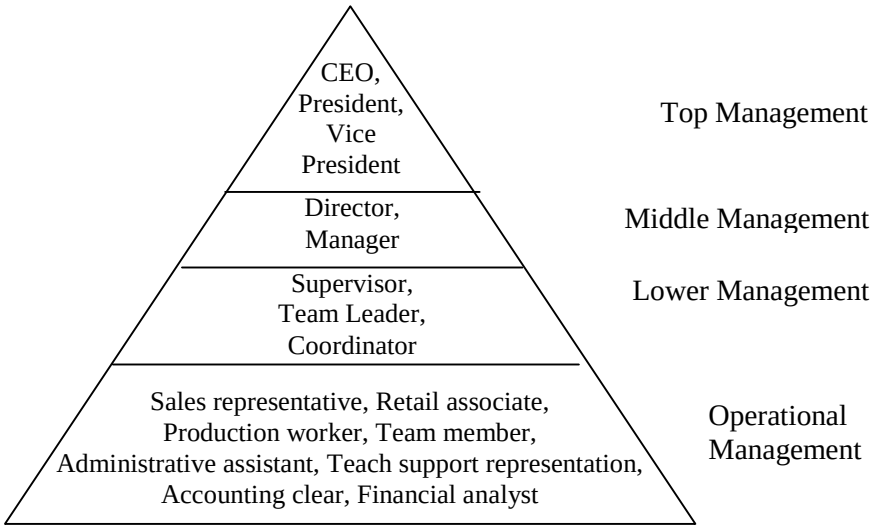
- **Planning:** It is the process of deciding in advance the courses of action to be followed; when and also, how to undertake these actions.

- **Organizing:** It refers to the grouping of people and activities in order to facilitate the achievement of the organizational objective.
- **Controlling:** Control is the mode of checking the progress of plans and also, correcting any deviations that may occur along the way.
- **Directing:** It is the process of activating the plans, structure and group efforts in the desired direction. It is needed for implementation of plans by providing the desired leadership, motivation and proper communication.

Management can be grouped into three hierarchical levels - top, middle and junior management levels. (*Adhikari, 2005:5*)

Figure: 2.2

Levels of Management



(Source: *Adhikari; 2005: 7*)

Top (or strategic) management establishes the policies, plans and objectives of the organization as well as a budget framework under which various departments will operate. Middle (or tactical) management has the responsibility of implementing the policy and overall plans of the top management. Junior (or operational) management has the responsibility of implementing day-to-day operations and decisions of the middle management to produce goods and services to meet the revenue, profit and other goals, which in turn will enable the organization to achieve its overall plans and objectives.

2.1.4 Information

The word ‘information’ is used commonly in our day to day working. Information can be defined as the data, which can be organized and presented so that the decision maker may take the necessary action. In other words, information is the result/product of processing data. (*Adhikari, 2005:29*)

Jawadekar (*2003:85*) defines information as the processed data, which improves representation of an entity, updates the level of knowledge, reduces uncertainty, aids in decision-making and has a surprise value.

Similarly to this, Davis and Olson defines information as the data that has been processed into a form that is meaningful to the recipient and is of real or perceived value in the current or the prospective actions or decisions of the recipient. Data is defined as groups of non-random symbols in the form of text, images or voice representing quantities, actions and objects.

Figure: 2.3

Information System

(Source: *Adhikari; 2005: 27*)

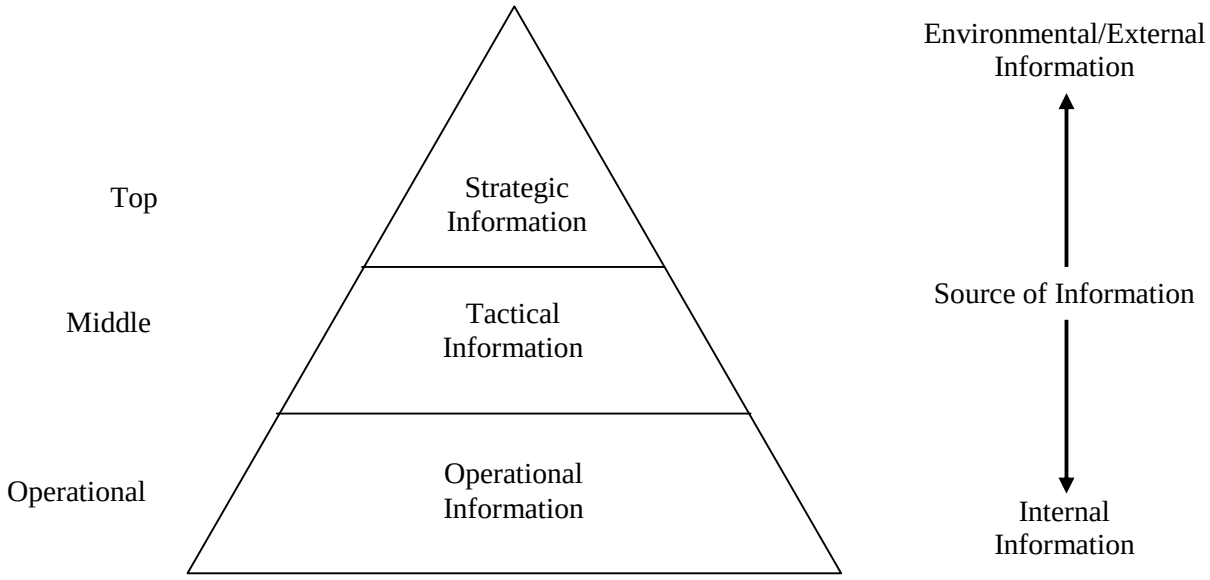
Information as a concept bears a diversity of meanings, from everyday usage to technical settings. Generally speaking, the concept of information is closely related to notions of constraint, communication, control, data, form, instruction, knowledge, meaning, mental stimulus, pattern, perception, and representation. Many people speak about the Information Age as the advent of the Knowledge Age or knowledge society, the information society, and information technologies, and even though informatics, information science and computer science are often in the spotlight, the word "information" is often used without careful consideration of the various meanings it has acquired.

2.1.5 Classification of Information

According to the levels of management, information can be classified as the operational, tactical and strategic information.

Figure: 2.4

Information Classification



(Source: *Behl; 2009:21*)

a) Strategic information is the information required for the senior managers. They need information to generate regular reports, to prepare retrieval requests, and information which would assist in identifying problem areas and opportunities.

b) Tactical information is carrying out the programs and plans for the senior management. Typically, they need information, which would assist in analysis, planning and reporting. Middle managers time orientation is in the range between lower management and that of top management. They need information to obtain routine cross-functional summary reports, to identify nonfactual details, to identify factual details, to generate exception reports.

c) Operational information is for monitoring the firm's daily activities. Lower managers are concerned primarily with the result of past operations and with conducting current operations. Lower manager's decisions usually are repetitive and structured. They need information to obtain operational data, to assist in scheduling of activities, to identify out of control situations, to generate performance and daily transaction reports. (*Adhikari, 2005:33-34*)

Data and Information Concepts

The word data is the plural of datum, through data commonly represents both singular and plural forms. Data are raw facts to observations, typically about physical phenomenon or business transactions. For instance, take of an aircraft would generate many data describing that event. More specifically, data are objective measurements of the attributes (the characteristics) of entities (such as people, place, things and events). Data is more than the raw material of information systems. The concept of data resources has been broadened by mangers and information systems professionals. They realize that data constitutes a valuable organizational resource. Thus, data as data resources must be managed effectively to benefit all end users in an organization.

The data resources of information systems are typically organized into:

- Data bases that hold processed and organized data
- Knowledge bases that hold knowledge in a variety of forms such as facts, rules and case examples about successful business practices.

People often use the terms data and information interchangeably. However, it is better to view data as raw material resources that are processed into finished information products. Then we can define Information as data that have been converted into a meaningful and useful context for specific end users. Thus, data are usually subjected to value-added process (we call data processing or information processing) where, (1) its form aggregated, manipulated and organized; (2) its content is analyzed and evaluated; and (3) it is placed in a proper context for a human user. (*O'Brien, 2004:8*)

Information, therefore, like any other resource in an organization, should be properly managed to ensure its cost-effective use. It is an ingredient that is vital to good management and if properly managed, should rank in importance with the organization's personnel, material and financial resources. In an organizational context, it is increasingly being recognized as a resource independent of the technology used in manipulating it. (*Adeoti-Adekeye, 1997:318-319*)

2.1.5 Information System

The rapid evolution of computer technology is expanding man's desire to obtain computer assistance in solving more and more complex problems: problems, which

were considered solely in the domain of man's intuitive and judgmental processes, particularly in organizations, a few years ago.

Information systems are becoming of ever-greater interest in progressive and dynamic organizations. The need to obtain access conveniently, quickly and economically makes it imperative to devise procedures for the creation, management and utilization of databases in organizations. Management information and information systems, in particular those related to effective decision-making processes in an organization, i.e. MIS, are regarded as valuable organizational resources. Simply put, an information system is a system for accepting data/information as a raw material and through one or more transmutation processes, generating information as a product. It comprises the following functional elements, which relate to the organization and its environments:

- **Perception:** Initial entry of data whether captured or generated, into the organization;
- **Recording:** Physical capture of data;
- **Processing:** Transformation according to the "specific" needs of the organization;
- **Transmission:** The flows which occur in an information system;
- **Storage:** Presupposes some expected future use;
- **Retrieval:** Search for recorded data;
- **Presentation:** Reporting, communication; and
- **Decision making:** A controversial inclusion, except to the extent that the information system engages in decision making that concerns itself.

Information system is generally expected to provide not only a confrontation between the user and information, but also, the interaction required for relevant and timely decision making. Its main purpose is to satisfy users' information needs. Approaching information systems in an organizational content shows that it is a sub-system within an organizational system which is a "living and open" system. Academics interested in information works and information practitioners alike have defined information systems in various ways but with basic ideas of people, information technology and

procedures which enable the facilitation of the generation, use and transfer of information. Although information systems are considered to belong to an applied discipline, there is need for an understanding of their underlying basic concepts by information practitioners. (*Adeoti-Adekeye, 1997:321*)

The definition of information systems by Duff and Assad (1980) is considered to be adequate: "A collection of people, procedures, a base of data and (sometimes) hardware and software that collects, processes, stores and communicates data for transaction processing at operational level and information to support Management decision making."

Certain deductions can be made from the above definition that:

- The definition covers the what, how and why of information systems;
- An information system can be manual or computer-based;
- That information systems have existed in organizations and always will;
- That an information system is supposed to support both the basic operations of an organization and its management;
- A distinction seems to be made between data for transaction processing purposes and information for decision-making purposes; and
- The definition has provided what can be considered as basic concepts underlying information systems, namely: people, management, information, systems and organizations.

The attributes indicated above can be considered as major attributes or essential elements for developing an information system concept in an organizational context. In order to understand the information system concept further, Salton (1975) highlighted the most important computer-based information systems as Information retrieval system (IRS), Question-answering system, Database system (DBS), Management information system (MIS), Decision support system (DSS).

An information system collects, processes, stores, analyzes and disseminates information for a specific purpose. Information systems are often at the heart of most organizations. For example, banks and airlines cannot function without their information systems. With the advent of electronic businesses (e-businesses), if there

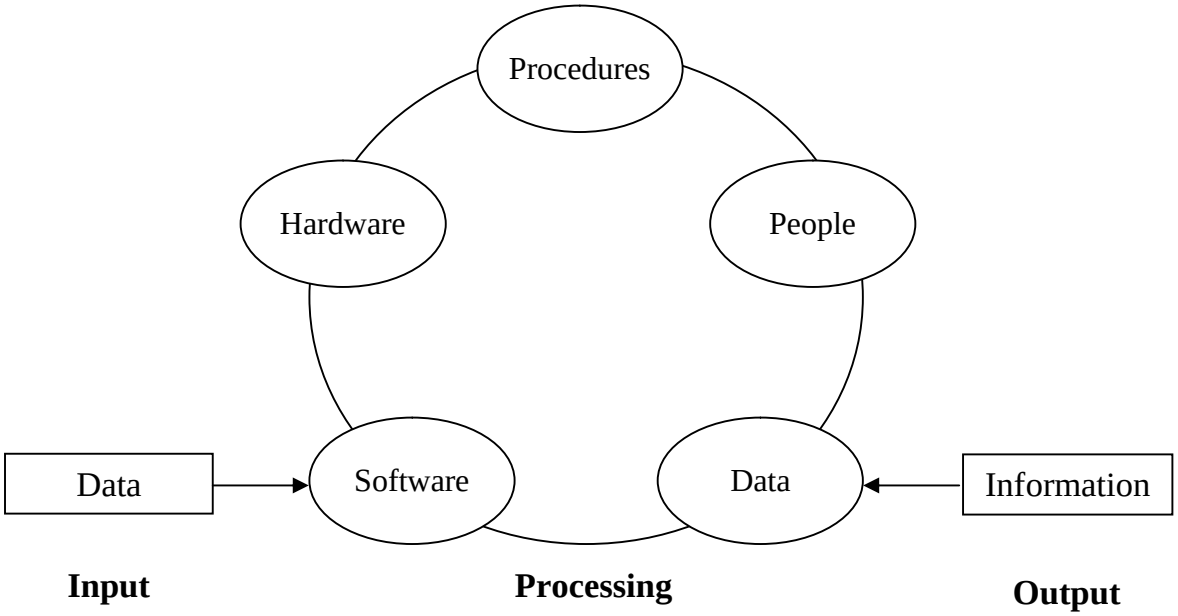
is no information system, then there is no business. Information systems accept inputs and process data to provide information to decision makers and help them communicate their results. Now, a World Wide Web presence and activities are expected by consumers and decision makers. So, information systems have become critical for many organizations that in the past did not rely on them. (*Turban and Aronson, 2004:38*)

Information is data that has been changed into a useful form of output. An information system has five key components: hardware, software, data, processes, and people. (*Adhikari, 2005:30*)

Interrelated components that collect, process, store and disseminate information to support decision making, control, analysis and visualization in an organization is the information system in organization. This system may contain information about significant people, places and things within the organization or in the environment surrounding it.

Figure: 2.5

Information System Components



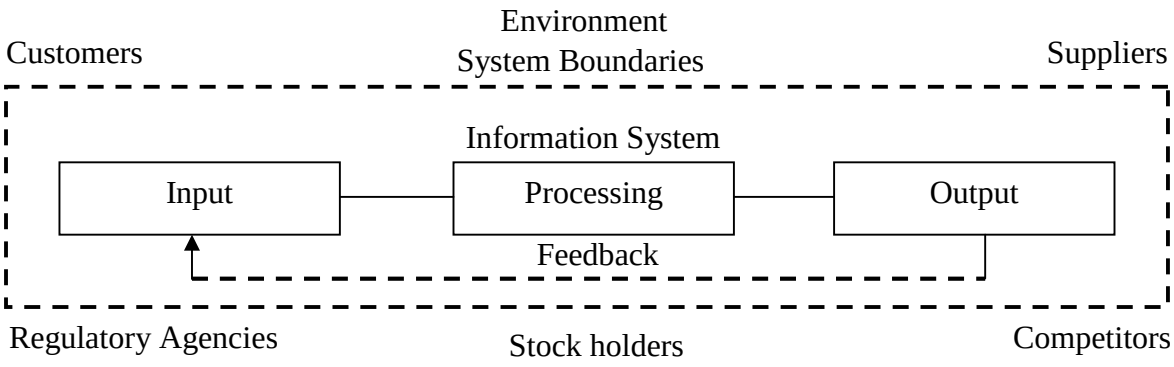
(Source: *Adhikari; 2005:30*)

Three activities in an information system produce the information need for the organization. These activities are input, processing and output. The output has the control called feedback which will help the members of the organization to evaluate

or correct the input stage. Typical figure of information system is given below. (*Adhikari, 2005:32*)

Figure: 2.6

Typical Figure of Information System



(Source: *Adhikari; 2005: 32*)

2.1.6 Information System Security

For Information system held in computer-based systems, security measures need to more complex but more effective in control. Risk analyses need to be undertaken to determine the most effective methods of ensuring information security.

Basic security measures that may need to be carefully applied include:

- Adequate physical security of the buildings in which computer equipment or critical communications equipment (microwave installations or optical fiber/cable exchanges) are held including protection against both human intervention and possible natural disaster (flood, fire).
- Back-up and recovery capabilities in case of system failure including recovery of power supply, telecommunications links, hardware, and software as well as provision for manual or lower tech methods of achieving the same task in case the computer system cannot be revived and simple precautions such as daily backups of all systems and data and storage of backup media at a separate location.
- Thorough testing of all aspects of systems under production conditions prior to their being placed into production mode.

- Access controls on software and data, to prevent unauthorized external access (hacking) or internal attempts at manipulation of system configuration, system code, or data recorded.
- Thorough training of staff in the computing systems and software they are required to use, so that data is not lost or systems damaged accidentally.
- Ensuring that all staff is aware of the security precautions that need to be applied. (*Adhikari, 2005:37-38*)

2.1.7 System

System (from the Latin (systema), and this from the Greek (sustema)) is an assemblage of entities/objects, real or abstract, comprising a whole with each and every component/element interacting or related to another one. Any object which has no relationship with any other element of the system is not a component of that system. A subsystem is then a set of elements which is a system itself and a part of the whole system.

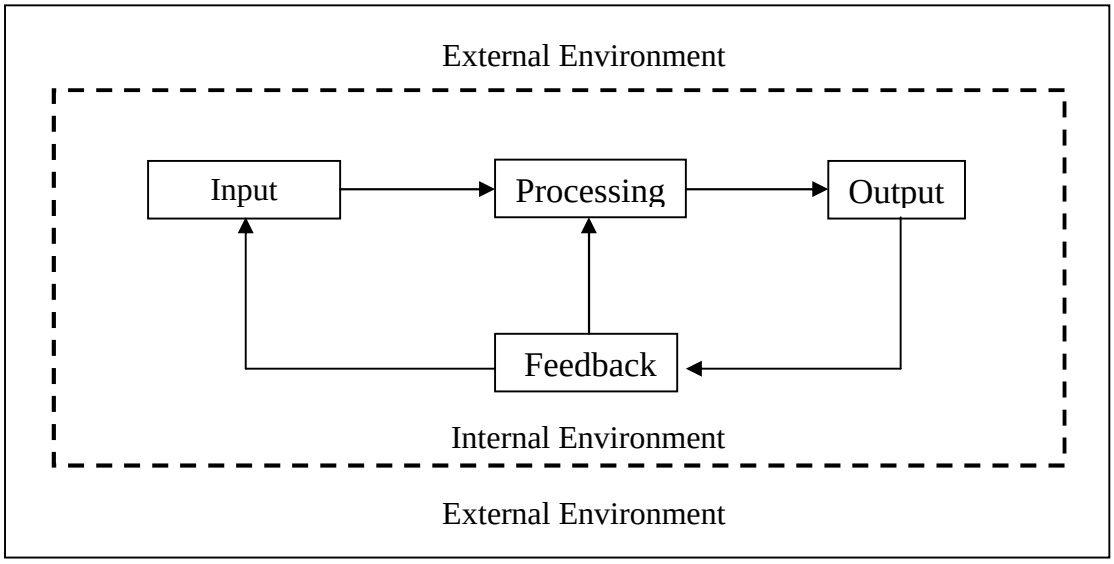
A system is group of interrelated components working together toward a common goal by accepting inputs and producing outputs in an organized transformation process. Such as a system (sometimes called a dynamic system) have three a basic interacting component or functions: Input, Processing and Output.

- **Input:** Involves capturing and assembling elements that enter the system to be processed. For example, raw materials, energy, data and human effort must be secured and organized for processing.
- **Processing:** Involves transformation process that converts input into output. For instance, a manufacturing process, the human breathing process, or mathematical calculations.
- **Output:** Involves transferring elements that have been produced by a transformation process to their ultimate destination. For instance, finished products, human services, and management information must be transferred to their human users.

The system concept becomes even more useful by including two additional components: feedback and control. A system with feedback and control components is sometimes called a cybernetic system, that is, a self-monitoring, self-regulating system.

Figure: 2.7

Model of System



(Source: *Behl; 2009: 12*)

- **Feedback:** Is data about the performance of a system. For example, data about sales performance is feedback to sales manager.
- **Control:** Involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal. The control function then makes necessary adjustments to a system input and processing components to ensure that it produces proper output. For example, as sales manger exercises control when he or she reassigns sales persons to new sales territories after evaluating feedback about their sales performance. (*O'Brien, 2004:8*)

2.1.8 Computer Based Information System (CBIS)

Information technology has become a strategic necessity. Believe it, act on it, or become a footnote in history. The revolution in business caused by the internet and its

related technologies demonstrates that information systems and information technology are essential ingredients for the success of today's inter-networked business enterprise. Therefore, as tomorrow's managers, entrepreneurs and business professionals, business students must learn how to use and mange a variety of information technologies to revitalize business processes, improve managerial decision making, and gain competitive advantage.

Thus, a CBIS demonstrates how the internet, intranets and extranets can give a business a strategic technology platform that supports electronic commerce and enterprise collaboration among the inter-networked enterprises in today's global business environment.

System is a collection of interrelated and integrated components and operates in a social context and with a computer based information system; the software usually includes application programs, which perform specific tasks for users Lucas (1997). And a CBIS is a collection of components for disseminating information regarding specific purpose.

The major components of a CBIS can include:

1. Hardware,
2. Software,
3. A database,
4. A network,
5. Procedures, and
6. People. (*O'Brien, 2004:151*)

2.1.9 Decision Making and MIS

Decision Support System (DSS) is a special class of system, which is used as a support in decision-making. DSS is a set of well integrated, user friendly, computer based decision making tools that can combine internal and external data with various models to solve unstructured and semi-structured problems. Many of the decision-making situations, at all levels of management are such that, its occurrence is infrequent but the methodology of decision-making is known. Some of the methods

are proven and are widely used. Such applications are separated and are packed in the DSS.

These systems use data from the general MIS and are used by a manager or a decision maker, for decision support. The DSS could be an internal part of MIS. When the decision making need is in real time dynamic mode, all such systems are designed to read, measure, monitor, evaluate, analyze and act as per decision guidance embedded in the system. The MIS would become more useful if the decision-making is made person independent and executed with well-designed DSS.

The ultimate purpose of the MIS is to make decisions at all levels of operations based upon the information flow. If decisions cannot be automated through MIS design, the objective becomes one of providing information to improve the decision-making ability of the manager. (*Adhikari, 2005:20*)

2.1.10 Role of MIS

The role of the MIS in an organization can be compared to the role of heart in the body. The information is the blood and MIS is the heart. In the body, the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart works faster and supplies more blood when needed. It regulates and controls the incoming impure blood, processes it and sends it to the destination in the quantity needed. It fulfills the needs of blood supply to human body in normal course and also in crisis. (*Jawadekar, 2003:7*)

The MIS plays exactly the same role in the organization as heart plays in body. The system ensures that an appropriate data is collected from the various sources, processed, and sent further to all the needy destinations. The system is expected to fulfill the information needs of an individual, a group of individuals, the managers and the top management.

The MIS satisfies the diverse needs through a variety of systems such as Query Systems, Analysis Systems, Modeling Systems, and DSS. The MIS helps in Strategic Planning, Management Control, Operational Control, and Transaction Processing.

The MIS helps the clerical personnel in the transaction processing and answers their queries on the data pertaining to the transaction, the status of a particular record and

references on a variety of documents. The MIS helps the junior management personnel by providing the operational data for planning, scheduling and control, and helps them further in decision making at the operations level to correct an out of control situation.

The MIS helps the middle management in short term planning, target setting and controlling the business functions. It is supported by the use of the management tools of planning and control.

The MIS helps the top management in goal setting, strategic planning and evolving the business plans and their implementation. The MIS plays the role of information generation, communication, problem identification and helps them in the process if decision-making. The MIS, therefore, plays a vital role in the management, administration and operations of an organization.

Table: 2.1

Organization and Information Concepts

Levels of Management	**Use of MIS**	**Nature of Information**	**Value of Information**	**Reporting Media and Structure**
CEO & Board	Goal Setting, Policy Making, Strategic Planning	Key, Accurate, Futuristic	Very High, Meeting High Risk & Uncertainty Situation	Unstructured
Middle Division, Department, Product Managers	Decision Making Problems solving Monitoring & Achieving Business Goals, Planning & Schedule	Exception, Precise, Analytical Decision Oriented, Related to Past, Current Future	High, Meeting Risky Situation	Ad hoc, unformatted, Regular but Modified Frequent, Display & Print
Supervisory, Jr. Managers, Supervisors, Officers	Problem Solving & Meeting Targets	Processed & Summarized and Classified for the Current Period	Low, Meeting near Certainty Situation	Given at fixed Internal Display & Print
Operational Assistants, Clerks	To know the status facts	Detailed Relating to Current Period	Lowest	Lowest Volume Print

(Source: *Jawadekar, 2002:107)*

2.1.11 Objectives of MIS

An effective MIS has following objectives:

- Facilitate the decision-making process by furnishing information in the proper time frame. This helps the decision-maker to select the best course of action.
- Provide requisite information at each level of management to carry out their functions.
- Help in highlighting the critical factors to the closely monitored for successful functioning of the organization.
- Support decision-making in both structured and unstructured problem environments.
- Provide a system of people, computers, procedures, interactive query facilities, documents for collecting, storing, retrieving and transmitting information to the users. (*Adhikari, 2005:14*)

2.1.12 Limitation of MIS

Some limitations of MIS are:

- MIS cannot replace managerial judgment in decision-making. It is merely an effective tool for the managers in decision-making and problem solving.
- The quality of output of MIS is directly proportional to the quality of input and processes.
- MIS cannot provide tailor made information packages. It is required to analyze the available information before decision-making.
- In a fast changing and complex environment, MIS may not have enough flexibility to update itself quickly.
- MIS takes only quantitative factors into account.
- MIS is less useful for making non-programmed decisions.
- MIS is less effective in organizations where information is not being shared with others.

- MIS is less effective due to frequent changes in top management, organizational structure and operational staff. (*Adhikari, 2005:19*)

2.1.13 Electronic Payment System

The emergence of e-commerce has created new financial needs that in many cases cannot be effectively fulfilled by the traditional payment systems. Recognizing this, virtually all interested parties are exploring various types of electronic payment system and issues surrounding electronic payment system and digital currency. Broadly electronic payment systems can be classified into four categories: Online Credit Card Payment System, Online Electronic Cash System, Electronic Cheque System and Smart Cards based Electronic Payment System. Each payment system has its advantages and disadvantages for the customers and merchants. These payment systems have numbers of requirements: e.g. security, acceptability, convenience, cost, anonymity, control, and traceability. Therefore, instead of focusing on the technological specifications of various electronic payment systems, the researcher have distinguished electronic payment systems based on what is being transmitted over the network; and analyze the difference of each electronic payment system by evaluating their requirements, characteristics and assess the applicability of each system.

As payment is an integral part of mercantile process, electronic payment system is an integral part of e-commerce. The emergence of e-commerce has created new financial needs that in many cases cannot be effectively fulfilled by traditional payment systems. For instance, new types of purchasing relationships-such as auction between individuals online-have resulted in the need for peer-to-peer payment methods that allows individuals to e-mail payments to the other individual. Recognizing this, virtually all interested parties (i.e. academicians, government, business community and financial service providers) are exploring various types of electronic payment system and issues surrounding electronic payment system and digital currency. Some proposed electronic payment systems are simply electronic version of existing payment systems such as cheques and credit cards, while, others are based on the digital currency technology and have the potential for definitive impact on today's financial and monetary system. While popular developers of electronic payment

system predict fundamental changes in the financial sector because of the innovations in electronic payment system (*Kalakota & Ravi, 1996*). Therefore, electronic payment systems and in particular, methods of payment being developed to support electronic commerce cannot be studied in an isolation. A failure to take place these developments into the proper context is likely to result in undue focus on the various experimental initiatives to develop electronic forms of payment without a proper reflection on the broader implications for the existing payment system.

2.1.14 Concept and Size of Electronic Payment

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 they have created new business and social practice, which make the use of these systems necessary. These changes, naturally, have affected the definition of electronic payments, which is evolving depending on the needs of each period. In its, most general form, the term electronic payment includes any payment to businesses, bank or public services from citizens or businesses, which are executed through a telecommunications or electronic networks using modern technology. It is obvious that based on this definition, the electronic payments that will be the objects of present result, are the payment that are executed by the payer himself, whether the latter is a consumer or a business, without the intervention of the another natural person. Furthermore, the payment is made from distance, without the physical presence of the payer and naturally it does not include cash. By providing such definition for the electronic payment system, researcher include the transfer of information concerning the accounts of the parties involved in the e-commerce transactions, as well as the technological means of distribution channels through which the transactions is executed.

Size of Electronic Payments: Electronic payment system is conducted in different e-commerce categories such as Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Business (C2B) and Consumer-to-Consumer (C2C). Each of

which has special characteristics that depend on the value of order. (*Danial, 2002*) classified electronic payment systems as follows:

Micro Payment (less than $ 10) is mainly conducted in C2C and B2C e-commerce.

Tiny value transactions: below $1.

Medium value transactions: between $ 1 and $ 1,000

Large value transactions: above $ 1,000.

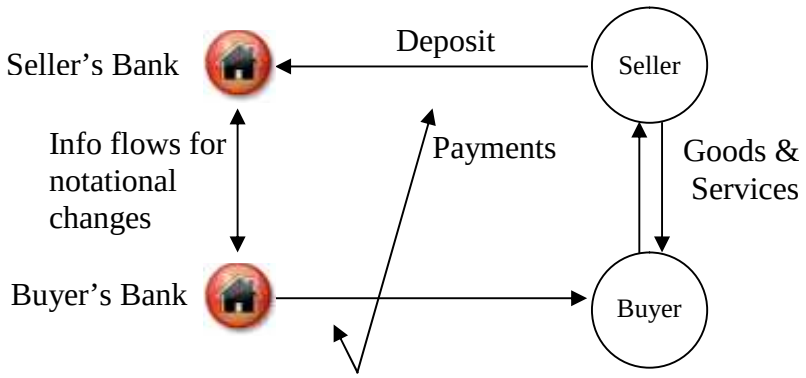
Systems that can support tiny value transactions have to trade-off between conveniences of transactions (the major part of a cost in an extremely cheap transaction) against the security or durability of transactions. On the other side of the amount range, large value transactions will require highly secure protocols whose implementations are costly: be on-line and/or carry traceability information. Finally, nearly all the system can perform medium value transactions.

2.1.15 Conventional vs. Electronic Payment System

To get into the depth of electronic payment process, it is better to understand the processing of conventional or traditional payment system. A conventional process of payment and settlement involves a buyer-to-seller transfer of cash or payment information (i.e., cheque and credit cards). The actual settlement of payment takes place in the financial processing network.

Figure: 2.8

Conventional/Traditional Payment System



(Source: *Singh; 2009: 20*)

Above Figure is simplified diagram for both cash and non-cash transactions. Cash moves from the buyers bank to sellers bank through face-to-face exchange in the market. If a buyer uses a non-cash method of payment, payment information instead of cash flows from the buyer to the seller, and ultimate payments are settled between affected banks, who remarkably adjust accounts based on payment information.

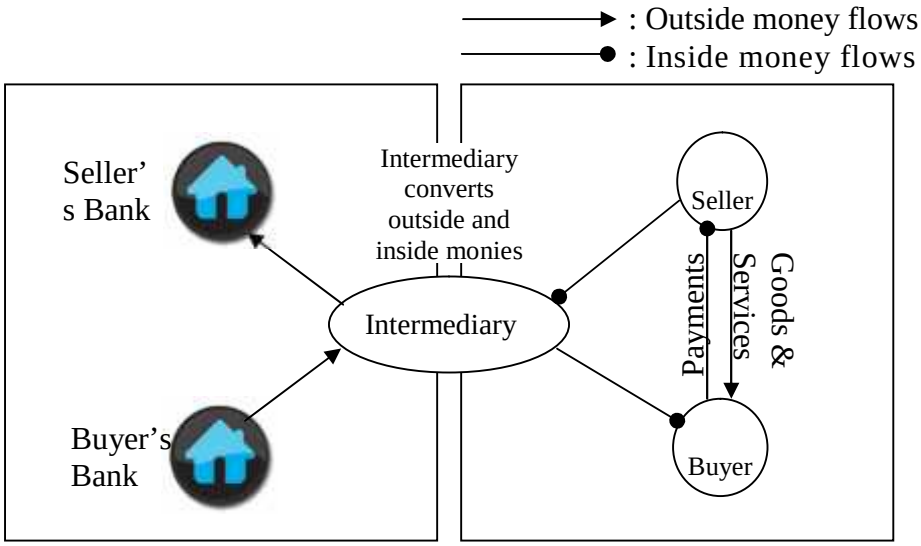
A cash payment requires a buyer's withdrawals from his/her bank account, a transfer of cash to the seller, and the seller's deposit of payment to his/her account. Non-cash payment mechanisms are settled by adjusting i.e. crediting and debiting the appropriate accounts between banks based on payment information conveyed via cheque or credit cards.

2.1.16 Process of Electronic Payment System

Electronic payment systems have been in operations since 1960s and have been expanding rapidly as well as growing in complexity. After the development of conventional payment system, EFT (Electronic Fund Transfer) based payment system came into existence. It was first electronic based payment system, which does not depend on a central processing intermediary. An electronic fund transfer is a financial application of EDI (Electronic Data Interchange), which sends credit card numbers or electronic cheques via secured private networks between banks and major corporations. To use EFT to clear payments and settle accounts, an online payment service will need to add capabilities to process orders, accounts and receipts. But a landmark came in this direction with the development of digital currency. The nature of digital currency or electronic money mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems (i.e. EFT based and intermediary based) here too security during the transaction and storage is a concern, although from the different perspective, for digital currency systems double spending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorizations) is important for the notational funds transfer. The figure below shows digital currency based payment system.

Figure: 2.9

Electronic Payment System



(Source: *Singh; 2009: 21*)

In this figure, it is shown that intermediary acts as an electronic bank, which converts outside money (e.g. Rupees or US$), into inside money (e.g. tokens or e-cash), which is circulated within online markets. However, as a private monetary system, digital currency has wide ranging impact on money and monetary system with implications extending far beyond more transactional efficiency.

2.1.17 Types of Electronic Payment Systems

With the growing complexities in the e-commerce transactions, different electronic payment systems have appeared in the last few years. At least dozens of electronic payment systems proposed or already in practice are found. The grouping can be made on the basis of what information is being transferred online. (*Murthy, 2002*) explained six types of electronic payment systems are PC-Banking, Credit Cards, Electronic Cheques (i-cheques), Micro payment, Smart Cards and E-Cash.

(*Kalakota and Whinston, 1996*) identified three types of electronic payment systems and they are Digital Token based electronic payment systems, Smart Card based electronic payment system and Credit based electronic payment systems.

(*Dennis, 2001*) classified electronic payment system into two categories, which are Electronic Cash and Electronic Debit-Credit Card Systems.

Thus, electronic payment system can be broadly divided into four general types (*Anderson, 1998*). They are Online Credit Card Payment System, Electronic Cheque System, Electronic Cash System and Smart Card based Electronic Payment System.

2.1.18 Online Credit Card Payment System

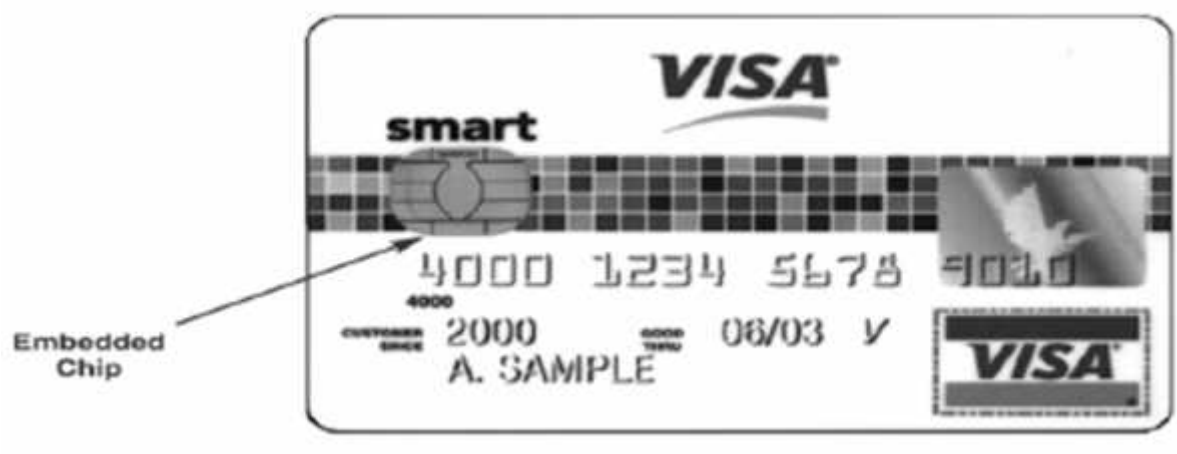
It seeks to extend the functionality of existing credit cards for use as online shopping payment tools. This payment system has been widely accepted by consumers and merchants throughout the world, and by far the most popular methods of payments especially in the retail markets (*Laudon and Traver, 2002*). This form of payment system has several advantages, which were never available through the traditional modes of payment. Some of the important things to be considered are: privacy, integrity, compatibility, good transaction efficiency, acceptability, convenience, mobility, low financial risk and anonymity. Added to all these, to avoid the complexity associated with the digital cash or electronic-cheques, consumers and vendors are also looking at credit card payments on the internet as one of possible time-tested alternative. But, this payment system has raised several problems before the consumers and merchants. Online credit card payment seeks to address several limitations of online credit card payments for merchant including lack of authentication, repudiation of charges and credit card frauds. It also seeks to address consumer fears about using credit card such as having to reveal credit information at multiple sites and repeatedly having to communicate sensitive information over the Internet. Basic process of Online Credit Card Payment System is very simple. If consumers want to purchase a product or service, they simply send their credit card details to the service provider involved and the credit card organization will handle this payment like any other.

2.1.19 Smart Cards Based Electronic Payment System

Smart cards are receiving renewed attention as a mode of online payment. They are essentially credit card sized plastic cards with the memory chips and in some cases, with microprocessors embedded in them so as to serve as storage devices for much greater information than credit cards with inbuilt transaction processing capability (*Chakrabarti and Kardile, 2002*).

Figure: 2.10

Smart Card Image



(Source: *Singh; 2009: 27*)

This card also contains some kinds of an encrypted key that is compared to a secret key contained on the user's processor. Some smart cards have provision to allow users to enter a personal identification number (PIN) code. Smart cards have been in use for well over the two decades now and have been widespread mostly in Europe and Asian Countries. Owing to their considerable flexibility, they have been used for a wide range of functions like highway toll payment, as prepaid telephone cards and as stored value debit cards. However, with the recent emergence of e-commerce, these devices are increasingly being viewed as a particularly appropriate method to execute online payment system with considerably greater level of security than credit cards.

Compared with traditional electronic cash system, smart cards based electronic payment systems do not need to maintain a large real time database. They also have advantages, such as anonymity, transfer payment between individual parties, and low transactional handling cost of files. Smart cards are also better protected from misuse than, say conventional credit cards, because the smart card information is encrypted. Currently, the two smart cards based electronic payment system- Mondex and Visa Cash are incompatible in the smart cards and card reader specification. Not knowing which smart card system will become market leader; banks around the world are unwilling to adopt either system, let alone other smart card system. Therefore,

establishing a standard smart card system, or making different system interoperable with one another is critical success factors for smart card based payment system.

Conventional credit cards clearly show the account number on the face of the card. The card number along with a forged signature is all that a thief needs to purchase items and charge them against the card. With smart card, credit theft is practically impossible because a key to unlock the encrypted information is required, and there is no external number that a thief can identify and no physicals signature that a thief can forge. In addition, smart cards provide the advantages of portability and convenience.

Multifunctionary is one of the most exceptional features of the Mondex, a system that intends become *"an electronic equivalent of cash"*. It is based on a smart card that can hold money and transfer it in both ways. The Mondex card is a debit card in the sense that can only be used to spend as long as it holds previously loaded money. The Mondex technology, in the development since 1990s, is exclusively runs by Mondex International, a London based firms in which Master cards holds 51% of share since the end of 1996.

Wallet sized smart cards embedded with programmable microchips that store sums of money for people to use instead of cash for everything from buying food, to making photocopies, to paying many things. The electronic purse works in the following manners. After the purse is loaded with money, at an ATM or through the use of an inexpensive special telephone, it can be used to pay for, say, candy in a vending machine equipped with the card reader. The vending machine needs only to verify that a card is authentic and there is enough money available for the chocolate bar. In one second, the value of purchase is deducted from the balance on the card and added to e-cash box in the vending machine. The remaining balance on the card is displayed by the vending machine or can be checked at an ATM or with a balance ready device.

2.1.20 Usage of Electronic Payment Systems

It is observed that different countries prefer the different forms of electronic payment system. The market has been from the start dominated by traditional financial intermediaries offering conventional electronic payment services augmented with minor innovations to adapt to the Internet. In 2003, 94.1 percent of all worldwide e-commerce transactions were conducted using credit cards (*Pago, 2003*). Even today,

Credits cards are dominant form of online payment all over the world. This is especially true about the developed and fastest developing countries. This fact can be supported by the Research conducted by Jupiter Media Matrix (2000). The research revealed that credits cards are the most dominant methods of online payment in US. In the year 2000, credit cards accounted 95% of online payments and accounted $47 billion of credit cards transactions in the US. This figure rosé to $25 trillion in the year 2004 (*Federal Reserve Payment Study, 2004*). However, according to Jupiter Media Matrix Research Survey, some consumers would prefer to other payment system, such as e-cash, debit cards and e-chequing. Only 50 % of consumers outside the US use credit cards for online purchase (*Landon and Traver, 2002*).

Table: 2.2

E-Commerce Payments in India

E-Commerce Payment Systems	**Percentage**	**Rank**
Credit Card	35	1
Debit Card (Smart Card)	26.5	2
Cash on Delivery	23.5	3
Bank Transfer	9	4
Money Transfer	5	5
Postal Transfer	1	6
Prepaid Card	0	0
Payment Through Convenience Store	0	0
Total	100	0

(Source: *Singh; 2008:29*)

According to the "Banking on the Internet Report", Australia has a strong platform for e-payment growth, with 37.7 per cent of the population willing to engage in online payment. In Europe (especially in UK) and other countries of developed world like Canada, New Zealand, and in some of the Asian Developing Countries like China, Thailand, Japan and Singapore, smart cards based electronic payment system is popular. Most of the developing countries like India rely much more on electronic funds transfer and smart cards based electronic payment system. Very few percent of people have credit cards and use of e-cheque is in vogue. But according to (*Singh, 2008*) credit card is most popular method of payments in India.

Poor countries still rely on traditional cash and cheque system; they are not very much familiar with the electronic payment system because of poor infrastructure, poor

economic conditions, lack of education etc. rate of adoption of e-payment system is not very encouraging in these country.

Outside the US, electronic payment system is heavily influenced by the host country's financial infrastructure. Added to these, legal regimes, IT Infrastructure, economic and social conditions, are the strong determinants of the methods of online payment and all these vary from country to country and even within the country.

But, overall Credit card is the most popular methods of payment over Internet. Internet buyers seem to prefer credit cards to other electronic payment system that have been made available to them. One reason may be the simple familiarity with the credit card, as it is the oldest form of electronic payment system. E-commerce is still new and intimidating to many. It is easier for the buyers to make purchase on the Internet when they can use the familiar payment method, like credit card. However, this payment system suffered from many limitations like security, merchant risk, high costs and affordability. For sellers' side, credit card has strategic disadvantages like:

(1) Credit cards are subject to percentage fees and these charges erode the profits margin, particularly on the inexpensive goods and services;

(2) A buyer who uses a credit card may refuse to pay the issuer on the grounds that he/she has a claim or defense arising out of the underlying transactions. When this happens, the issuer may pass the loss back to the seller. Above all, credit cards have highest possibilities of frauds. Therefore, both buyers and sellers are shifting from credit cards to other innovative payment products, such as smart cards and electronic money. But, still it is expected that the buyers may continue to prefer credit card system, particularly when making expensive purchase.

2.1.21 Critical Success Factors of Electronic Payment System

Success of e-commerce businesses, including both the largest of corporations and small retailers, rely on electronic payment system. Therefore, understanding the various critical success factors of e-commerce payment system is important. There are various factors, which should be considered by an e-commerce, firm before introducing and implementing e-commerce payment system. From the business

perspective, new payment products are notoriously difficult to introduce as the barriers to entry, acceptance, and ubiquity are high (*Abrazhevich, 2002*).

Table: 2.3

Factors Discouraging Consumer for Online Payments

Factors	Percentage
Concern about security	70
Difficulties to enter information	9
Do not have credit cards/smart cards etc.	7
Do not like interest charge	6
Purchase value too small	4
Exceeded personal limit	4

(Source: *Singh; 2003:39)*

Above table shows some factors, which are obstacles in the online payment systems. A good payment system should also consider these factors. Added to this, new payment products must be low margin to compete, high volume to build critical mass and be profitable, receive favorable press treatment, be well branded to gain customer confidence, achieve rapid uptake, and be differentiated from check and credit card so that consumers and merchants find reason to prefer and use them. Thus the factors which are critical for the success of e-commerce payment systems are multifaceted. These include integrity, non-repudiation, authentication, authorization, confidentiality and reliability, which are discussed below:

Integrity: transaction data are transmitted and received unchanged and as intended.

Non-repudiation: transactions have the quality of non deniable proof or receipts.

Authentication: identities and attributes of parties engaged in commerce are established at some tolerable level of risk.

Authorization: individuals are established and recognized as entitled to receive, send or view transactions.

Confidentiality: transactions can be protected from view except by those who are authorized.

Reliability: probability of failure in the transaction-send, receive, acknowledge-is low.

Functionally, money technologies also need to achieve these operating characteristics: privacy, scalability, ease of use, personalize-able, seamlessness, interoperability, write one-apply anywhere and cost effective.

2.1.22 Comparison of Electronic Payment Systems

The electronic payment system is the ability to pay electronically for goods and services purchased online and are an integral part of e-commerce and an essential infrastructure for e-commerce models. One of the major reasons for the widespread of e-commerce transactions is perhaps the rapid development and growth of various electronic payment systems. In the developed countries, credit cards have been used even before the advent of Internet.

The present part of the study revealed many electronic payment systems and broadly these electronic payment systems can be grouped or classified into four categories: Online Credit Card Payment System, Online Electronic Cash System, Electronic Cheque System and Smart Cards based Electronic Payment System.

These payment systems have numbers of requirements: e.g. security, acceptability, convenience, cost, anonymity, control, and traceability. Therefore, instead of focusing on the technological specifications of various electronic payment systems, the researcher have distinguished electronic payment systems based on what is being transmitted over the network; and analyze the difference of each electronic payment system by evaluating their requirements, characteristics and assess the applicability of each system.

After analysis and comparison of various modes of electronic payment systems, it is revealed that it is quite difficult, if not impossible, to suggest that which payment system is best. Some systems are quite similar, and differ only in some minor details. Further, all these systems have ability or potential to displace cash. Added to this, a widely different technical specification makes it difficult to choose an appropriate payment system. On the basis of above analysis it is concluded that, smart cards based electronic payment system is best. It has numerous advantages over the other electronic payment systems.

Therefore, establishing a standard smart card based system, or making different system interoperable with one another is critical success factor for the smart cards

based payment system. Smart card organizations around the world must establish a smart card interface standard and a conformance testing organization to make all smart card system compatible; otherwise smart card related products will not develop fully. The comparison table of electronic payment system is presented on Appendix IV.

2.1.23 Credit Card

It is an instrument of payment used for making payment of services and goods in place of cash or cash items, while repayment can be made after fixed time or over a period of time. It has the option of revolving credit. The cardholders can have the option of partial payment, and on the remaining dues, one has to pay interest. Banks and finance companies issue credit cards carrying the brand of any international payment association such as Visa Card or Master Card. The bank issuing card pays on behalf of card user to the merchant (store) from where the card is used for purchase. A certain percentage is charged from the merchant in return for processing the transaction, crediting the purchased amount less bank's commission to the merchant's account.

The amount that the cardholder uses is treated as a loan, if cardholder doesn't pay the amount within the period given by the bank (grace period), usually within 45 days of statement issued, interest is charged.

A credit card's grace period is the time the customer has to pay the balance before interest is charged to the balance. Grace periods vary, but usually range from 20 to 30 days depending on the type of credit card and the issuing bank. Some policies allow for reinstatement after certain conditions are met. Usually, if a customer is late paying the balance, finance charges will be calculated and the grace period does not apply. Finance charge(s) incurred depends on the grace period and balance, with most credit cards there is no grace period if there's any outstanding balance from the previous billing cycle or statement (i.e. interest is applied on both the previous balance and new transactions). However, there are some credit cards that will only apply finance charge on the previous or old balance, excluding new transactions.

Foreign currency credit card can be availed against the passport facility for traveling abroad. Foreign currency account holders also can obtain credit card for hotel and

travel expenses. All Credit card or Charge card users have a credit limit up to which one can use the fund to purchase goods or services. Visa or Master card (depending upon the type of card) is responsible for processing and settling the transactions and the card issuing bank is responsible to collect fund from its customers.

2.1.24 Types of Credit Card

There are two types Credit cards: - secured and unsecured. The card that is secured with a saving deposit of cardholders to ensure payment of the outstanding balance if he/she were to default on payment is called secured cards. It is generally used by people who are new to the bank and also who are trying to rebuild their poor credit ratings. The cardholder of a secured credit card is still expected to make regular payments, as he or she would with a regular credit card, but should he or she default on a payment, the card issuer has the option of recovering the cost of the purchases paid to the merchants out of the deposit. The advantage of the secured card for an individual with negative or no credit history is that most companies report regularly to the major credit bureaus. This allows for building of positive credit history. Secured credit cards are an option to allow a person with a poor credit history or no credit history to have a credit card which might not otherwise be available. They are often offered as a means of rebuilding one's credit. Secured credit cards are available with both Visa and Master Card logos on them. Fees and service charges for secured credit cards often exceed those charged for ordinary non-secured credit cards, however, for people in certain situations, (for example, after charging off on other credit cards, or people with a long history of delinquency on various forms of debt), secured cards can often be less expensive in total cost than unsecured credit cards, even including the security deposit. Whereas the card which is not secured by any collateral is called unsecured credit card. Most credit cards are unsecured so there is higher interest rate than other forms of lending, such as mortgages, which utilize property as collateral. All credit cards fit into one of the following three categories:

1) Bank Cards

They are the cards issued by banks. For example: Visa and Master card

2) Travel and entertainment (T&E) cards

Examples of these types of cards are American express, Dinners club and Carte Blanche. Travel, entertainment and national house cards have same terms and conditions wherever you apply.

3) House Cards

House cards are good only in a chain of stores. It is generally a local and national retail card.

2.1.25 Historical Background of Credit Cards in Nepal

Credit card is generally associated with a financial institution or bank. However, the history of credit card business in Nepal is associated with a travel agency named Alpine Travel Services private limited (ATS). ATS first obtained the license from VISA and MasterCard International in 1985 A.D. as the representative of the chase Manhattan Bank, NA Singapore. It was horsed to sign up merchant establishment to the various outlets. Now, Alpine accepts credit card service from more than 2000 merchants all over the country. From its association with the chase Manhattan Bank, Singapore and then in 1993 with the Overseas Union Bank Ltd, Credit Card in Nepal has come a long way. After ATS, Nepal Grindlays Bank Limited, NGBL, (later named Standard Chartered Bank Limited, SCBL) also entered credit card acquiring market in 1989 with Visa and NABIL acquired Master Card. Later, NGBL acquired Master Card in 1990A.D. and JCB in 1992 A.D. It was the Himalayan Bank Limited and NABIL to start the issue of cards in Nepal for the first time in November 1993 A.D. NABIL issued Master Card whereas HBL entered the credit card issuing business with its typical local proprietary card branding "HBL Regular" which is the Nepal's first ever (domestic) Credit Card. In December 1997, HBL improved its technology to issue HBL Gold Card which was more reliable and safe. These cards become very popular in Nepalese general public, especially in the Kathmandu valley. But now HBL Gold is not issuing because of manipulation problem. Himalayan Bank Ltd started to acquire international credit card (Visa) only since 1996. Likewise then Nepal Grindlays Bank Limited (NGBL) started issuing Visa and Master Card in April 1997 A.D. and July 1998 A.D.

This brought about competition in small credit card market of Nepal and of course for the better as it reduced the high commission charges that were enjoyed by the pioneers of credit card introducers and improved the quality of service. In Nepal, however, the use of the credit cards is restricted to small value and mostly personal transactions and in tourism sector. Today Credit card business in Nepal is provided mainly by five banks; Himalayan Bank, Nabil Bank, SCBNL, NIBL and very recently Global Bank. All of these banks are both issuer and acquirer. Credit card is still in initial stage in Nepalese market. So it is facing some problems. The major problem with the card business is that most of the people are not aware of its benefit. They are only familiar with the general services provided by the Bank. They don't know what the credit card is, how its operation is carried out, how the entire system works and what are the advantages if one becomes the card holder. The primary reason behind this may be huge investment to start card business and comparatively very low return due to small market size. Hence this has been one of the problems to tap the foreside business.

Players of Credit Cards in Nepal are Nabil Bank, Himalayan Bank, SCBNL, NIBL and Global, which are carrying the credit card business in Nepal. All of these banks are both issuer and acquirer. Types of credit cards they are acquiring and issuing are shown in the following table:

Table: 2.4

Players of Credit Cards in Nepal

Players of Credit Card in Nepal Bank	Cards Issued	Cards Acquired
NABIL	Master Cards	Master Cards/ Visa card/Diner's Card
SCBNL	Master card/Visa card	Master card/Visa card/JCB
HBL	Visa Card	Visa Card
NIBL	Visa Card	Visa Card
Global Bank	Visa Card	Visa Card

2.1.26 Advantages and Disadvantages of Credit Cards

Advantages of Credit Card to the cardholders

Credit Cards have numerous advantages, some of them are mentioned below:

- Safe and secure in comparison to traditional modes of payment like cash, cheques etc.
- Very convenient to carry it instead of bulky cash.
- Wide acceptance.
- Unlike cash it is easy to get replacement.
- A credit card can be used not only for purchases, but also to make cash advances. Hence, it is helpful during shortage of cash and in emergencies.
- In built credit instruments with the privilege of interest free credit period of 45 days maximum to 15 days minimum.
- Facility of revolving credit i.e. option of minimum stated payment on regular.

Advantages to the Merchants

- Merchants need not worry about the payment as the bank is liable for payment and not the cardholder.
- Volume of sales increases as the card encourages consumers for purchases, as they do not have to pay in cash immediately.
- Payment received through credit card is more safe and secure than any other forms of payment.

Disadvantages of Credit Card

In spite of being a most extensively used financial tool, credit card has some inconvenience too. They are:

- Sometimes card holders complain their goods are not delivered due to amount altered and transactions not authorized. There exist system errors.
- Sometime merchant can make multiple imprints of the card and sometimes transaction may happen on lost card or counterfeit card etc.
- Processing errors or violation of the rules set out in the Visa / Master card rules like late submission, transaction on expired card, transaction without code, wrong transaction etc.

2.1.27 Debit Card

Debit card is also a plastic card, an instrument used to pay the price of services and goods in lieu of cash or cash items, where payment is made only against the deposits available in the customer's depository account and payment is effected immediately. It exactly looks like a credit card but the features are completely different. A debit cardholder must have an account with the bank and the moment he makes any purchase, his account gets immediately debited at the point of purchase and hence is called a debit card. The ATM cards that banks issue are the example of debit cards. It can be used in POS (point of sale) machines to make payment on purchase or services.. Debit card users can have direct access to their account but the debit cards issued for a rupee account cannot be used worldwide because of the non-convertibility of Nepalese currency. Member banks and companies of Visa and Master card international issue debit cards.

2.1.28 Types of Debit Card

There are currently three ways that debit card transactions are processed: online debit (also known as PIN debit), offline debit (also known as signature debit) and the Electronic Purse Card System. It should be noted that one physical card can include the functions of an online debit card, an offline debit card and an electronic purse card.

Although many debit cards are of the Visa or MasterCard brand, there are many other types of debit card, each accepted only within a particular country or region, for example Switch (now: Maestro) and Solo in the United Kingdom, Interac in Canada, Carte Bleue in France, Laser in Ireland, "EC electronic cash" (formerly Eurocheque) in Germany and EFTPOS cards in Australia and New Zealand. The need for cross-border compatibility and the advent of the euro recently led to many of these card networks (such as Switzerland's "EC direkt", Austria's "Bankomatkasse" and Switch in the United Kingdom) being re-branded with the internationally recognised Maestro logo, which is part of the MasterCard brand. Some debit cards are dual branded with the logo of the (former) national card as well as Maestro (e.g. EC cards in Germany, Laser cards in Ireland, Switch and Solo in the UK, Pinpas cards in the Netherlands, Bancontact cards in Belgium, etc.). The use of a debit card system allows operators to

package their product more effectively while monitoring customer spending. An example of one of these systems is ECS by Embed International.

The front of a typical debit card includes Issuing bank logo, EMV chip, Hologram, Card number, Card brand logo, Expiration date, Cardholder's name where as in the reverse side of a typical debit card includes Magnetic stripe, Signature strip, Card Security Code.

Online Debit System

Online debit cards require electronic authorization of every transaction and the debits are reflected in the user's account immediately. The transaction may be additionally secured with the personal identification number (PIN) authentication system and some online cards require such authentication for every transaction, essentially becoming enhanced automatic teller machine (ATM) cards. One difficulty in using online debit cards is the necessity of an electronic authorization device at the point of sale (POS) and sometimes also a separate PIN pad to enter the PIN, although this is becoming commonplace for all card transactions in many countries. Overall, the online debit card is generally viewed as superior to the offline debit card because of its more secure authentication system and live status, which alleviates problems with processing lag on transactions that may only issue online debit cards.

Offline Debit System

Offline debit cards have the logos of major credit cards (e.g. Visa or MasterCard) or major debit cards (e.g. Maestro in the United Kingdom and other countries, but not the United States) and are used at the point of sale like a credit card (with payer's signature). This type of debit card may be subject to a daily limit, and/or a maximum limit equal to the current/checking account balance from which it draws funds. Transactions conducted with offline debit cards require 2–3 days to be reflected on users' account balances. In some countries and with some banks and merchant service organizations, a "credit" or offline debit transaction is without cost to the purchaser beyond the face value of the transaction, while a small fee may be charged for a "debit" or online debit transaction (although it is often absorbed by the retailer). Other differences are that online debit purchasers may opt to withdraw cash in addition to the amount of the debit purchase (if the merchant supports that functionality); also,

from the merchant's standpoint, the merchant pays lower fees on online debit transaction as compared to "credit" (offline) debit transaction.

Electronic Purse Card System

Smart-card-based electronic purse systems (in which value is stored on the card chip, not in an externally recorded account, so that machines accepting the card need no network connectivity) are in use throughout Europe since the mid-1990s, most notably in Germany (Geldkarte), Austria (Quick), the Netherlands (Chipknip), Belgium and Switzerland (CASH). In Austria and Germany, all current bank cards now include electronic purses.

Prepaid Debit Card

Prepaid debit cards, also called reloadable debit cards or reloadable prepaid cards, are often used for recurring payments. The payer loads funds to the cardholder's card account. Prepaid debit cards use either the offline debit system or the online debit system to access these funds. Particularly for US-based companies with a large number of payment recipients abroad, prepaid debit cards allow the delivery of international payments without the delays and fees associated with international checks and bank transfers. Web-based services such as stock photography websites (istockphoto), outsourced services (oDesk), and affiliate networks (MediaWhiz) have all started offering prepaid debit cards for their contributors / freelancers / vendors.

2.1.29 Advantages and Disadvantages of Debit Cards

Debit and check cards, as they have become widespread, have revealed numerous advantages and disadvantages to the consumer and retailer alike. The following allegations seem to be based only on the current situation within the developed countries and may not fully applied to all the countries.

Advantages of Debit cards are as follows:

- A consumer who is not credit worthy and may find it difficult or impossible to obtain a credit card can more easily obtain a debit card, allowing him/her to make plastic transactions.
- Use of a debit card is limited to the existing funds in the account to which it is linked (except cases of offline payments), thereby preventing the consumer

from racking up debt as a result of its use, or being charged interest, late fees, or fees exclusive to credit cards.

- For most transactions, a check card can be used to avoid check writing altogether. Check cards debit funds from the user's account on the spot, thereby finalizing the transaction at the time of purchase, and bypassing the requirement to pay a credit card bill at a later date, or to write an insecure check containing the account holder's personal information.
- Like credit cards, debit cards are accepted by merchants with less identification and scrutiny than personal checks, thereby making transactions quicker and less intrusive. Unlike personal checks, merchants generally do not believe that a payment via a debit card may be later dishonored.
- Unlike a credit card, which charges higher fees and interest rates when a cash advance is obtained, a debit card may be used to obtain cash from an ATM or a PIN-based transaction at no extra charge, other than a foreign ATM fee.

The Debit card has many disadvantages as opposed to cash or credit:

- Many banks are now charging over-limit fees or non-sufficient funds fees based upon pre-authorizations, and even attempted but refused transactions by the merchant (some of which may not even be known by the client).
- Many merchants mistakenly believe that amounts owed can be "taken" from a customer's account after a debit card (or number) has been presented, without agreement as to date, payee name, amount and currency, thus causing penalty fees for overdrafts, over-the-limit, amounts not available causing further rejections or overdrafts, and rejected transactions by some banks.
- In some countries debit cards offer lower levels of security protection than credit cards. Theft of the users PIN using skimming devices can be accomplished much easier with a PIN input than with a signature-based credit transaction. However, theft of users' PIN codes using skimming devices can be equally easily accomplished with a debit transaction PIN input, as with a credit transaction PIN input, and theft using a signature-based credit transaction is equally easy as theft using a signature-based debit transaction.

- In many places, laws protect the consumer from fraud much less than with a credit card. While the holder of a credit card is legally responsible for only a minimal amount of a fraudulent transaction made with a credit card, which is often waived by the bank, the consumer may be held liable for hundreds of dollars, or even the entire value of fraudulent debit transactions. The consumer also has a shorter time (usually just two days) to report such fraud to the bank in order to be eligible for such a waiver with a debit card, whereas with a credit card, this time may be up to 60 days. A thief who obtains or clones a debit card along with its PIN may be able to clean out the consumer's bank account, and the consumer will have no recourse.
- In the UK and Ireland, among other countries, a consumer who purchases goods or services with a credit card can pursue the credit card issuer if the goods or services are not delivered or are unmerchantable. While they must generally exhaust the process provided by the retailer first, this is not necessary if the retailer has gone out of business. This protection is not provided by legislation when using a debit card but may be offered to a limited extent as a benefit provided by the card network, e.g. Visa debit cards.
- When a transaction is made using a credit card, the bank's money is being spent, and therefore, the bank has a vested interest in claiming its money where there is fraud or a dispute. The bank may fight to void the charges of a consumer who is dissatisfied with a purchase, or who has otherwise been treated unfairly by the merchant. But when a debit purchase is made, the consumer has spent his/her own money, and the bank has little if any motivation to collect the funds.
- In some countries, and for certain types of purchases, such as gasoline (via a pay at the pump system), lodging, or car rental, the bank may place a hold on funds much greater than the actual purchase for a fixed period of time. However, this isn't the case in other countries, such as Sweden. Until the hold is released, any other transactions presented to the account, including checks, may be dishonored, or may be paid at the expense of an overdraft fee if the account lacks any additional funds to pay those items.

- While debit cards bearing the logo of a major credit card are accepted for virtually all transactions where an equivalent credit card is taken, a major exception in some countries is at car rental facilities. In some countries car rental agencies require an actual credit card to be used, or at the very least, will verify the creditworthiness of the renter using a debit card. In these unspecified countries, these companies will deny a rental to anyone who does not fit the requirements, and such a credit check may actually hurt one's credit score, as long as there is such a thing as a credit score in the country of purchase and/or the country of residence of the customer.

2.1.30 Charge Cards

Charge card is also a payment card with a pre-set limit. The cardholder does not have the option of revolving credit. The cardholder must pay the entire dues at the end of each month or the billing period.

2.1.31 Chip / Smart Cards

A Chip/Smart card is also a payment card and looks like any other plastic card or an ATM with an integrated circuit(IC Chip) installed. The IC contains memory, may contain a processor, and communicates with the external world through contacts on the surface of the card. The size, position and utility of the contacts are specified by an international standard (ISO7816), so that cards can interact with a variety of equipment. There are two main types of smart cards: Intelligent Memory Chip and Microprocessor cards. Payments are made either on-line by connecting to the customers account or off-line through credit card concept and through funds (limit) loaded in the chip. A memory chip has a data storage capability that enables the card to collect every time it is used. The microprocessor chip has additional features such as it can add, delete and manipulate information in its memory. Memory smart cards have been around for several years, being used in pay phones, identification, access control, voting and other applications. Processor smart cards are the most advanced, and are ideally suited for banking and financial applications where use of the card is allowed.

2.1.32 Premium Cards

These cards possess added features such as travel insurance, cardholder assistance and emergency cash advances along with the normal features of conventional credit cards and charge cards.

2.1.33 VISA

Visa international is a membership corporation that is owned by its members. Visa operates the world's largest retail electronic payments network and is one of the most recognized global financial services brands. Visa facilitates global commerce through the transfer of value and information among financial institutions, merchants, consumers, businesses and government entities.

Visa offers a range of branded payment product platforms, which its financial institution clients use to develop and offer credit, charge, deferred debit, prepaid and cash access programs to cardholders. Visa's card platforms provide consumers, businesses, merchants and government entities with a secure, convenient and reliable way to pay and be paid in 170 countries and territories. Visa's global transaction and information processing network, Visa Net, supports these payment platforms and delivers value-added services, including fraud and risk management, dispute resolution, rewards and other business-enhancing applications.

Visa’s family of global payment brands, including Visa, Visa Electron, Plus and Interlink, enjoy unsurpassed acceptance at 27 million merchant outlets and 1 million ATMs across the world. It is the world's largest payment system owned by more than 22000 financial institutions worldwide**.** Visa provides its member the facilities like payment products, a global communication network, risk control and authorization services, cleaning and settlement facilities

Visa is also a registered trademark. The blue white and gold band form one of the world's largest recognized brands. Visa assures a high profile for the brand through a number of activities, such as advertising, sponsorship of the Olympics and other promotional events. The trade mark is licensed to members for their use to ensure increasing acceptance of Visa payment cards and services worldwide.

Visa international's mission is to enhance member's profitability and pre-eminence by:

- Enhancing current product (especially deposit access) expanding product offering (commercial & chip cards).
- Strengthening geo-Figureic coverage.
- Supporting and enhancing Visa Net systems.
- Improving acceptance of the card.
- Increasing brand preference.
- Continuous improvement of the supporting infrastructure. (For example, in the areas of risk management, standards, corporate governance).

(*www.visa.com (accessed on 15 April 2010*))

2.1.34 Master Card

The MasterCard story begins in 1966 when a group of banks created a member-owned association that later became MasterCard. In 1968 the company extended its presence to Mexico, Japan and Europe, marking the start of its commitment to becoming the leading global payments network. Through the 1980s, MasterCard continued to build on this promise, bringing the advantages of electronic payments to new regions and markets around the globe. MasterCard became the first payment card issued in the People's Republic of China, and the company also launched Maestro®, the world's first truly global online debit program, in partnership with Europay International.

Uncovering new ways to provide value to its customers, MasterCard launched MasterCard Advisors in 2001, bringing innovative consulting services to customers and others within the industry. That same year, MasterCard completed a major upgrade of its state-of-the-art network, enhancing its ability to process transactions safely, securely and instantly the world over. MasterCard also implemented structural changes that reflected a new outlook for the company. MasterCard integrated with Europay International in 2002, establishing a unified global corporate structure and also becoming a private share corporation.

By 2005, MasterCard had committed itself to a new, customer-focused strategy that aligned its advisory and processing capabilities with its long-standing role as a franchisor. This three-tiered business model crystallized the company's positioning as a franchisor, processor and advisor, laid the groundwork for its transition to a more transparent governance model and initial public offering in 2006.

Today and beyond, MasterCard Worldwide continues to provide a unique combination of expertise, industry-leading insight, and globally-integrated resources that the company leverages to deliver value to constituents. MasterCard is committed to innovating and growing the range of products and services the company brings to market through its strong partnerships with its customers. MasterCard Worldwide is a driving force at the heart of commerce, enabling global transactions and bringing insight into the payments process to make commerce faster, more secure, and more valuable to everyone involved.

As a critical link among financial institutions and millions of businesses, cardholders and merchants worldwide, MasterCard provides services in more than 210 countries and territories. MasterCard advances commerce worldwide by developing more secure, convenient and rewarding payment solutions, processing billions of payments seamlessly across the globe, and building economic connections that accelerate business.

(*www.mastercard.com (accessed on 13April 2010)*)

2.1.35 Parties Involved in Card Business

There are five parties involved in credit card business that is mentioned below.

a) Issuer

Any financial or non financial institution, which is authorized to issue cards under the granted license of Visa and Master card international, are called issuer. Examples of such issuers in Nepal are Nabil Bank Ltd., Himalayan Bank Ltd, Standard Chartered Bank, and Nepal Investment Bank Limited. The issuing bank bills the consumer for repayment and bears the risk that the card is used fraudulently. American Express and Discover were previously the only card-issuing banks for their respective brands, but as of 2007, this is no longer the case.

b) Cardholder

Prospective person or organization (card users), whose cards are issued by the issuer are called cardholder.

c) Merchant

All those outlets which accept these cards as a mode of payment are called merchants. Examples of such merchant are departmental stores, travel agencies, grocery stores, shopping centers, restaurants, hotels, car rental agencies etc. Now days there are many online merchants who have allowed doing transaction on line without the cardholder being present like muncha house, thamel.com.

d) Acquirer

Whenever a card holder makes a transaction the only thing he / she does is sign a sales slip. This sales voucher is then presented to the financial institution, usually a bank which makes the payment to the merchant normally on the same day or the next working day. It further processes it to get the payment from the issuer. Such institution that accept these transacted sales slips from the merchants are called acquirer. A bank can be both acquirer as well as issuer. Nabil Bank issues credit card and processes the transactions for its various merchants.

e) Clearing and Settlement

Since a credit card is not a cash purchase and the merchant is paid by its acquirer, it involves a fifth and the most important party called the clearing and settlement bank. Once the acquirer makes the payment to the merchant, it itself needs to get the payment from the bank which has issued the card and it is not possible and feasible to make direct claim as there are hundreds or even thousands of such transactions taking places every day. Hence these claims from all these member institutions are forwarded to the clearing and settlement banks for payment and in the settlement process the actual payments are made. In case of master card this process is conducted by master card international and visa international for visa card.

f) Independent sales organization

Resellers (to merchants) of the services of the acquiring bank.

g) Merchant account

This could refer to the acquiring bank or the independent sales organization, but in general is the organization that the merchant deals with.

h) Credit card association

An association of card-issuing banks such as Visa, MasterCard, Discover, American Express, etc. that set transaction terms for merchants, card-issuing banks, and acquiring banks.

i) Transaction network

The system that implements the mechanics of the electronic transaction may be operated by an independent company, and one company may operate multiple networks. Transaction processing networks include: Cardnet, Nabanco, Omaha, Nova, Vital and Visa Net.

j) Affinity partner

Some institutions lend their name to an issuer to attract customers that have a strong relationship with that institution, and get paid a fee or a percentage of the balance for each card issued using their name. Examples of typical affinity partners are sports teams, universities and charities.

2.1.36 ATM and Its Hardware

An automated teller machine (ATM) or automatic banking machine (ABM) is a computerised telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller. On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip, that contains a unique card number and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN).

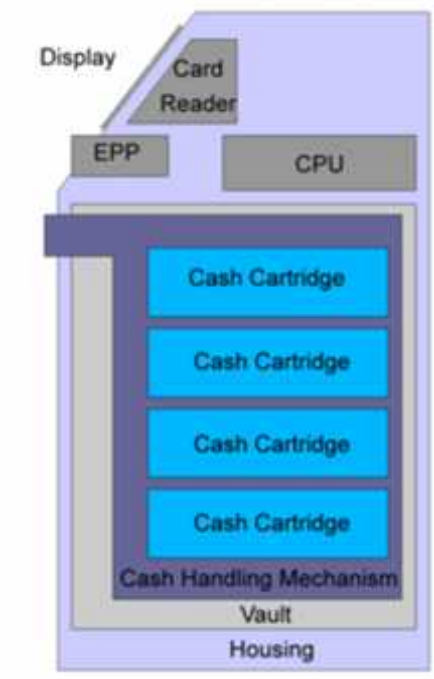
Using an ATM, customers can access their bank accounts in order to make cash withdrawals (or credit card cash advances) and check their account balances as well as purchase cellphone prepaid credit. If the currency being withdrawn from the ATM is different from that which the bank account is denominated in (e.g.: Withdrawing

Nepali Rupees from a bank account containing US Dollars), the money will be converted at a wholesale exchange rate. Thus, ATMs often provide the best possible exchange rate for foreign travelers and are heavily used for this purpose as well.

ATMs are known by various other names including Automated Transaction Machine, automated banking machine, cashpoint (in Britain), money machine, bank machine, cash machine, hole-in-the-wall, Bancomat (in various countries in Europe and Russia), Multibanco (after a registered trade mark, in Portugal), and Any Time Money (in India). Multiple security cameras and security guards are a common feature in ATM.

Figure: 2.11

A Block Diagram of an ATM



(*Source: http://en.wikipedia.org/wiki/File:Atm_blockdiagram.png (accessed on 14 April 2010))*

An ATM is typically made up of the following devices:

- CPU (to control the user interface and transaction devices)
- Magnetic and/or Chip card reader (to identify the customer)
- PIN Pad (similar in layout to a Touch tone or Calculator keypad), often manufactured as part of a secure enclosure.

- Secure cryptoprocessor, generally within a secure enclosure.
- Display (used by the customer for performing the transaction)
- Function key buttons (usually close to the display) or a Touch screen (used to select the various aspects of the transaction)
- Record Printer (to provide the customer with a record of their transaction)
- Vault (to store the parts of the machinery requiring restricted access)
- Housing (for aesthetics and to attach signage to)

Recently, due to heavier computing demands and the falling price of computer-like architectures, ATMs have moved away from custom hardware architectures using microcontrollers and/or application-specific integrated circuits to adopting the hardware architecture of a personal computer, such as, USB connections for peripherals, ethernet and IP communications, and use personal computer operating systems. Although it is undoubtedly cheaper to use commercial off-the-shelf hardware, it does make ATMs potentially vulnerable to the same sort of problems exhibited by conventional computers.

With the migration to commodity PC hardware, standard commercial "off-the-shelf" operating systems and programming environments can be used inside of ATMs. Typical platforms previously used in ATM development include RMX or OS/2. Today the vast majority of ATMs worldwide use a Microsoft OS, primarily Windows XP Professional or Windows XP Embedded. A small number of deployments may still be running older versions such as Windows NT, Windows CE or Windows 2000. Notably, Vista was not widely adopted in ATMs. Notable ATM software that operates on XFS platforms include Triton PRISM, Diebold Agilis EmPower, NCR APTRA Edge, CR2 BankWorld, KAL Kalignite, Phoenix Interactive VISTA atm, and Wincor Nixdorf ProTopas.

Although ATMs were originally developed as just cash dispensers, they have evolved to include many other bank-related functions. In some countries, especially those which benefit from a fully integrated cross-bank ATM network (e.g.: Multibanco in Portugal), ATMs include many functions which are not directly related to the management of one's own bank account.

Modern ATM physical security, per other modern money-handling security, concentrates on denying the use of the money inside the machine to a thief, by means of techniques such as dye markers and smoke canisters.

The security of ATM transactions relies mostly on the integrity of the secure cryptoprocessor: Customer identity integrity, Device operation integrity, Customer security, the ATM often uses commodity components that are not considered to be "trusted systems". ATM usage fees are the fees many banks and interbank networks charge for the use of their Automated Teller Machines (ATMs). In some cases, these fees are assessed solely for non-members of the bank; in other cases, they apply to all users. Many people oppose these fees because ATMs are actually less costly for banks than withdrawals from human tellers.

Two types of consumer charges exist: the surcharge and the foreign fee. The surcharge fee may be imposed by the ATM owner (the deployer or Independent sales organization) and will be charged to the consumer using the machine. The foreign fee or transaction fee is a fee charged by the card issuer (financial institution, stored value provider) to the consumer for conducting a transaction outside of their network of machines in the case of a financial institution.

2.1.37 Interbank Network

An interbank network, also known as an ATM consortium or ATM network, is a computer network that connects the ATMs of different banks and permits these ATMs to interact with the ATM cards of non-native banks.

While interbank networks provide capabilities for all ATM cards within the same network to use other banks' ATMs that belong to the same network, the services vary. For instance, when a person uses their ATM card at an ATM that does not belong to their bank, the basic services such as balance inquiries and withdrawals are usually available. However, special services, such as the purchase of mobile phone airtime, are usually not accessible to ATM cardholders of banks other than the ATM cardholders of the acquirer (the bank that owns the ATM). Furthermore, many banks will charge a fee to users of cards that do not come from their own bank (in addition to any fees imposed by the bank of the card the person is using).

Interbank networks are convenient because people can access the ATMs of other banks who are members of the network when their own bank's ATM is unavailable. Such is especially convenient for travelers traveling abroad, where multinational interbank networks, like PLUS or Cirrus, are usually available. Interbank networks also, through different means, permit the use of ATM cards at a point of sale through the use of a special EFTPOS terminal where ATM cards are treated as debit cards.

2.1.38 SCT ATM Network

Smart Choice Technologies P. Ltd. is a company registered in Nepal and promoted by well-established entrepreneurs. The company was established in 2001. The company has deployed a first-of-its-kind initiative in Nepal creating an integrated shared services network (SCT-Network) for Automated Teller machines (ATMs) and Point-of-sale (POS) Terminals, managed through a national switch. The SCT-Network is a fully integrated network supporting multiple device types and card acquiring standards.

This network has been made available, on a subscription basis (pay-per-use), to banks and financial institutions across the country. Besides the network, this national switch will also operate and manage domestic & international gateways and settlement systems. For inter-bank settlement, the company has appointed a settlement bank, which is responsible for the daily settlement of all ATM transactions on the network.

The company has also launched a local debit card program (branded as SCT™) to enable banks to issue cards to customers at a fraction of the costs typically associated with international card schemes. The local debit card program offers a first-time opportunity for banks to issue and manage a local debit card program, with wide acceptability (due to the ATM & POS Network in Nepal and India and regional countries at a subsequent date).

In addition, the company also provides a secure facility for Card and PIN production & management, customized for each bank. This facility is equipped with world standard Hardware Based Encryption (RACAL-HSM) supporting the latest (e.g. 3DES) encryption standards.

The project also includes integration of ATMs and POS banks may have already invested in, and enable them to recover their investments on a significantly

accelerated basis. The technology used in this project is tried and tested in many sites overseas and consequently mitigates the risk of technology failure that is typically associated with new technologies.

Currently, Smart Choice provides the following products & services under its network.

- Automated Teller Machine (ATM) supply, installation, integration, acquiring, and maintenance
- Point-of-Sale (POS) Terminal supply, installation, integration, acquiring, and maintenance
- Racal Host Security Module (HSM) supply, installation, and training
- 'IST Switch' License software supply, installation, and integration
- ATM & POS Networking services

Currently, Smart Choice has signed SCT-Network software & subscription agreements with 24 commercial bank including Nabil Bank Limited and 42 Development Banks & Financial Institutions.

2.1.39 Point of Sale (POS)

Point of sale (POS) or checkout is the location where a transaction occurs. A "checkout" refers to a POS terminal or more generally to the hardware and software used for checkouts, the equivalent of an electronic cash register. A POS terminal manages the selling process by a salesperson accessible interface. The same system allows the creation and printing of the voucher.

2.1.40 Remittance

A remittance is a transfer of money by a foreign worker to his or her home country. Remittance as a major source of foreign currency to the developing nation has become a substantial component of making current account surplus in the balance of payments. It is argued that many workers from Nepal going abroad for employment are no doubt young, energetic, laborious and enthusiastic. They do hard work for earning large remittance income to support their families. However, the downside of

remittances reflects the view that remaining young generation for long time outside without family may increase their vulnerability and ultimately they will have a tendency to leave their homeland. Thus, in order to recover the loss of economically active labor force to the domestic economy, they should be encouraged to come back again with skilled knowledge for utilizing their savings and working experience for development to the productive areas in accordance with the priority of the national development plans.

Remittance income in developing countries has become a lifeline for economic development. By remittance we mean sending income in terms of money or goods in home by the migrants or workers who have their earnings outside their home country. Now-a-days, this source of foreign income has been growing rapidly in each year in developing countries. Since long time in Nepal, many migrants have been transferring their income through the unofficial channels. Today due to the establishment of different agencies like Western Union, International Money Express (IME) etc. in several district headquarters of the country, the remittance flows has become popular for transferring cash or money in time to the recipients. It would be highly beneficial to the country, where there is natural calamities, political conflict, people war, low investment in entrepreneurial activities and economic recession. Minimizing transaction costs would significantly help recipients' families. The cost of remittance service does not really depend on the amount of principal. Indeed, the real cost of a remittance transaction include labor charges, house rent, technology, networks etc. It is also known that greater competition among banks and money transfer operators (MTO) brings down the cost of transaction. In addition, some commercial banks have recently started providing remittance services than money transfer operators. Both sending and receiving countries can increase banking access for migrants by facilitating participation of financial institutions and credit unions in the remittance market.

2.1.42 SWIFT

SWIFT is the Society for Worldwide Interbank Financial Telecommunication, a member-owned cooperative through which the financial world conducts its business operations with speed, certainty and confidence. Over 8,468 banking organisations,

securities institutions and corporate customers in more than 208 countries trust it every day to exchange millions of standardised financial messages.

In 1973 SWIFT was born in the centre of Brussels, a handful of people and an ambitious idea. Supported by 239 banks in 15 countries, the Society for Worldwide Interbank Financial Telecommunication (SWIFT) starts the mission of creating a shared worldwide data processing and communications link and a common language for international financial transactions. It provide the proprietary communications platform, products and services that allow its customers to connect and exchange financial information securely and reliably. It also act as the catalyst that brings the financial community together to work collaboratively to shape market practice, define standards and consider solutions to issues of mutual interest.

SWIFT enables its customers to automate and standardise financial transactions, thereby lowering costs, reducing operational risk and eliminating inefficiencies from their operations. By using SWIFT customers can also create new business opportunities and revenue streams.

SWIFT is solely a carrier of messages. It does not hold funds nor does it manage accounts on behalf of customers, nor does it store financial information on an on-going basis. As a data carrier, SWIFT transports messages between two financial institutions. This activity involves the secure exchange of proprietary data while ensuring its confidentiality and integrity.

2.1.43 E-banking

E-banking includes familiar and relatively mature electronically-based products in developing markets, such as telephone banking, credit cards, ATMs, and direct deposit. It also includes electronic bill payments and products mostly in the developing stage, including stored-value cards (e.g., smart cards/smart money) and Internet based stored value products.

Traditional banks offer many services to their customers, including accepting customer money deposits, providing various banking services to customers, and making loans to individuals and companies. Compared with traditional channels of offering banking services through physical branches e-banking uses the internet to

deliver traditional banking services to their customers such as opening accounts, transferring funds, and electronic bill payment.

E-banking can be offered in two main ways. First, an existing bank with physical offices can also establish an online site and offer e-banking services to its customers in addition to the regular channel. For example, Citibank is a leader in e-banking, offering walk-in, face-to-face banking at its branches throughout many parts of the world as well as e-banking services through the World Wide Web. Citibank customers can access their bank accounts through the Internet, and in addition to the core e-banking services such as account balance inquiry, funds transfer, and electronic bill payment, Citibank also provides premium services including financial calculators, online stock quotes, brokerage services, and insurance.

E-banking from banks like Citibank complements those banks' physical presence. Generally, e-banking is provided without extra cost to customers. Customers are attracted by the convenience of e-banking through the Internet, and in turn, banks can operate more efficiently when customers perform transactions by themselves rather than going to a branch and dealing with a branch representative.

In addition to traditional banks that have both a physical and online presence, there are several e-banks that exist only on the Internet, allowing users to work with a "virtual" bank. NetBank is such an Internet-only bank. Without physical branches, NetBank can cut operating costs and can potentially offer higher deposit rates to its customers and waive many fees normally charged by a bank with a large network of physical branches. The challenge for Internet-only banks is to provide quality customer services without physical offices. One way in which NetBank is dealing with this issue is via an agreement with the MAC ATM Network (automated teller machine network). NetBank customers can deposit and withdraw funds from their NetBank accounts through these ATMs, and in addition, customers can also deposit and receive funds through wire transfer.

E-banking services are delivered to customers through the Internet and the web using Hypertext Markup Language (HTML). In order to use e-banking services, customers need Internet access and web browser software. Multimedia information in HTML format from online banks can be displayed in web browsers. The heart of the e-banking application is the computer system, which includes web servers, database

management systems, and web application programs that can generate dynamic HTML pages.

Bank customers' account and transaction information is stored in a database, a specialized software that can store and process large amounts of data in high speed. The function of the web server is to interact with online customers and deliver information to users through the Internet. When the web server receives a request such as an account inquiry from an online customer, it requires an external web application program to process the request. C, Visual Basic, VBScript, and Java are some of the languages that can be used to develop web application programs to process customer requests, interact with the database, and generate dynamic responses. Then, the web server will forward the response HTML files to e-banking customers. Several banks, such as NationsBank, also use state-of-the-art imaging systems, allowing customers to view images of checks and invoices over the Internet.

One of the main concerns of e-banking is security. Without great confidence in security, customers are unwilling to use a public network, such as the Internet, to view their financial information online and conduct financial transactions. Some of the security threats include invasion of individuals' privacy and theft of confidential information. Banks with e-banking service offer several methods to ensure a high level of security:

(1) Identification and authentication,

(2) Encryption, and

(3) Firewalls

First, the identification of an online bank takes the form of a known Uniform Resource Locator (URL) or Internet address, while a customer is generally identified by his or her login ID and password to ensure only authenticated customers can access their accounts. Second, messages between customers and online banks are all encrypted so that a hacker cannot view the message even if the message is intercepted over the Internet. The particular encryption standard adopted by most browsers is called Secure Socket Layer (SSL). It is built in the web browser program and users do not have to take any extra steps to set up the program. Third, banks have built firewalls, which are software or hardware barriers between the corporate network and the external Internet, to protect the servers and bank databases from outside intruders.

For example, Wells Fargo Bank connected to the Internet only after it had installed a firewall and made sure the firewall was sufficiently impenetrable.

The range of e-banking services is likely to increase in the future. Some banks plan to introduce electronic money and electronic checks. Electronic money can be stored in computers or smart cards and consumers can use the electronic money to purchase small value items over the Internet. Electronic checks will look similar to paper checks, but they can be sent from buyers to sellers over the Internet, electronically endorsed by the seller, and forwarded to the seller's bank for electronic collection from the buyer's bank. Further, banks seek to offer their customers more products and services such as insurance, mortgage, financial planning, and brokerage. This will not only deliver more value to the customers but also help banks to grow business and revenues.

Electronic banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. The following terms all refer to one form or another of electronic banking: personal computer (PC) banking, Internet banking, virtual banking, online banking, home banking, remote electronic banking, and phone banking. PC banking and Internet or online banking are the most frequently used designations. It should be noted, however, that the terms used to describe the various types of electronic banking are often used interchangeably.

PC banking is a form of online banking that enables customers to execute bank transactions from a PC via a modem. In most PC banking ventures, the bank offers the customer a proprietary financial software program that allows the customer to perform financial transactions from his or her home computer. The customer then dials into the bank with his or her modem, downloads data, and runs the programs that are resident on the customer’s computer. Currently, many banks offer PC banking systems that allow customers to obtain account balances and credit card statements, pay bills, and transfer funds between accounts.

2.2 Review of Journals and Articles

The following work papers and abstracts about electronic cards are drawn from websites:

Visa International, (2000), in its published report states that in 1998 over 185 million bankcards were issued in Asia Pacific region alone which accounted for transaction worth over US$330 billion. When compared to other regions such as European Union, North America, etc the volume is quite low but a consistent growth of 30% has been maintained by the payment cards sector in the payment industry. Merchant locations outlets that accepts these cards as a means of payment is over 5.4million. The growth of electronic terminals (device which executes transaction electronically) is growing at an annual rate of 40% whereas the numbers of ATMs (Automatic Teller Machines) has grown at the rate of 25%.

With demo Figure of about two third of the worlds populations and 25% of the worlds gross domestic products- Asia pacific Region has more than 500 million bank customers. With the above stated growth rate and the emergence of middle class consumers, this fertile market displays tremendous potential to become a cash free zone with all the financial needs being handled by bankcards.

Chakravorti, (2003) states that Credit cards provide benefits to consumers and merchants not provided by other payment instruments as evidenced by their explosive growth in the number and value of transactions over the last 20 years. Recently, credit card networks have come under scrutiny from regulators and antitrust authorities around the world. The costs and benefits of credit cards to network participants are discussed. Focusing on interrelated bilateral transactions, several theoretical models have been constructed to study the implications of several business practices of credit card networks. The results and implications of these economic models along with future research topics are discussed…

In the international market card has become synonyms for cash. They are going to declare some places as cash free zone. Talking about our two giant neighbors, China and India, they are also rapidly moving in the card business fueled by their fast growing economy and increasing GDP. China is one of the fastest growing economies in the world. As per Visa International there is enormous growth potential in China. The nation has more than 30,000 international cards with the increasing numbers of foreign travel by Chinese citizens. In terms of local consumption about 70% hold debit cards for online debit purposes and the rest 30% holds deferred debit cards. China is enthusiastic about e-commerce and chip card technology, but significant infrastructure development is still to occur.

On the other hand, Visa international state India has sustained average annual growth of around 6.0% since 1990 which only seems to rise following economic liberalization after 1990. In case of payment cards, the foreign banks share is estimated at 70-75%. Citibank is the largest credit card issuer with close to 52% of the market while Standard Chartered Bank is second with about 13% of the market. In 2000 only there were about 2.5 million local Visa and Master Card issued. After the government made the Indian rupee convertible the usage of international cards has increased manifolds.

The prediction for the number of payment card on issue by mid 2000 was around 10 million, which have exceeded way ahead. India has some promising long-term prospects due to the rise of middle–class consumers and changing lifestyles. But in case of Nepalese card business, the number of cards and the outlets are very low in comparison to other countries.

There were 12,100 credit card users in Nepal in 2008 out of which 90% were Kathmandu based and the number of credit card users is estimated to increase by 30,000-35,000 following year. According to Industry sources Nepal at present have 4,000 establishments that range from hotels, travels agencies, trekking and mountaineering agencies, supermarkets, retail outlets etc which accepts Mater Card, Visa Card, American Express and Diners Club cards. Nepal Investment bank has facilitated first Visa electron Debit card in Nepal (*Shrestha, 2004:8*).

At present, almost all of the five banks issue credit cards, charge cards, debit cards and ATM cards with card types varying from VISA Classic and Gold to VISA Electron, Master Card and Master Card Gold. Experts think that the convenience and security of card transactions have driven the shift towards plastic money. Bankers agree that despite the expensive interest rates, which hover between 27 to 30 percent per annum, the prospect of ‘plastic money’ in Nepal is bright.

Card is a kind of facility provided by financial or commercial bank. It is very popular in international business and their personal life but in our country it is new concept. Due to lack of necessary infrastructure for using card its business position is still in unsatisfactory level. However, only few researchers have done research on this card market. So only few working paper and previous thesis were reviewed in this thesis.

Due to less grown of credit card client the Nabil officials said the bank has lately shifted its focus from credit cards to debit cards..

2.3 Review of Thesis

Thapa, (2002), had conducted study on "*Prospect and Challenge of credit card Business in the banking sector of Nepal*". The main objective of the research was to find out the prospects and challenges of credit card business in the banking sector of Nepal. Researcher has taken Nabil bank Ltd and Standard Chartered Bank as a sample bank. The researcher found that the main problem of credit card business is acceptance infrastructure which takes huge amount of investment to commence. The credit card business in Nepal depends mainly upon the arrival of tourist and high fixed cost associated with card operation was portrayed as a barrier.

It can be concluded that the Thapa's study is descriptive rather that analytical. Nevertheless, in the absence of any work paper on credit cards, his initiation to present the card market scenario of Nepal is highly commendable and is worth noting for further more studies on it. Hence, the necessity of research does not finish.

Hada, (2004), had conducted study on "*Credit card Practices in Nepal*". In this study, Hada had tried to find out the situation of credit card in Nepal at that period considering three banks and the leader bank that led the card business and viability of card business in Nepal. In this research also the researcher had failed to present the exact business of credit card and the research is only based on secondary data. Hence the necessity of research is still not finished.

Shrestha, (2008), had conducted study on "*Impact and Effectiveness of Internet Banking Services in Nepal*". The main objective of the research was to find out the uses and problems of Internet Banking Services in Nepal. prospects and challenges of credit card business in the banking sector of Nepal. Researcher has taken Kumari bank Ltd as a sample bank.

The researcher found that the main obstruction for the implementation of Internet Banking is due to the absence of proper cyber laws and the communication infrastructure of our country is unable to support the full-fledged implementation of Internet Banking Services.

Rajbhandari, (2008), had conducted study on *"Credit Card Business in Nepal with Reference to Nabil Bank, Himalayan Bank and Standard Chartered Bank Nepal"*. His study attempts to explore a good picture of Credit Card Market in Nepal. The major objective of his research is to get the overview related to various transactions and different untapped segments of the credit card business in Nepal. The researcher found that that credit card business is in optimistic track in case of Nepal. But the study only deals with credit cards only and directed to illustrate the problems of credit card business only.

Research Gap

Electronic Payment System in general and electronic card in particular is most popular form of payment among the types of payment due to its special features. But in Nepal the popularity of electronic card is quite low due to ignorance about this card business. There are not many researchers conducted on this topic and the study which is related to this topic is also unable to brief on the detail meaning and importance of electronic card in modern life. Most of the above research is only based on the secondary data. Hence this research is distinct in the sense of presenting secondary data as well as primary data which shows the concise figure of Electronic Payment System and card business in Nepalese market and how it affects modern life. An approach toward finding market scenario, card players, customer behavior, attitude toward card services, attracting future customers and retaining present customers, marketing need for cards, possible improvements and role to be played by different parties involved in the business has been taken in this thesis.

In the above research, most of the study is based on the on traditional paper-based information and even lack capable manpower and IT experts. Information does not flow systematically due to absence of Network based computerized Information System to coordinate and communicate different divisions and units of the department. The research mainly focus on "What will happen if Card Section is rectified?" or "Will it be beneficial if the proper Electronic Payment system is implemented?". To study in this aspect, card section office placed at Durbarmarg is taken. Nabil Bank has already introduced a computer based information system

(CBIS) and is providing its services through fully computerized branches and well trained personnel. They have also been using banking software system for their daily activities and also provide various technological services to its customer. To get the knowledge of the implemented Electronic Payment System and flow of information Nabil bank is studied. The gap of this study is that the data used are mostly primary data, which is collected from observation, questionnaire, and interview method. The conclusion and recommendation made in this study cannot generalize in other banks and from the Review of Literature it has been found that there is no any other Research conducted on the same topic “Electronic Payment System (A Case Study on Electronic Card Section of Nabil Bank Limited)”.

CHAPTER III

RESEARCH METHODOLOGY

The first look may not always be adequate. It may be prone to error. Therefore, we look into the phenomenon again and again and study the problem differently and thoroughly each time. Research is a knowledge building process. It generates new knowledge, which can be used for different purpose. Research is undertaken not only to solve a problem existing in the work setting, but also to add or contribute to the general body of knowledge in a particular area of interest to the researcher. Thus research is an organized, systematic, data based, critical, scientific inquiry or investigation into a specific problem, undertaken with the objective of finding answers or solutions to it (*Wolff and Pant, 2005:5*).

Methodology is the research method used for investigation. Research Methodology is the way of doing and completing research work. It is the way to solve the research problem systematically. The systematic and well organized way of solving the research problem can be referred to as research methodology. The research methodology methods and techniques are convenient and appropriate for analyzing the data and information collected. This includes personal observation, questionnaire distribution, secondary data collection, annual report, previous study, websites of commercials banks etc. Research methodology depends on the various aspects of research projects. The size of project, the objective of project, impact of project in various aspects of human life etc are the variables that determine the research methodology of the particular projects.

The topic of the problem has been selected as Electronic Payment System (A case study on Electronic Card Section of Nabil Bank Limited). A study on card division of Nabil bank with tentative objectives of pointing out the problem, as well as to determine ways of retaining present customers while attracting future customers has been conducted.

3.1 Research Design

Research design helps the researcher in the right direction in order to achieve the goal. A simple survey will be made to collect the opinion of the general public and the

concerned personnel regarding the card division of Nabil bank. Thus, the research design here will be exploratory and descriptive in nature.

This study will examine the current situation of Card Division with a view to make suggestions for improving the utilization of different types of Cards. Keeping in view the nature of the study, an exploratory research design will be applied because it implies to find out the current situation of existing system in an organization.

This will be a descriptive, diagnostic and development research. Descriptive research is essentially a fact finding approach relative largely to present and abstracting generalizations by cross sectional study of the current situation and diagnostic research design relates to problem and to find out that solution. The research can also be taken as a development approach as it takes the developmental approach in finding out the solution. So it can also be taken as a development trend of Electronic Payment System in Nepal.

3.1.1 Population and Sample

There are 30 Licensed Commercial Banks operating in Nepal at present. Population refers to the target group on whom we have conducted our research. In Nepal Currently there are five banks providing credit card facility and they are HBL, SCBNL, NIBL, NABIL and Global banks. Whereas many other banks of Nepal started to provide card facility through Debit card or ATM cards to its customer. Sampling is the process of selecting the sample from the given population. Under different techniques of sampling, judgmental sampling technique will be used in this study. In this research, some of the customer and employee of Nabil Bank will be taken as research population. A population in most studies usually consists of a large number of people, events of objects. Because of its large size, it will be difficult to collect detailed information from each member of the population.

At present Nabil Bank provides banking facilities and services to rural and urban areas of the country through its 37 branches; therefore it is not possible to cover the entire employee in this research study. In this regard, Card Division placed at Durbarmarg will be selected for sample. Out of 26 dedicated and hard working staff of the division sample will be taken from Top level, Middle level & Lower level staffs

of Card Division as well as staff at the reception of Durbarmarg branch. A set of questionnaire will be supplied and interview will be taken from different level of management as respondent.

Apart from this, general public who will visit the Durbarmarg Branch for different purpose will also be taken as sample. At least 25 individuals on four Sunday of October 2010 will be interviewed to take their opinion on existing functioning of Electronic Payment system and card division of the bank.

3.2 Sources of Data

The research design for this study will be based mostly on the exploratory design method. Thus, the sources of data collection will be both based on primary and secondary sources. Keeping in the view of explorative nature of the study, primary source is the main source of information and data. The sources of data collection can be better being explained as

3.2.1 Primary Data

For primary data collection interview will be taken with staffs in the concerned department. Interaction and interviews with card users and staff will also be carried out. Direct interview with the staffs, officers and departmental heads involved in the card section will also be made. Regular unstructured and structured interviews will be conducted with the said groups during the research period. Primary data collection includes:

- Visit of bank and Interviewing with the users to get their opinion about existing electronic card system;
- Interviewing with staff who is working to get to know details information about the electronic card system.

3.2.2 Secondary Data

The secondary data to be used will be taken from annual reports, Newsletters, brochure, organizational chart, and different websites related to Nabil Bank. Sources

of secondary data for this study includes accounting data, internally generated reports which are found within the company and web site of the company and sources refers to books, websites, publication periodicals, data service and computer data banks, reports and statistics gathered and complied by other prior to study.

Sources for this study have been listed below:

- Data and information relating to card section from NABIL to be provided by the staff at NABIL bank.
- Publication of NABIL.
- Annual reports of different years.
- Internet articles and previous thesis and project works
- Visit website of the bank i.e. www.nabilbank.com
- Search engines like Wikipedia www.wikipedia.org, Google www.google.com
- Books, research papers from different library.

3.3 Data Collection Procedure

Both primary and secondary data will be used in preparing these reports. And data will be obtained directly from concerned staffs in the card section of the banks.

a) Questionnaire

At first, a formal list of question to be asked during the interviews will be prepared to gather responses from the respondents on a given topic. Then they will be prioritized according to the importance of the question. Similarly, questionnaire in a leaflet will be prepared for the purpose of interview with the general public to obtain the data. Structured questionnaires will be prepared to collect data from Customers (card users) and bank staff. This questionnaire will be targeted to people regardless of sex, age, education or any other such demographic criteria, the only requirement was that the respondent had to have a card of Nabil bank. This questionnaire will be designed so as to focus on specific reason for acquiring card and choosing Nabil bank for doing so. For the card holders, the question will mainly focused on the types of card acquired, means of gathering information about card, reasons for acquirement and problems encountered with usage of card, frequency of usage, places of usage, reasons for usage and problems with ATM.

b) Interview

Structured interviews with the Officer of Card Division and other concerned authority will be conducted.

c) Observation

In this course of preparation of study report, researcher will frequently visit the organization to collect the information through observation.

d) Review

This method primarily implies the collection of secondary data, which have been already published. Most of the secondary data will be collected from the published material and website of the organization.

3.4 Analytical Tools and Technology

As stated earlier, the basic structure of this study is descriptive and analytical as well. In order to make the study more precise, the data will be presented in tabular from. Figures and diagrams will be used to clarify and verify the data presented to evaluate the performance of card division of Nabil Bank Ltd.

3.5 Research Software Tools Used

Different software will be used for preparing this research report, without help of these Software tools; it will be very difficult to present the research report. To prepare the research report Microsoft Excel 2003 is used as Analysis Tools and Microsoft Word 2003 is used as Report Writing Tools.

3.6 Data Analysis Tools and Techniques

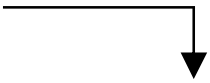
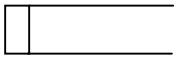
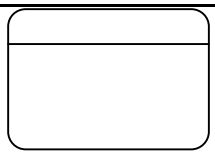
The data collected from secondary as well as primary sources will be sorted and only the related data will be considered. They will be further examined in relation to the objectives. According to their pattern, available data will be presented in the Data Flow Diagrams (DFD) and Entity Relationship Diagram (ERD).

3.6.1 Data Flow Diagram (DFD)

The components of a data flow diagram (DFD) are:

Table: 3.1

DFD Object Symbols and Description

Objects	Symbols	Description
External Entity		It is a person or group, which interacts with the system, something outside the system. It is not a user. e.g., Customer, Supplier, Government Agency, Accounting Department, Human Resources System, etc.
Data Flow		It is the directional movement of data to and from External Entities, the process and Data Stores. In the physical model, when it flows into a data store, it means a write, update, delete etc. Flows out of Data Stores mean read, query, display, select types of transaction.
Data Store		It is a repository of information. In the physical model, this represents a file, table, etc. In the logical model, a data store is an object or entity.
Process (Activity, Function)		Depending on the level of the diagram, it may represent the whole system as in a Context (level 0) diagram or a business area, process (activity), function, etc. in lower levels.

(Source: *Shankar; 2005:240*)

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system but it does not show program logic or processing steps. A data flow diagram illustrates the processes, data stores, and external entities in a business or other system and the connecting data flows.

A data flow diagram can be used for the visualization of data processing (structured design). It is common practice for a designer to draw a context-level DFD first, which shows the interaction between the system and outside entities. This context-level DFD is then "exploded" to show more detail of the system being modeled. With a dataflow diagram, users will be able to visualize how the system will operate, what the system

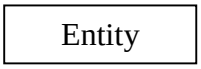
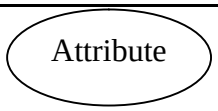
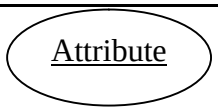
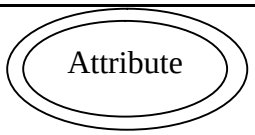
will accomplish, and how the system will be implemented. Dataflow diagrams can be used to provide the end user with a physical idea of where the data they input, ultimately has an effect upon the structure of the whole system from order to dispatch to restock how any system is developed can be determined through a dataflow diagram.

3.6.2 Entity Relationship Diagram (ERD)

Different types of symbols representation are discussed in detail below:

Table: 3.2

ERD Object Symbols and Description

Objects	Symbols	Description
Entity		An entity is an object or concept about which you want to store information.
Attributes		Attributes are the properties or characteristics of an entity.
Key attribute		A key attribute is the unique, distinguishing characteristic of the entity. For example, an employee's social security number might be the employee's key attribute.
Multi-valued attribute		A multi-valued attribute can have more than one value. For example, an employee entity can have multiple skill values.
Relationships		Relationships illustrate how two entities share information in the database structure.

(Source: *Sadagopan; 2005: 107*)

An entity-relationship (ER) diagram is a specialized graphic that illustrates the interrelationships between entities in a database. It helps the analyst understand the organizational system. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to represent relationships and ovals are used to represent attributes.

CHAPTER IV

SYSTEM ANALYSIS AND DATA PRESENTATION

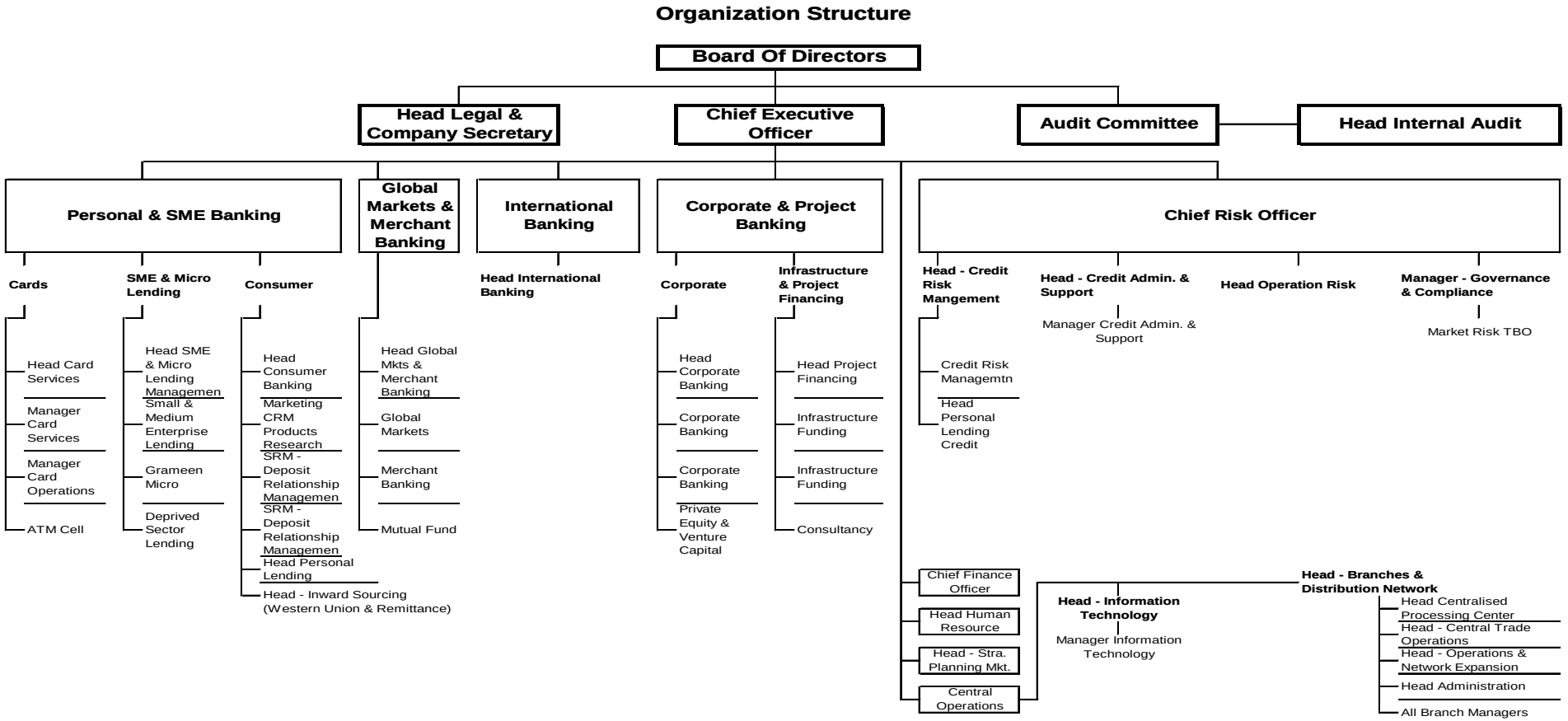
4.1 Organization and System Analysis

NABIL Bank Limited was established in 1984 as a joint venture bank with Dubai Bank Ltd of Dubai. NABIL bank is the first joint venture bank to commence operations in Nepal. This bank is the leader in bringing the very best international standard of banking practices, products & services. NABIL Bank is highly successful to create banking habits among the Nepalese people. This bank has become the bank of the year for 2004. The bank has diversified its realms of business in the interests of customers and also being inspired by the noble cause of adding value to economic development. The bank has packaged its service products into well diversified range consisting of corporate banking, trade finance, along with customer and retail banking services specially, card products, microfinance and the like to reach out to the masses. Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it started an era of modern banking with customer satisfaction measured as a focal objective while doing business. The bank has a network of 38 points of representation spread across the country that has complimented by a network of ATM's & now Nabil Net & Nabil Tele the ease of access of accounts & information for customer has been more convenient. The bank's business philosophy is “Your bank at Your Service”. The values that drive the bank and its staff all the time which they also call their mission statement is CRISP (C-Customer Focused, R-Result Oriented, I- Innovative, S- Synergetic, P- Professional). Operations of the bank including day-to-day operations and risk management are managed by highly qualified and experienced management team. Bank is fully equipped with modern technology which includes ATMs, credit cards, state-of-art, world-renowned software from Infosys Technologies System, Bangalore, India, Internet banking system and Telebanking system. The main objective of the study will be the analysis of Electronic payment system focusing through card division of Nabil Bank and identifying and rectifying the problems associated in it.

4.1.1 Management Team

Figure: 4.1

Organization Structure of Nabil Bank



(Source: *Nabil Bank Limited| 24th Annual Report: 2007/08; 24-25*)

Nabil Bank is managed by a professional management team. The members of the management have proven track record in the banking sector. The management team of Nabil bank is headed by Chief Executive Officer along with various departments they are Risk Units, Legal and company secretariat, Corporate, Project Financing, SME and Micro Lending, Consumer Banking, Deposit Relation Management, Card Division, Central Operations, Global Markets, Merchant Banking, Finance, Human Resources, Information Technology, Internal Audit and along with various branches inside and outside the valley.

4.2 System Study

In this section the total market approach of Nabil bank card division and the card production and delivery process along with others are described. In the light of Vision and Mission of the Bank, along with many others, the services and facilities provided by Nabil Bank Card division through Electronic Payment System are as follows:

4.2.1 Cards Products of Nabil

With the experience of more than decade, Bail today stands on the forefront in card services by providing an array of card products like credit cards, debit cards and prepaid cards in world renowned brands like Master Card and Visa. Nabil MasterCard and Visa Card can be used in Nepal and India in over 350,000 outlets for purchases and in more than 40,000 ATMs for cash withdraws. Bail is one of the very few banks in the country who issue international card in master Card brand against customers' USD Account or against Passport facility. Nabil MasterCard international in accepted in countless ATMs and outlets all over the world. For convenience of the cardholders, all Nabil credit cards have flexible repayment options where by a cardholder can choose to pay any percentage front 10% to 100% of the due amount.

Similarly, to customers who prefer to use their own balances, the Bank has offered Nabil Visa Electron Debit and Nabil prepaid card. Both Nabil Visa electron Debit cards and Nabil prepaid cards are hassle free, readily available and simple to use. These cards are also accepted for purchases and for cash withdrawals from ATMs in both Nepal and India. There is no charge on use of Visa Electron and Prepaid cards

for cash withdrawal from Nabil ATMs and for purchase through any outlets across Nepal and India.

Nabil has been the pioneer in increasing acceptance of cards as payment means in the country. For a single Bank in Nepal, Nabil has one of the largest networks of 60 ATMs and more than 1,00,000 POS terminals at locations spreading across the country from Birtamode to Mahendranagar that accepts range of card brands like Master card, Visa, Maestro, Cirrus, Visa Electron, Visa Plus and SCT cards. Bail also provides services of online payments through its Card Division selected branches enabling customers to make payments like test registrations. Membership fees, purchase of books, journals etc. Four types of credit cards issued by Nabil bank are MasterCard Local, MasterCard International, VISA Local and Diners Card. Debit cards issued by Nabil bank are VISA Electron / ATM Card and NABILPREPAID / NABILKOOLCASH Card

I) Credit Card

MasterCard Local

MasterCard Local are valid in Nepal and India. It can be used for purchases of merchandise / services or cash withdrawal. It is accepted in over 300,000 POS terminal merchants and paper merchants. It is offered with Competitive interest, late fee and service charges. There is no auto debit reversal fee as well as no compulsion of maintaining account with Nabil Bank. It is one of the flexibility of choosing convenient payment option. It has simplified assessment process. The card will be delivered within 5 working days. Validity of the card is 1 year. Bank also has the capability of same day card issuance in urgent cases

MasterCard International

MasterCard International are valid worldwide except in Nepal and India. It can be used for purchases of merchandise / services or cash withdrawal. It is accepted in millions of POS terminal merchants and paper merchants. It is issued to USD account holders of Nabil Bank. It is offered with competitive interest, late fee and service charges. There is no auto debit reversal fee. Customer should pay 100% of billed amount by due date. It has simplified assessment process. The card will be delivered within 5 working days. Validity of the card is 1 year. Bank also has the capability of same day card issuance in urgent cases.

VISA Local

VISA Local cards are valid in Nepal and India. It can be used for purchases of merchandise / services or cash withdrawal. It can be accepted in over 300,000 POS terminal merchants and paper merchants as well as in over 5,000 ATMs. It is offered with competitive interest, late fee and service charges. There is no auto debit reversal fee. There is no compulsion of maintaining account with Nabil Bank. There is also flexibility of choosing convenient payment option. It has simplified assessment process. The card can be delivered within 5 working days. The validity of the card is 2 years. It has attractive scheme for reversal of card issuance fee

Diners Card

The bank is in the process in acquiring business of Diners Card.

For Travel (Against Passport Facility)

The bank issue MasterCard International for the worldwide travel purposes except for travels in India. It is valid worldwide except in Nepal and India. It can be used for purchase of merchandise / services or cash withdrawal. It is accepted in millions of POS terminal merchants and paper merchants. Card is easy to obtain being a pre-paid card. It can be issued against the facility of passport by endorsing the air ticket and passport. It has simplified assessment process. Card can be delivered within 2 working days. Validity of the card is 1 year. Bank also has the capability of same day card issuance in urgent cases.

II) Debit Card

Visa Electron / ATM Card

Visa Electron cards are valid in Nepal and India. It can be used for purchases of merchandise / services or cash withdrawal. It has round the clock as well as prompt service without any queue It is accepted in over 100,000 POS terminal merchants and over 10,000 ATMs. There is no interest, late fee or penalty and No hassle of limit. It has secured transactions due to electronic environment. It is highly economical to obtain and use. Added facility of balance inquiry and PIN change are also available. There is no service charge on use at Nabil ATMs and all POS terminals.

NABILPREPAID/ NABILKOOLCASH Card

NabilPrepaid/ NabilKoolCash is a prepaid card that can be availed by any person without having to open an account. Nabil Prepaid is issued in international brand - Visa Electron as a numbered card and can be obtained instantly from any Nabil Bank. The Nabil Prepaid cards are valid in Nepal and India and can be used in more than 100,000 outlets with POS terminals and thousands of ATMs accepting Visa cards. The NABILPREPAID / NABILKOOLCASH Card has Instant Issuance. There is no need to maintain account nor credit risk analysis required. User can instantly recharge from any branch of Nabil Bank. It has flexibility in Recharge amount to suit the user's requirement. There is also Image and status symbol. User do not need to carry bulk cash so free from worry of cash being lost or stolen. It creates Simplicity and convenience in payment of goods and services. It also has cash withdrawal facility with expenses tracking and monitoring features.

Investment in MasterCard and Visa Card by Nabil Bank

Master Card International on conversion into a private stock corporation allocated its franchisee class B common stock to members in recognition of their membership interest. The bank presently holds 1114 class B Common Stock having a par value of USD 0.0001 each. Similarly, the Bank currently holds 6166 units of Class C Common Stock of Visa International allocated earlier after its conversion to VISA Inc.

4.2.2 ATM Services of Nabil Bank

Nabil Bank is committed to providing round the clock service to its customers through a large network of Automated Teller Machines (ATMs). For convenience, ATMs have been installed all over Nepal. Nabil Bank is the pioneer in introducing credit cards in Nepal. It is a principal member of Visa and MasterCard International since early 1990. Nabil Bank is proud to be the bank having the widest range of services in cards which includes acquiring of all kinds of cards under Visa and MasterCard brands. The bank also acquire Diners Cards being a sole agent for the country and have arrangement of POS sharing with American Express Cards. Similarly, it issue the widest range of credit and debit cards under the brands of Visa and MasterCard to the account holders as well as non-account holders. Nabil Bank has the state of art technology in cards to provide online services. All the ATMs of

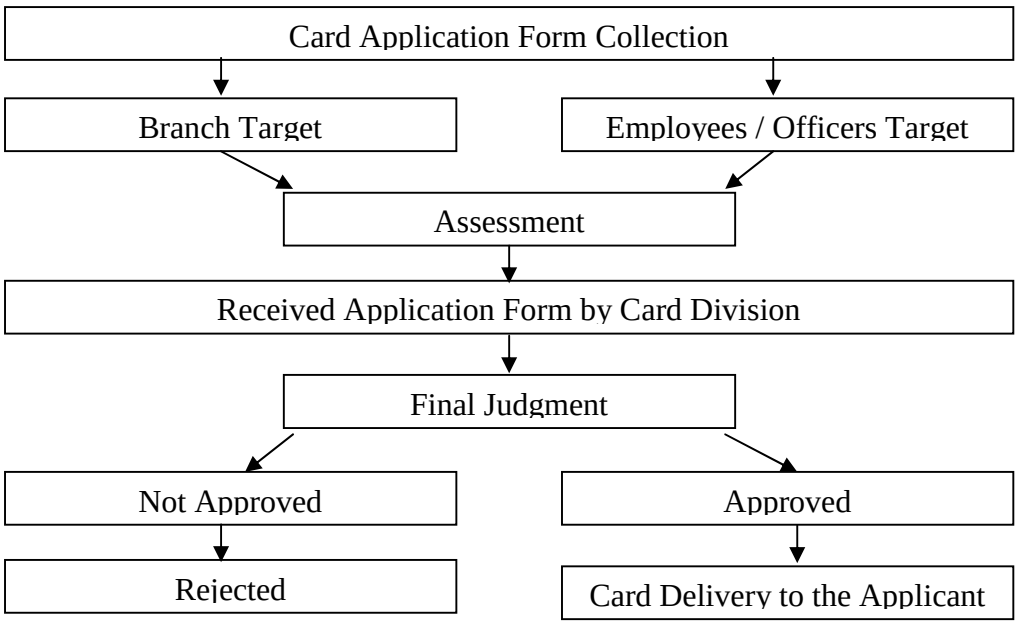
Nabil are linked with the global network of Visa and MasterCard ensuring the widest acceptance. There are total of 49 ATM terminals of Nabil Bank out of which 31 are inside the Kathmandu valley and remaining 29 distributed over East to west of Nepal. There are in general no customer charges for making cash withdrawals at ATMs, provided a debit card is used for the transaction and the ATM belongs to the cardholder's bank ("on-us" transactions). Cards Accepted by Nabil ATMs are Visa, Electron, Plus, MasterCard, Maestro, Cirrus, Electronic.

Some major services rendered by Nabil ATMs include Fast Cash, Manual Input Cash, Balance Inquiry, PIN Change, Mini Statement, Statement Request (to be added soon), Cheque Book Request (to be added soon) and Utility Payment (to be added soon).

Nabil Bank, which is also the member of SCT Network, provides Debit Card which is the easiest way to carry cash. Using Nabil Debit Card customers can withdraw cash as well as purchase goods from several merchants. Customers can use this card at any ATM/POS terminal that is under SCT network and at a time customers can withdraw up to Rs. 1,00,000/- per day through 5 transaction in Nepal. Where as in India customer can withdraw 25,000 IC per day and per month 2,00,000/- IC only. It provides secured transaction with no queue hassle at Bank.

Figure: 4.2

Card Application Collection Procedure



(Source: *Khan; 2004:23*)

People can apply for a card either through branch or directly to the card division. After receiving the application the reception section checks the require documents and make the data entry into the register book and make a file of the application. Then the application file passes to the card division for assessment. They analyze the application and make credit limit for the applicant if the request is made for the credit card. Then the file is sent for the data capture into the computer. After capturing the applicant's information the file is sent to the production room for card production. Then the card is sent to the delivery section and the file is stored in the file management section.

4.2.3 Overview on Card Fees and Charges

To provide an overview on credit card fees and charges, the fee structure of Nabil Bank Limited has been included below:

Fees & Charges

1. **Credit Card:**

Description	**Membership Fee**	**Annual/Renewal Fee**	**Total**
Visa/MasterCard Local			
Main Card	750/-	750/-	**1,500/-**
Supplementary Card		750/-	75**0/-**
Visa/MasterCard International (Regular)			
Main Card	$25/-	$25/-	**$50/-**
Supplementary Card		$25/-	**$25/-**
Visa/MasterCard International (Against Passport Facility)			
For less than $1,000 Main Card		$30/-	**$30/-**
For more than $1,000 Main Card		$50/-	**$50/-**

2. **Debit Card:** (**Visa Electron Card)**

Description	**Annual/Renewal Fee**	**Total**
Main Card	200/-	**200/-**
Supplementary Card	200/-	

4.2.4 Remittance Service by Nabil Bank

The national processing center of the bank is geared up to process cheques, drafts or traveler's checks and credit proceeds into the accounts at the soonest possible, no matter where they have been drawn - on any bank in Nepal or anywhere else in the world with the established use of the correspondent banking relationship. Worldwide network arrangement with the correspondent Banks allows to facilitate collection of cheques, drafts, Traveler's cheques efficiently and timely. Commission and charges will be levied on collection items on the basis of the Bank's Schedule of charges. The remittance services currently provided by Nabil Bank are SWIFT Transfer**,** Western Union**,** E-Remittance (Qatar, Doha)**,** Traveler's Cheque**,** Bank Draft**,** Mail Transfer**,** Manager's Check**,** Anywhere Branch Banking**.**

SWIFT Transfer

SWIFT stands for Society for Worldwide Interbank Financial Telecommunication System, which is a reliable communication network speeding up fund transfer and other financial messages. Through the SWIFT transfer mechanism, one can transfer the fund to virtually anywhere in the world. Likewise one can receive the fund for his/her account with Nabil bank from virtually any bank in the world. There is no need to have an account with Nabil Bank for fund transfers through SWIFT. The swift code of Nabil Bank is NARBNPKA.

Western Union

Through Western Union, one can receive the fund through thousands and thousands of agents located worldwide. It is the fastest and premium fund transfer system. Once the fund is transferred at the sending end and the recipient knows MTCN (Money Transfer Control Number), sender's name, amount etc, he or she will obtain the fund at any of Nabil's Branches within the shortest possible time by filling up a form and submitting an identity. There is no need to have an account with Nabil Bank. Nabil like CG Finco, Annapurna Travel, Sita World, Hulas, is one of the sole agents of Western Union for Nepal along with

E-Remittance (Qatar, Doha)

Any of the Nepali workers in Qatar can send the fund to their recipient / beneficiary through E-remittance. This product has been established in a tie-up with Doha Bank, Qatar to facilitate transfer of workers' funds into the country.

Traveler's Check

One can purchase or sell traveler's cheques at Nabil Bank. Instead of carrying cash, a lot of people prefer to carry traveler's cheques for safety reason, while he or she travel. American Express Traveler's Cheques are available for sale.

Bank Draft

Nabil Bank can draw drafts on a number of its correspondent banks located all over the world for Indian Rupee Draft Arrangement as well as Foreign Currency Draft Arrangement

Mail Transfer

When there is no SWIFT transfer or draft arrangement, one may go through the mail transfer. As the name suggests, mail transfer is slow compared to other ways of fund transfer.

Manager's Check

It is a cheque drawn by Nabil bank on itself, especially used for payments made by Nabil Bank. Beneficiary can send the cheque on collection or through clearing or can deposit it in his or her account with Nabil Bank itself.

Anywhere Branch Banking

Nabil Bank uses state-of-art technology, software and hardware to provide the best services to its customers. All the branches are connected through VSAT link or Radio link, so that one can access his or her account from any of the branches located throughout the county. All the branches of the bank serve for deposit and withdrawal of cash, card payment, balance enquiry, statement, balance certificate etc.

4.2.5 Internet Banking by Nabil Bank

In keeping with the commitment to be the "Bank of 1st Choice" Nabil Bank is constantly moving towards enhancing customer services by providing enhanced products and services. Along the same line, bank also provide with NabilNet, Internet banking system (online banking), NabilTele, telephone banking system.

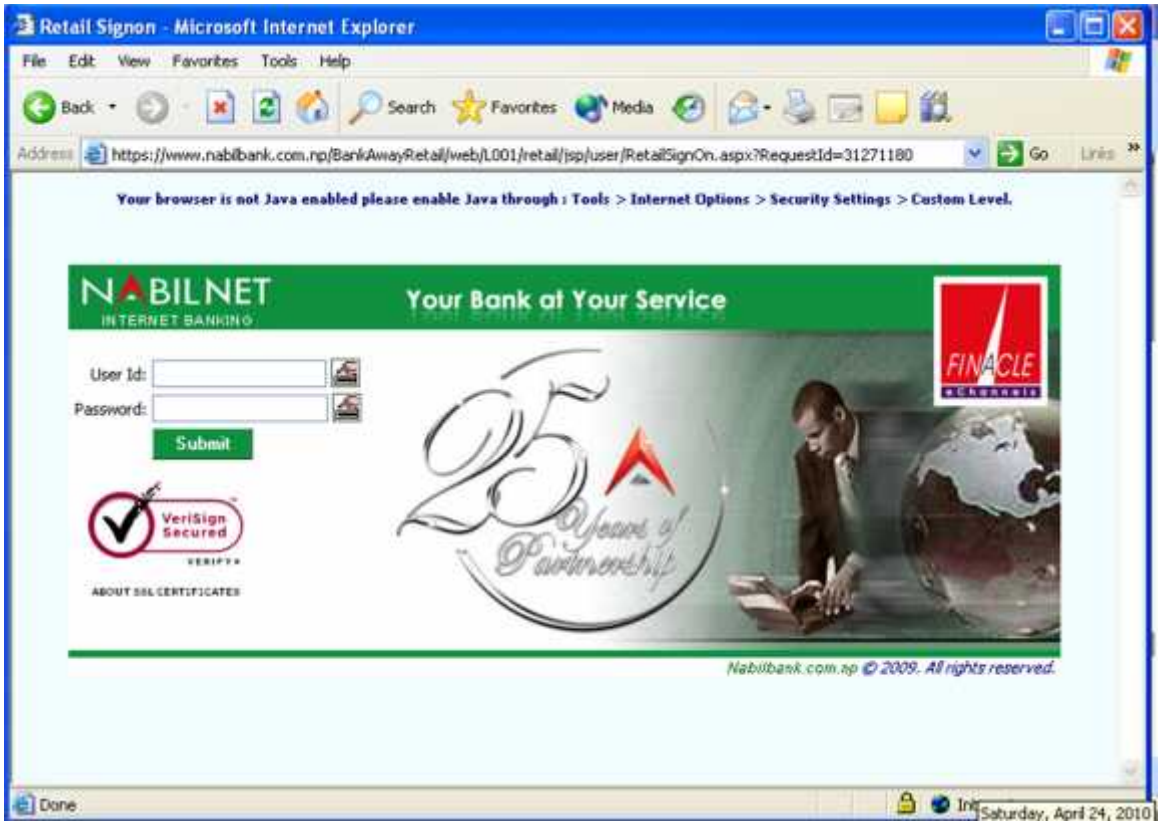
NabilNet

Through a computer connected to the Internet, one can log on to the NabilNet site and do various banking transactions from the comfort of his or her house or office.

The features of NabilNet are as follows:

Figure: 4.3

Login Window of Internet Banking of Nabil Bank



(Source: *www.nabilbank.com.np (Accessed on 24 April 2010)*)

Fund Transfer: One can transfer the funds from his or her account to any other account in Nabil Bank. All Nabil branches are connected to the centralized database through VSAT link and use state-of-art, world-renowned software.

Statement: One can view, download or print the statement at his or her convenience.

Balance Inquiry: One can view his or her balance at any time.

Cheque Status: One can enquire/confirm which of the issued cheques are paid by the bank and which are not.

Access: One can access all the accounts under his or her customer ID for balance enquiry, fund transfer, statement etc.

Email: One can send emails to the relationship manager for banking services or follow-ups in a secure environment.

NabilTele: Through a telephone, customer will be able to obtain their balance.

4.2.6 NABIL M-Pay

Nabil M-Pay is a real time mobile commerce solution available to the bank account holders who are subscribing mobile phone service of Nepal Telecom. Now Nabil account holders who are also subscribing to Nepal Telecom mobile phone (Prepaid or Postpaid) can obtain recharge pin of Nepal Telecom Prepaid phones in their mobile phone any time round the clock. Nabil account holders no longer need to physically buy the recharge card, all they need is an account with bank to recharge their Nepal Telecom prepaid phones. Nabil account holders will need to one time register for this service by filling up and submitting Nabil Mobile Commerce Service Form. There is no registration charge for availing this service. Other standard charge of Nepal Telecom will be applicable. For the user's safety bank allows only 3 recharge transactions per day, 5 transactions per week and 10 transactions per month. Transaction and other Procedure are applicable only after the registration.

Features

- No need to buy recharge coupon from retailers.
- Pre-Paid mobile top up from your own mobile handset in real time
- No extra cost/fee
- Need to have a bank account in any branch of Nabil
- Mobile top up available for NPR 100/-, NPR 200/- and NPR 500/-

- Transaction secure through personal PIN which is known to that particular user only
- Simple procedure to avail the service. Just one simple form to be filled up
- Service available from all Nabil Branches
- Service currently available to NTC Pre-Paid (Namaste) mobile users only
- Post paid mobile can also be registered to top up other pre-paid mobile.

PIN Change : Service user can change his/her permanent PIN by sending SMS to 5677 with following text: CP XXXX ####, where XXXX is his/her existing pin and #### is the new pin

Top Up Procedure : Send a SMS to 5677 with following text: RCG 100, 200 or 500 for top up request for NPR 100, 200 or 500 respectively. Once the payment instruction SMS is successfully delivered user will receive a SMS containing 13 digit recharge PIN. After receiving 13 digit recharge pin user is ready to re-charge the mobile phone.

4.2.7 Other Services by Nabil Bank

U.S. Visa Fee : If anyone have to travel to the United States of America and need to pay U.S. visa fee, then the bank collect that at Maharajgunj branch.

Safe Deposit Locker : To keep valuables of customers the bank has safe deposit locker facility available at Kamaladi Branch, Durbarmarg Branch, Maharajguj Branch, Lalitpur Branch and Biratnagar Branch. There are various sizes of the safe deposit locker to suit the requirement of customers.

Balance Certificate : Bank also issue balance certificates in any equivalent currency chosen for the travel or study purposes of the customer at their request.

Advance Payment Certificate : For foreign currency payments customer receive in advance of their exports shipments, bank issue advance payment certificates which will help customer to clear their goods through customs check points.

The national processing center of the bank is geared up to process the cheques, drafts or traveler's checks and credit proceeds into customer's accounts at the soonest

possible, no matter where they have been drawn - on any bank in Nepal or anywhere else in the world with the established use of its correspondent banking relationship. Worldwide network arrangement with its correspondent Banks allows Nabil to facilitate collection of cheques, drafts, Traveler's cheques efficiently and timely. Commission and charges will be levied on collection items on the basis of the Bank's Schedule of charges.

The bank also provide the Examination fees payment service like as that of TOEFL. The process is same as credit card payment system. In this type of service the bank official enter into the examination site and paid the examination fee in the name of particular student through the credit card of the bank as an electronic payment system.

4.3 Analysis of Existing System

The card division of Nabil Bank situated at Durbarmarg is a full-fledged card division of the Bank and is providing full array of card Services. The section is providing various services to its customers, which are as follows:

- Credit Card : MasterCard Local, MasterCard International, VISA Local, Diners Card
- Debit Card : VISA Electron / ATM Card
- NABILPREPAID/ NABILKOOLCASH Card
- International and Domestic Remittances SWIFT Transfer, Western Union, E-Remittance (Qatar, Doha), Traveler's Cheque, Bank Draft, Mail Transfer, Manager's Check, Anywhere Branch Banking
- Any Branch Banking Services
- Other Services viz. Tele-banking etc.

In order to facilitate the customers with state of art technology, Bank is providing Debit Card facilities even with the SCT (Smart Choice Technology) Network. This facility enables the customers to withdraw cash from any of the ATM (Automated Teller Machine) Terminals located at different parts of the country and to purchase goods from many shopping complexes and departmental stores under POS arrangement.

Nabil Bank has relation with Western Union Money Transfer. Nabil Bank is the agents for receiving the fund transferred through Western Union Money Transfer. It is here to help all the customers receiving the fund through thousands of agents located worldwide. It is the fastest and premium fund transfer system. The sender will have a MTCN (Money Transfer Control Number) which will be sent to the concerned customers by telephonic conversation, email, Fax etc. and customers will know the sender's name, amount etc, and can obtain the fund at any of Nabil Bank's Branches within the shortest time by just filling up a form and submitting an identity. Customers do not have to maintain an account with the Bank.

Nabil Bank has already introduced a computer based information system (CBIS) and is providing its services through fully computerized branches with well trained personnel. At present, the card division has 26 dedicated and hard working staffs; and is using 22 computers. They have also been using banking software system for their daily activities and also provide various technological services to its customer. The Card Division is using the **Finacle** banking software, one of the most recent software in banking sector and offers Any Branch Banking Services (ABBS) within the country. Finacel has been efficiently used in the entire branches of Nabil Bank.

Finacle universal banking products are designed to address the core banking, e-banking, Islamic banking, treasury, wealth management and CRM requirements of retail, corporate and universal banks. The Finacle banking software, currently used in the bank, is developed by infosys. , and is one of the major player in the arena of core banking in in over 106 banks across 60 countries like the US, UK, UAE, Mainland China, Taiwan, Hong Kong, Saudi Arabia, Maldives, Mauritius, Nepal, Nigeria, Indonesia, Singapore, Uganda, Sri Lanka, Tanzania, Zimbabwe, Thailand, Philippines, Jamaica, Cayman Islands and India. Finacle CRM solution is a modular, multilingual, Web-based customer-centric application that enables banks to leverage ready-to-deploy CRM functionality for competitive differentiation. Integrated with Finacle core banking solution, Finacle CRM solution offers end-to-end functionality to effectively address the needs of the complete cycle of marketing, sales and service for banking products. Facilitating a unified 360° view of the customer across product lines and multiple back-end systems, it enables banks to improve customer experience across channels and empowers them with a robust platform for cross-sell opportunities. It also arms banks with the technology muscle to increase reach

through effective marketing campaigns. Finacle CRM solution’s proven scalability further ensures that it can meet the needs of growing banks.

Core Banking - Finacle core banking solution is a comprehensive, integrated yet modular business solution handles the strategic and day-to-day (or core) processes of banks.

e-Banking - Finacle consumer e-banking solution is a proven Internet and mobile solution for retail banking customers.

CRM - Finacle CRM solution is a modular, multilingual, web-based customer-centric application that enables banks to leverage ready-to-deploy CRM functionality.

Treasury - Finacle treasury solution is an integrated yet modular front, middle and back-office solution built on best-of breed open technology platforms, providing high scalability , flexibility and STP capability.

Mobile Solutions - Finacle mobile solutions can broadly be classified under two categories: mobile payments and mobile banking solutions.

Alerts - Finacle alerts solution empowers banks with the capability to alert end users about events recorded by the bank's business systems.

Web-based Cash Management - Finacle web-based cash management solution is ideal for banks looking to deploy an online cash management solution for their corporate customers.

Wealth Management - Finacle wealth management solution is a modular, fully scalable, integrated core banking and investment management system designed for the specific needs of retail and private banks.

Islamic Banking - Finacle Islamic banking solution offers an integrated and comprehensive approach for banks to define and present Shariah-compliant products to customers.

Finanz Tools - Finanz Tools is an integrated family of tools that engage the bank’s customers in personalized sales illustrations.

Suitable for larger institutions - Finacle is one of the few 'open' core banking applications that runs live sites with volumes going up to a peak of over 12M

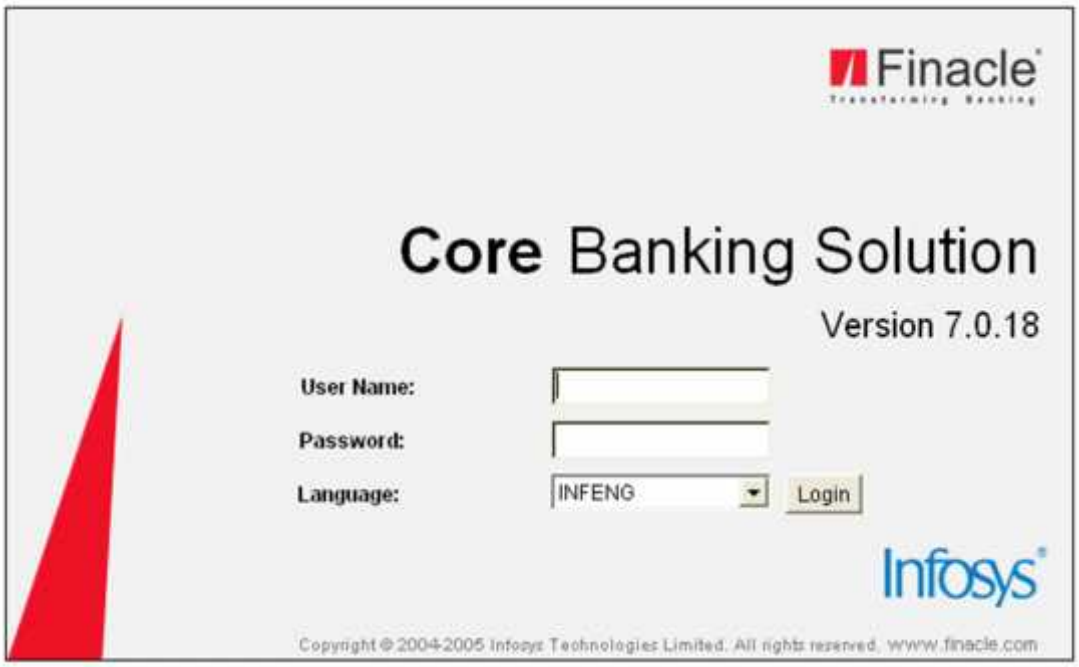
transactions a day, 17,000+ users, 19M+ customers, 2100+ branches and 3TB of database.

Finacle 10 will enable banks to transform their operations through standard platform and processes. A set of over 5000 parameters and an enhanced scripting studio will deliver rapid product innovation. The solution also brings a whole new set of offerings including Islamic banking, wealth management; and an enhanced mobile banking solution. Eight Tier-1 and Tier-2 banks around the world have already transformed their operations with Finacle 10.

(*http://www.infosys.com/finacle accessed on 12 April 2010*)

Figure: 4.4

Login Window of Finacle



(*Source: http://www.infosys.com/finacle (accessed on 12 April 2010)*)

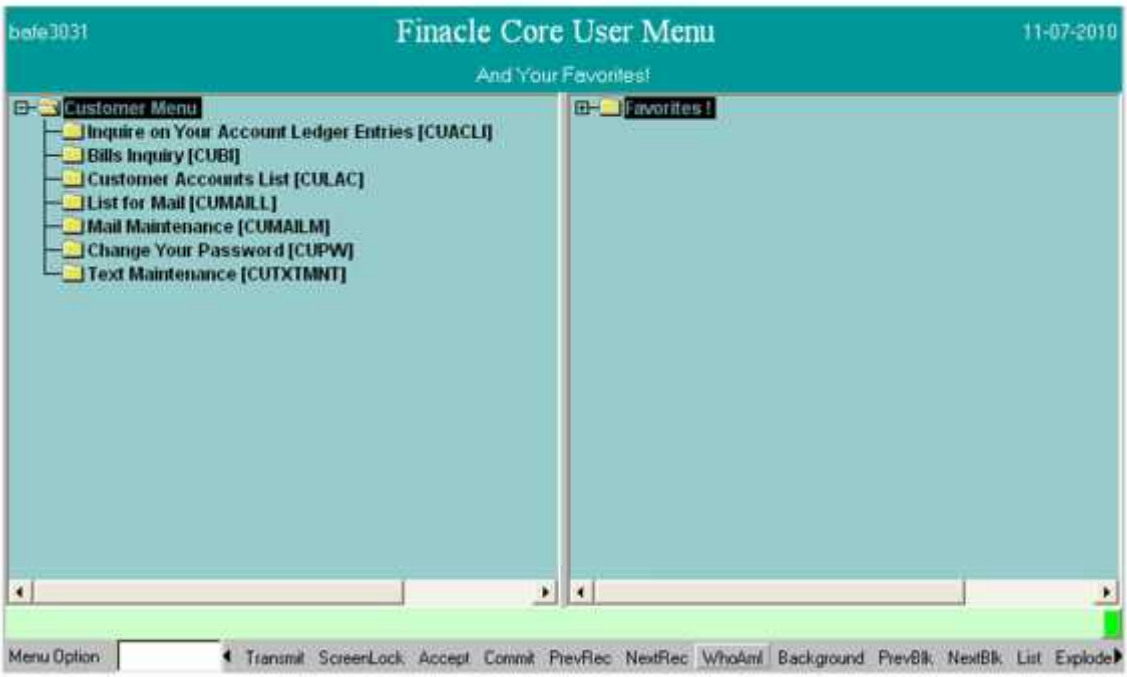
Above picture is the login window of Finacle system in Nabil Bank. The system is installed currently in all branches. To enter into the system one must have the user id and password. Id and password is provided to bank staff only, therefore, other personal cannot enter into the system.

There is separate security policy and some rules and regulation set by the bank regarding password to make the system inaccessible to unauthorized person. User id is given to employees who use the computer regularly and they set the password themselves for the

easy access. Different employee can set same password but the user id cannot be same and is different for each and every employee in the bank. The system works on windows environment and it does not provide access to user without valid user id and password.

Figure: 4.5

Outlook of the Finacle



(*Source: Nabil Bank Ltd.*)

Nabil Bank is using Finacle in all the branches of the Bank. The system **'Finacle'** has many features and it can provide the wide range of facilities to the bank.

4.3.1 Card Processing System

The environment is said to be On-US if the card issued from Nabil Bank is used at the Nabil Bank terminal whether it may be POS or ATM. In On-US environment the data will be received from POS by card swapping or ATM terminal and will reach to the online switch of the bank. In this process the online switch will provide the overall check and balance feature of the transaction. If the credit card used in this process is processed the interface of either VISA or Master will be used. Whereas if the debit

card issued from the Nabil bank is used then after the online switch, Finacle interface will be used.

Figure: 4.6

On-US Environment through Credit Card

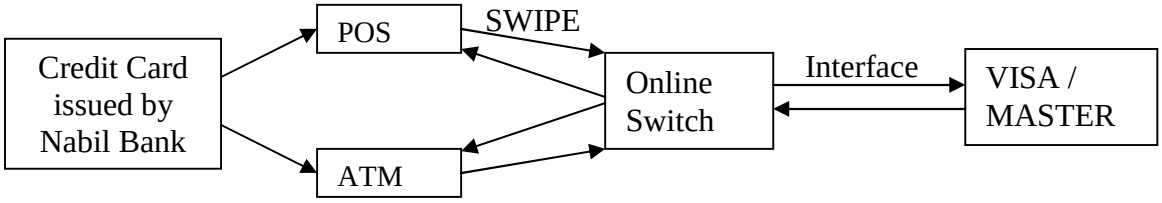
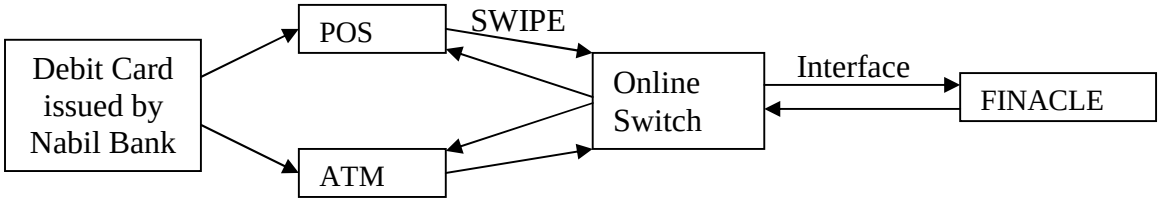


Figure: 4.7

On-US Environment through Debit Card



The transaction environment is said to be Off-US if the transaction is made with the cards issued from other banks at Nabil Bank Terminal.

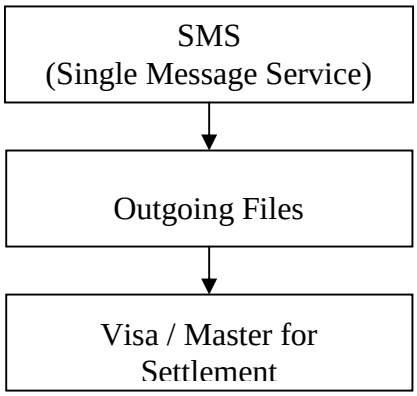
Payment Settlement

In case of the payment settlement of On-US transaction, against the amount that is being used in transaction process will first load in the system of the bank and the respective credit card will be made debit. Whereas, in case of debit card, the amount will be deducted from the account of the card holder for each transaction.

In case of Off-US transaction after loading in the system SMS (Single Message Service) will be created in which for each transaction a system will automatically create a separate outgoing files through Visa edit package for visa card and Master pre edit for Master card. Then the settlement will be done through Visa and Master accordingly through their corresponding access part like VAP (Visa Access Part) for Visa card. The Off-US transaction also include if the cards issued from the Nabil bank is used in the ATM other than Nabil Bank's ATM then the settlement will be done through Visa and Master.

Figure: 4.8

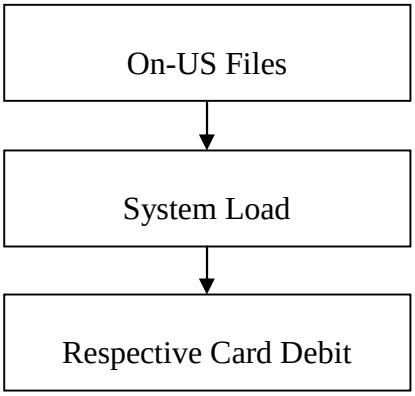
Payment Settlement of Off-US Transaction System



In case of On-US transaction On-US files will be created in which for each transaction a system or switch will automatically create a separate On-US files. The file will be sent to EDC (Electronic Data Capture). Then the transaction amount will be made debit to the respective card. Then the settlement will be done by the card holder accordingly. The On-US transaction include if the cards issued from the Nabil bank is used in the Nabil Bank's ATM or POS.

Figure: 4.9

Payment Settlement of On-US Transaction System



ATM Cash withdrawal processing

The processing of an ATM cash withdrawal can involve at least three parties: the cardholder, the financial institution which issues the debit card and the financial institution which owns the ATM. A typical information flow for an ATM cash withdrawal is illustrated in Figure below completing the following steps within few seconds.

The cardholder puts their card into an ATM, enters their PIN and the details of the withdrawal (I). The relevant information is then transmitted to the ATM owner (II).

If the ATM owner and card issuer are the same institution, the transaction remains internal to that network. If the card has been issued by another institution, the ATM owner will 'switch' the information to that issuer (III).

The issuer then checks if its customer has available funds. If so, it will return an authorization message via the ATM owner (IV)

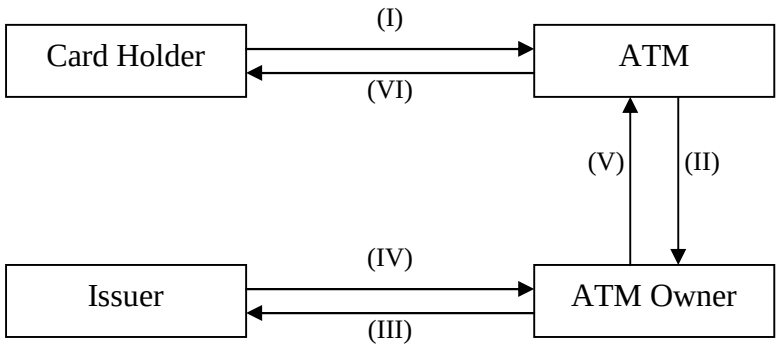
Same information will be forwarded to the ATM (V),

Finally cash is dispensed (VI).

Information flows for an ATM Transaction

Figure: 4.10

Information Flows for an ATM Transaction



(Source: *Reserve Bank of Australia; 2000: 14*)

Information Flow for a Credit Card Transaction

There are three main types of cards that cardholders are allow to make payments using some type of credit:

In credit cards payment system cardholders are allow to make payments using some type of credit in which credit cards are used that is a general-purpose card and can be used at all participating merchants. Cardholders usually have the benefit of an interest-free period if they pay the account in full at the end of each statement period; they also have the option of not paying in full and making use of a revolving line of credit.

A typical information flow when a credit card is used in an electronic payment transaction at the point-of-sale is illustrated in Figure below.

The credit card is swiped through an electronic terminal on the merchant's counter (1).

The transaction and cardholder details are routed to the merchant's financial institution (the acquirer) (2).

If the acquirer is also the issuer, the transaction can be authorised internally and the authorisation returned to the merchant (5). If the issuer is another institution, the acquirer routes the transaction to that issuer either bilaterally (3) or via a 'switch' facility provided by the credit card scheme (3a).

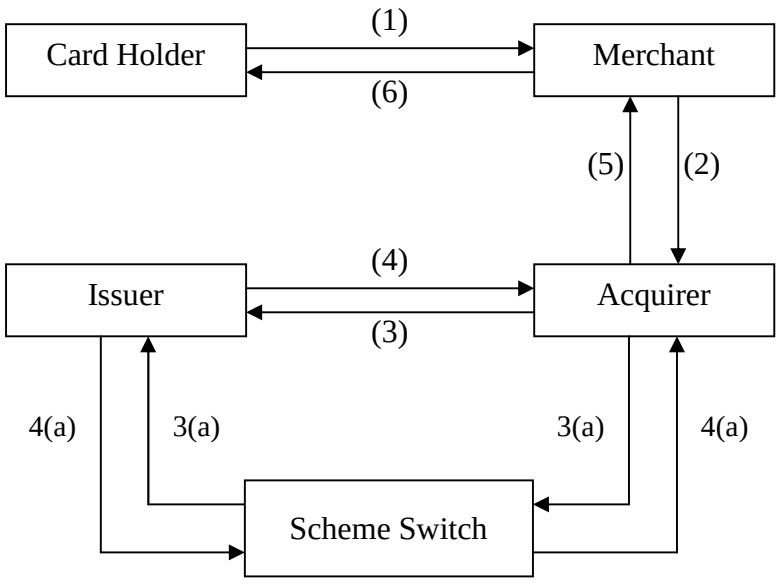
The issuer either authorises or declines the transaction and a message is sent back to the acquirer, (4) or (4a), and onto the merchant (5).

If the transaction is authorised, the customer signs the voucher. The merchant checks the signature against the card and, if all is in order, the transaction is complete (6).

When transactions are authorised on-line, as in this example, the cardholder's available credit limit is adjusted immediately, although posting to the cardholder's account can take one to two days.

Figure: 4.11

Information Flows for a Credit Card Transaction



(Source: *Reserve Bank of Australia; 2000: 18*)

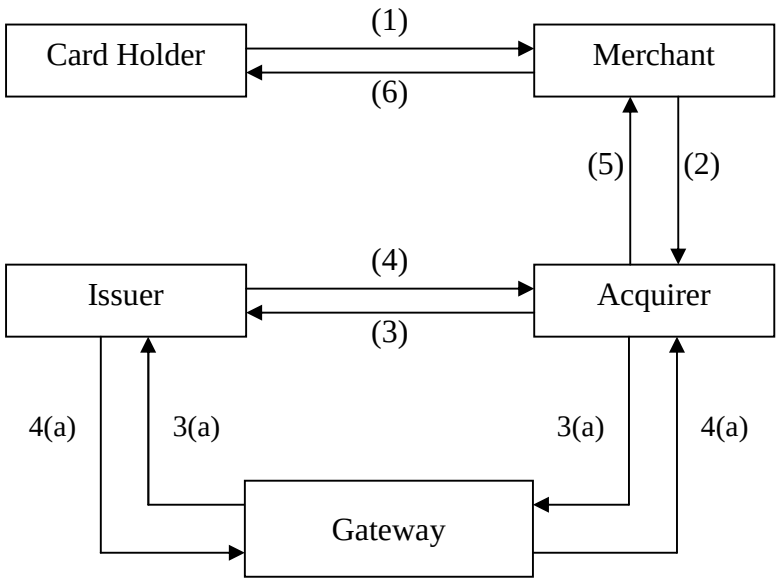
Credit cards are issued by individual financial institutions, which set the annual fee, interest-free period, the interest rate on the revolving credit facility and other conditions associated with the credit card. The card associations themselves have a number of roles in credit card schemes. At a business level they manage the brand. They establish and maintain rules and regulations covering such issues as membership, governance, technical specifications, procedures for the interchange of transactions and the setting of interchange fees, and dispute resolution. In the case of MasterCard and Visa, the associations also have an operational role that includes switching transactions and calculating what issuers and acquirers owe each other; they may also authorise transactions on behalf of issuers. Finally, they ensure the payment of a transaction if the issuing institution fails by co-ordinating loss-sharing arrangements among surviving members.

Debit Card Payments

In addition to their use in ATMs, debit cards are used to purchase goods and services, and at many merchants to obtain cash at the time of purchase (‘cashback’), by providing the cardholder with electronic access at the point-of-sale to a transaction account at their financial institution. As more card issuers came into the market, access arrangements had to be negotiated to allow their cards to be used in existing networks. In some cases, new issuers were able to link directly to these networks; in others, they found it more practical to link to one bank that acted as their ‘gateway’ into the system. Now, financial institutions are linked either directly or indirectly to all debit card payment networks and cardholders can use their cards at any terminal.

Figure: 4.12

Information Flows for a Debit Card Transaction



(Source: *Reserve Bank of Australia; 2000: 21*)

The information flows in a typical debit card transaction (the process is completed in a few seconds) at the point-of-sale are illustrated in the figure below.

The cardholder presents the card to the merchant and enters a PIN (1),

and the relevant data are transmitted to the merchant's financial institution (the acquirer) (2).

If it is one of the acquirer's own cards, the account is checked internally and authorisation returned to the merchant (5). If the card is issued by another financial institution, the information is switched to the card issuer either directly via a bilateral link (3) or, if the issuer does not have this link, via a third institution acting as a gateway (3a).

The issuer then checks the account and returns an authorisation (or a decline) to the acquirer either directly (4) or via the gateway (4a).

The acquirer passes the message to the merchant (5) and the transaction is complete (6).

BIN – Bank Identification Number

In the 12 digit card of every bank first 4 digit is the Bank Identification Number (BIN). This number is very much helpful at the time of settlement. The BIN (Bank

Identification Number) for different types of cards issued by Nabil Bank are: For Nepali Rupees VISA card BIN is 4511, BIN of Nepali Rupees Master card is 5434 and US$ Master card BIN is 5421. For the settlement of transaction for other bank cards Nabil bank settle through Bank of India for INR and NPR where as for the US$ the settlement is made through City Bank, New York.

Internet Banking

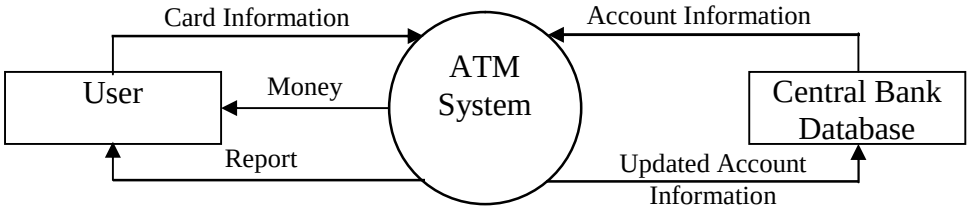
Internet banking is also another important service rendered by the bank to its customers. Nabil to Nabil fund transfer is available to Nabil bank service users. Customer can transfer fund form one account of Nabil bank to another account to Nabil through Nabil Bank. Balance Enquiry service is also provided to the customer by the bank. Customers and also have statement with the help of Internet banking.

4.3.2 DFD of ATM

In the context diagram of ATM the user first entered the card information along with the request amount the ATM System forward the information to the Central Bank Database. After necessary check the account information will be sent to ATM system as the result and the report is sent to the user. If the result is positive the money will be sent to the user.

Figure: 4.13

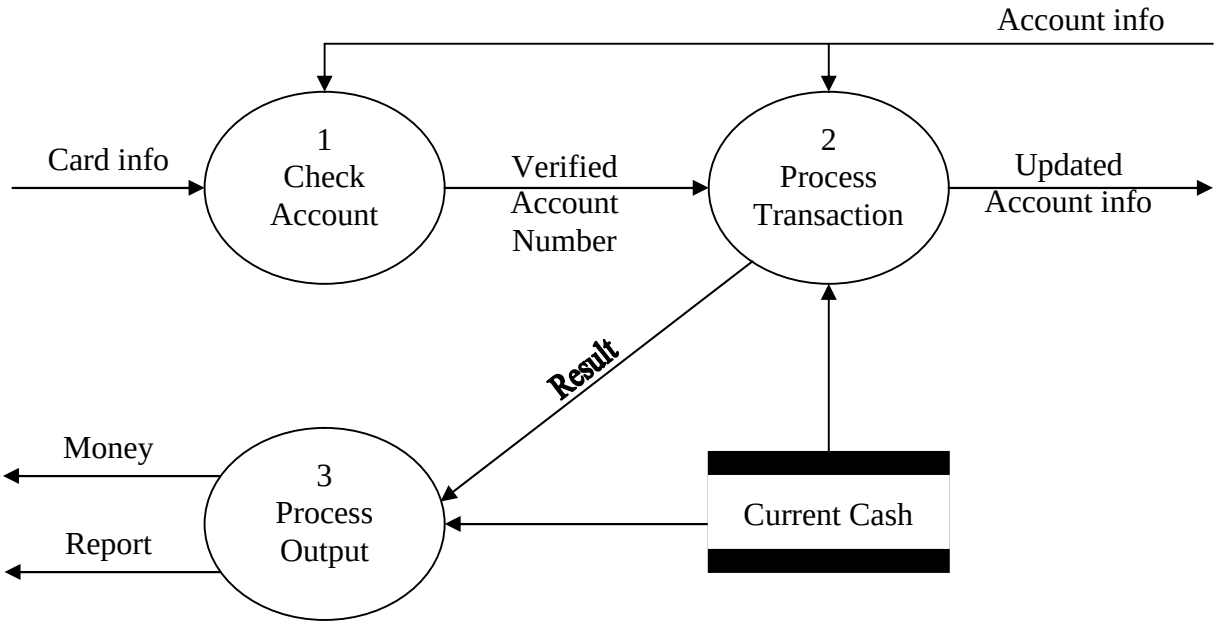
Context Diagram of ATM



According to the DFD Level 1 of ATM System, Card information is entered by the user along with request amount. The account information will be checked in first process. After verified account number the in second process cash will be checked along with the update in the account information. Then after the result is sent to third process which gives the money and report as the output.

Figure: 4.14

DFD Level 1 of ATM System



4.3.3 Data Dictionary

Entity descriptions:

ATM/POS : Contains information of the ATM/POS terminal.

Credit Card Holder : Contains information of the credit card holder.

Bank : Contains information of the bank, which is using the system.

Account : Customer has to open account to start transaction with the bank. It contains all details of account.

Account Holder : Contains information about the account holder.

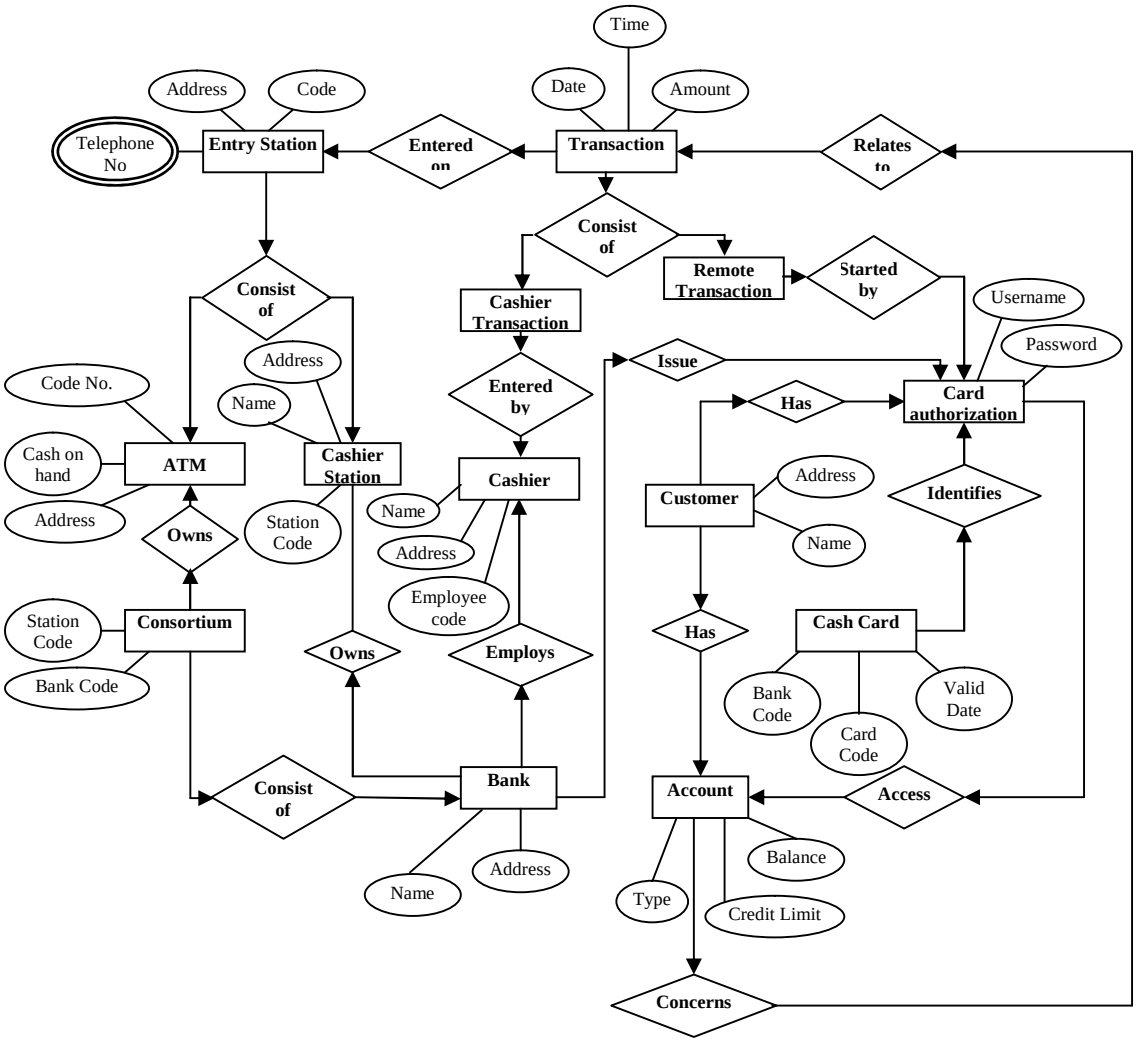
Branch : Contains information about the branch.

4.3.4 ERD of Bank and Card Division

The figure below shows the simple ER diagram of banking environment of the Nabil Bank. Current information system of the bank is also based on similar relation as shown in the diagram.

Figure: 4.15

Entity Relationship Diagram of Banking Transaction



(Source: *Maharjan; 2007: 115*)

4.3.5 Data Security

Information is valuable asset of Nabil and it must be preserved and secured carefully. Unlike other assets, information is and can be unlawfully used without depriving the legitimate owner from its possession. In short, information security and its preservation have three aspects Confidentiality, Integrity, and Availability (CIA).

In the context of Nabil, the Data and Information Security Policy defines its policy statement as "Access to data residing in systems at Nabil is to be granted only to those individuals who must, in the course of exercising their responsibilities, use the specific

information. Access to data will be granted to Nabil employees only with special permission. Auditors and others may access data if the data pertains to the individuals, who are assigned by the management.

Some of the salient features of the password policy of the bank are as follows:

- Password is corporate property; it cannot be treated as private asset. Never use bad word as a password,
- Password should not be shared or disclosed unless requested by management,
- Do not use the common password like etc.

It is of utmost importance that the data at branch offices and various department of the central office must be backed up regularly.

4.3.6 Role of Existing System

A Card Division of a Nabil bank also provides the information necessary to manage an organization effectively. Information it generates are generally considered one of the essential components of prudent and reasonable business decisions. Card division is also viewed and used at many levels by management. Because Card division also supplies decision makers with facts, it supports and enhances the overall decision making process. These information also plays important role to enhance job performance throughout an institution.

At the most senior levels, it also provides the data and information to help the board and management make strategic decisions. At other levels in electronic payment and Card processing system, it provides the means through which the institution's activities are monitored and information is distributed to management, employees, and customers. In Durbarmarg branch, Card division is under the Personal and SME Banking purely for the purpose of collecting, storing, processing and disseminating of overall information of banks Cards.

Technology employed in existing information system:

For server PowerEdge 2950 Mother Board & Quad Processor 3.6 GHz, 2. 4 GB RAM, 260 GB Hard disk drive, 21” Color Monitor, 1.44 Floppy disk drive, 64 MB AGP Card, 56x CD ROM Drive, 56 Kbps Modem (external), Multimedia Keyboard, Optical Mouse with pad, Casing with Power Supply (ATX), UPS-1200VA and Speaker are used.

For client P-4 Mother Board & Processor 3.0 GHz, 256 MB RAM, 40 GB Hard disk drive, 14" Color Monitor, 1.44 Floppy disk drive, 32 MB AGP Card, Multimedia Keyboard, Optical Mouse with pad, Casing with Power Supply (ATX), UPS-600VA are used.

Softwares used are Microsoft Office 2007, Windows Server 2007, Finacle and McAfee.

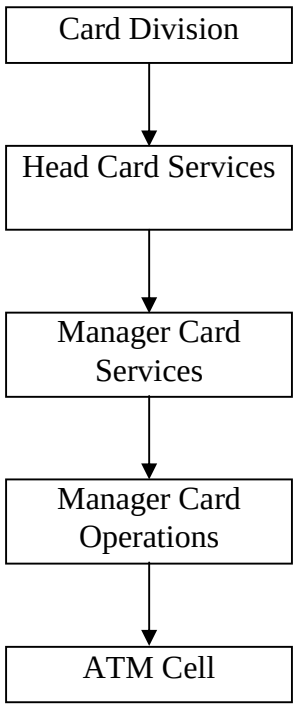
For Networking LAN Card (10/100 Mbps), 16-Port Hub (10/100 Mbps) with Firewall along with Cisco, UTP Cable and RJ-45 Jack are used.

Printers used are Dot matrix LX-300+, Canon laser Jet LBP 810, HP Inkjet BJC 1000 SP, HP laser Jet 1200 and Photocopier.

4.3.7 Hierarchical Chart of Card Division

Figure: 4.16

Organization Structure of Card Division of Nabil Bank

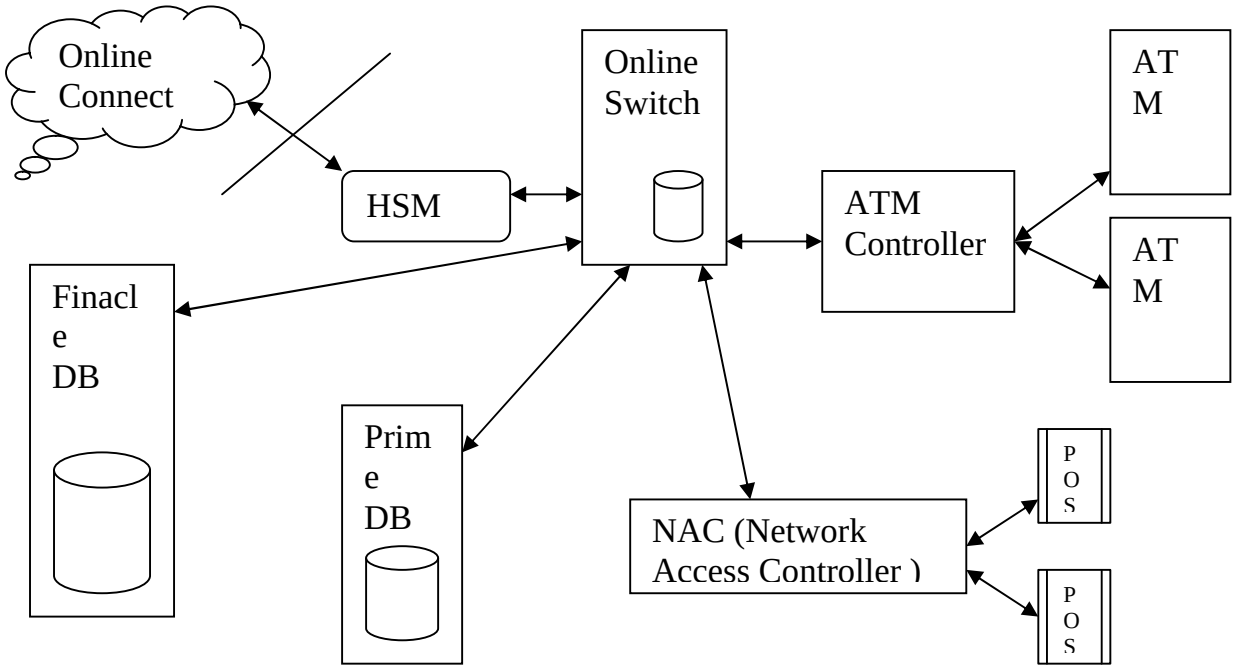


4.4 DFD of Existing System

Context level diagram and zero level data flow diagram presented below clearly define the flow of information and data in the MIS and Compliance. The both diagram are drawn by short observation of the organization and interviewing the concerned personnel.

Figure: 4.17

DFD of ATM Work Flow



(Source: *Nabil Bank Ltd*)

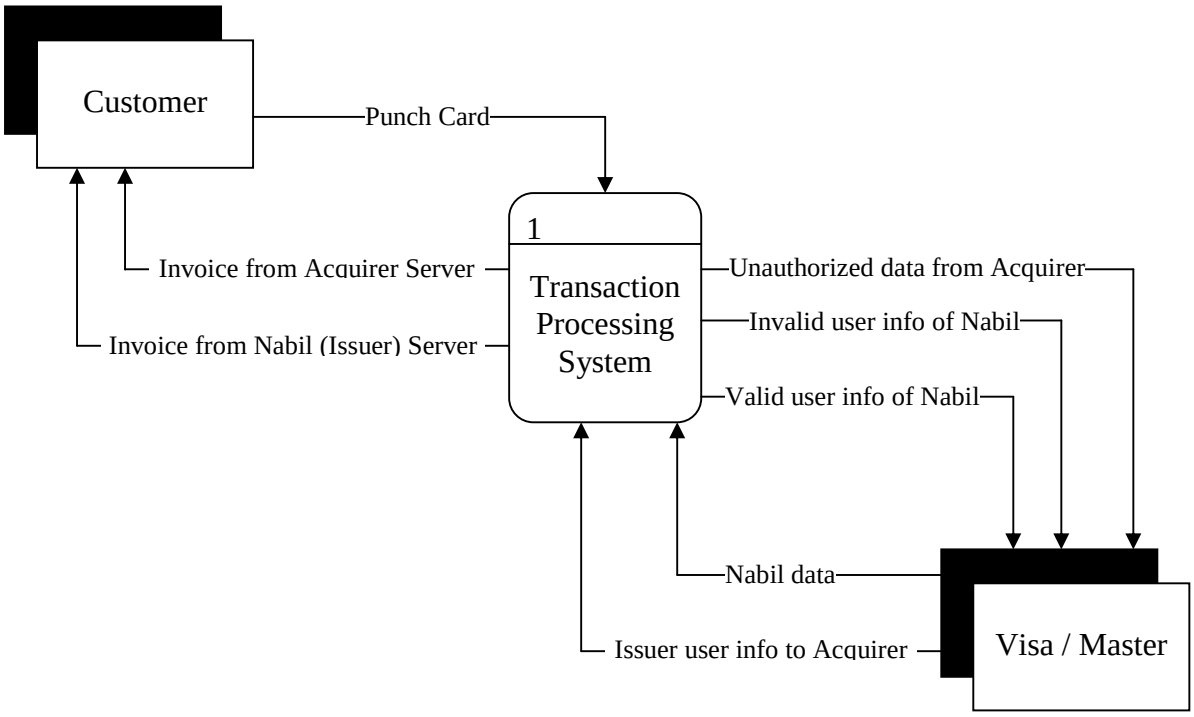
The above DFD also describe the ONLINE Authorization System Configuration (Online Switch) which is very much helpful for the configuration of ATM (Diebold / NCR). The online switch is connected to ATM through ATM Controller, POS through NAC (Network Access Controller) and similarly to database of bank and outside world.

4.4.1 Context Level Diagram of Existing System

There are mainly eight entities to explain the overall information system of the organization. Account Opening Section, Loan section, Human Resource Department, Remittance Section, Reporting Section, Cash Section and Reconciliation Department are those which uses the system most that is continuously link with the system. Other sections are not directly link with the system.

Figure: 4.18

Context Level Diagram of Transaction Processing System

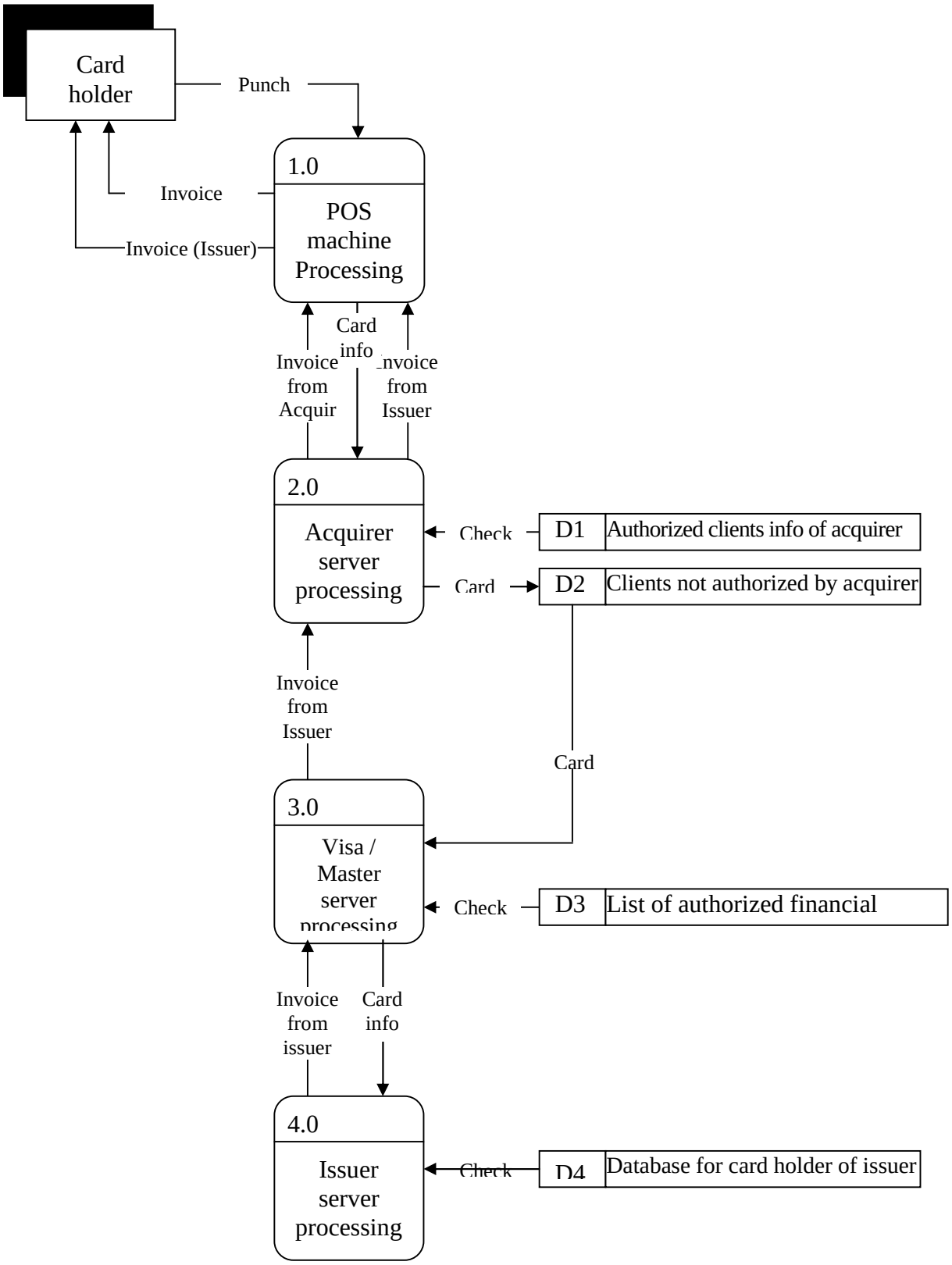


(Source: *Khan: 2004; 27*)

When client punches card into the POS machine, the card information goes to the acquirer's server. The server checks that the card holder is authorized by them (acquirer) or not. If so, then the server checks the status of the card. That means the card status is normal or not and then checks that the requested transaction can satisfied his credit availability or not. If satisfied all the conditions then it generates an invoice with authentication unique number and sends it back to the POS machine and thus merchant verifies the customer. If the card holder is not the clients of the acquirer then the card information is passed to their payment brand's (Visa, MasterCard etc). Then the payment brand's server checks that under which financial institutions the card is issued and then sends it to the issuer's server. The issuer's server then checks the status of the card. That means the card status is normal or not and then checks that the requested transaction can satisfied his credit availability or not. If satisfied all the conditions then it generates an invoice with authentication unique number and sends it back to the POS machine and thus merchant verifies the customer.

Figure: 4.19

System Level DFD of Transaction Processing System

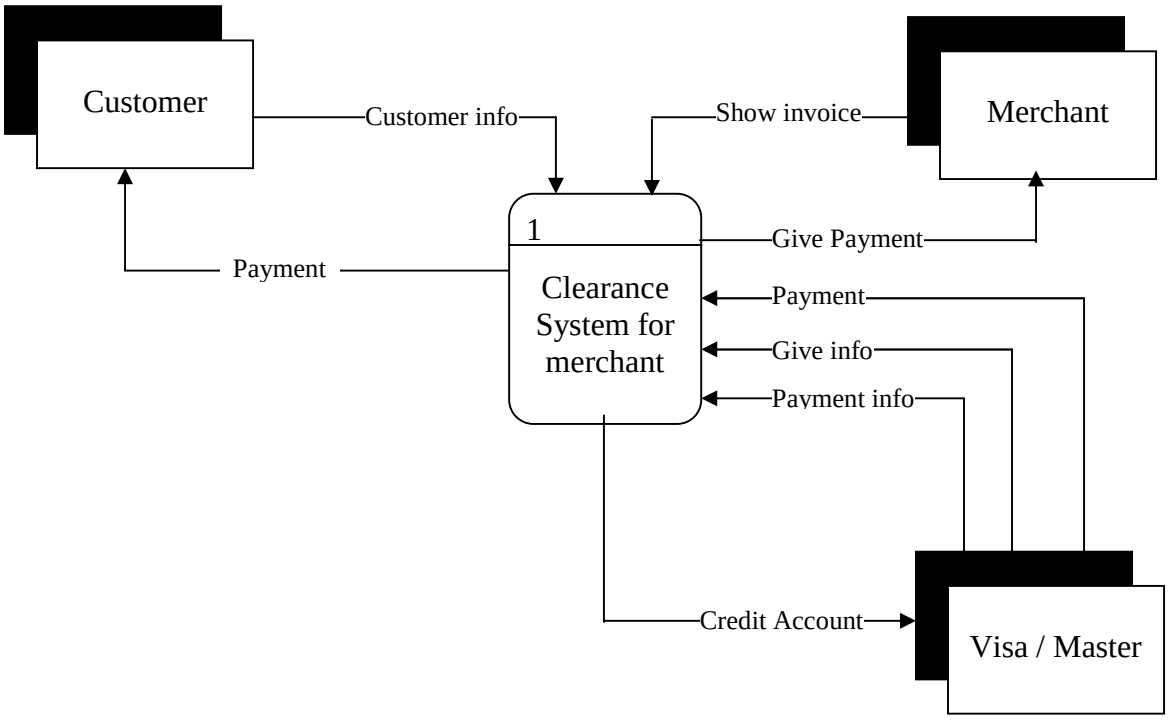


(Source: *Khan: 2004: 28*)

When a customer punches card to the POS machine, the card information first goes to the Nabil Bank's server as acquirer. Then Nabil server found that the card holder is not authorized by them. As they are under the payment brand of Visa, they send it to the Visa server which is located in Singapore for the south Asian region. Then Visa checks under which member (financial institution) the card holder exist. They found corresponding bank as the issuer. Then they send it to the corresponding bank's server. The corresponding bank's server then checks the status of the card. That means the card status is normal or not and then checks that the requested transaction can satisfied his credit availability or not. If satisfied all the conditions then it generates an invoice with authentication unique number and sends it back to the POS machine. The cardholder then signs on it and thus merchant fulfill the client's request or order. The whole process described above is the 1st part of the transaction processing system which is called Base 1 system

Figure: 4.20

Context Level Diagram of Transaction Processing System (Clearance)



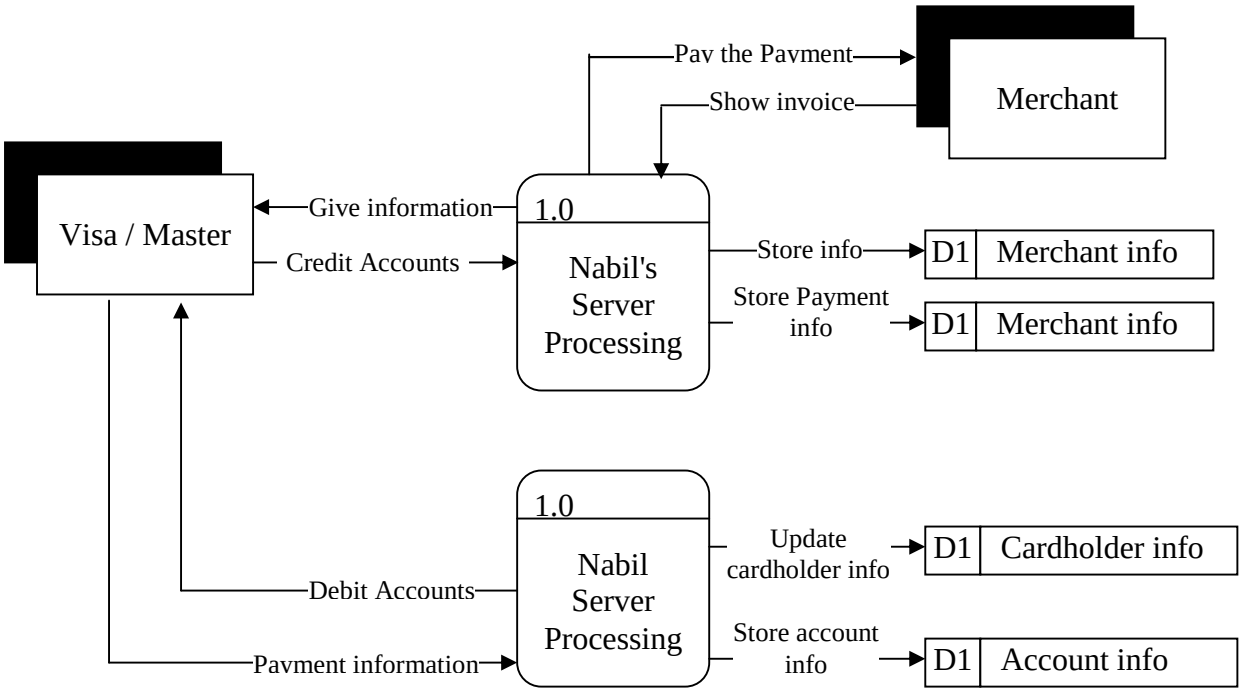
(Source: *Khan; 2004: 28*)

In the 2nd part of the system the payment are settled between merchant and the acquirer as well as the issuer. After getting the invoice signed by the cardholder the merchant goes to the acquirer (eg. Nabil bank) and shows the invoice. Then the

acquirer pays the payment to the merchant. The acquirer then sends the information to the visa. Visa then debit the amount from issuer. The issuer collects the information from visa through Internet.

Figure: 4.21

System Level DFD of Clearance System (Base II)



(Source: *Khan; 2004: 30*)

This phase will describe about the transaction processing system (Verification and clearance). Before that some definition are necessary to be given which are as follows:

Cardholder: In the electronic environment, consumers and corporate purchasers interact with merchants from personal computers over the Internet. A cardholder is an authorized holder of a payment card (e.g. Master card, Visa) that has been issued by an issuer.

Merchant: A merchant is a person or organization that has goods or services to sell to the cardholder. Typically, these goods and services are offered via a website or by electronic mail. A merchant that accept payment cards must have a relationship with an acquirer.

Acquirer: This is a financial institution that establishes an account with the merchant and processes payment card authorizations and payments. Merchants will usually accept more than one credit card brand but do not want to deal with multiple individual issuers. The acquirer provides authorization to the merchant that a given card accounts is active and that the proposed purchased does not exceed the credit limit. The acquirer also provides electronic transfer of payments to the merchant's account. Subsequently the acquirer is reimbursed by the issuer over some sort of payment network for electronic funds transfer. For example Nabil Bank works as an acquirer as well as issuer.

4.5 Networking Structure of Nabil Bank

A computer network is an interconnection of various computer systems located at different places. In computer network two or more computers are linked together with a medium and data communication devices for the purpose of communicating data and sharing resources.

The computer that provides resources to other computers on a network is known as server. In the network the individual computers, which access shared network resources, are known as workstation or nodes.

Computer Networks may be classified on the basis of geographical area in two broad categories and they are Local Area Network (LAN) and Wide Area Network (WAN).

a) Local Area Network (LAN)

A local area network is usually privately owned and links the devices in a single office, building or campus of up to a few kilometers in size. Depending on the needs of an organization and the type of technology used, a LAN can be as simple as two PCs and printer in someone's whole office or it can extend throughout a company and include voice, sound, and video peripherals.

LANs are designed to allow resources to be shared between personal computers or workstations. The resources to be shared can include hardware, software or data. In addition to size, LANs are distinguished form other types of networks by their transmission media and topology. In general, a given LAN will use only one type of transmission medium. Almost all the branches of Kathmandu valley is connected with the fiber-optic cable.

b) Wide Area Network (WAN)

Computer networks which connect two or more local area networks and span a large geographical area are known as Wide Area Network (WAN). The available media for WAN connectivity in Nepal are different type leased lines, radio link, fiber optics, ISDN and VSAT.

Main station is in Kathmandu, which synchronizes the radio link, ISDN and router. Router integrates through radio link and ISDN plays vital role through the satellite.

The Nabil Bank branch offices are situated in different geographical regions of Nepal. Pursuing its objective, Nabil provides a full range of commercial banking services through its 19 points of representation across the kingdom and over 170 reputed correspondent banks across the globe.

4.5.1 Branches and ATM Locations of Nabil Bank

In total 65 ATMs of Nabil bank are installed in the country. Out of them 34 ATM are inside the Kathmandu valley and 31 ATMs are outside the Kathmandu valley. ATMs of Nabil bank are installed at Newroad, Dharmapath, Jorpati, Lalitpur, Kumaripati, Kantipath, Kamaladi, Maharajgunj, Tripureshwor, Kalimati, Tahachal, US Embassy Bharma Cottage, Thamel, New Baneshwor, New Baneshwor, Bhaktapur Durbar Square, Kaushaltar, Phohara Durbar (US Mission), Halchowk, Maitidevi, Chabhil, Satdobato, Balaju, Kuleshwor, Kalimati, Krishna Tower, Durbarmarg and Narsingh Chowk, Thamel, Attarkhel, Gwarko, Anamnagar, Dhapashi. We can also get ATM service of Nabil bank even outside Kathmandu valley and they are at Birtamod, Damak, Dharan, Itahari, Biratnagar, Birgunj, Narayanghat, Hetauda, Butwal, Bhairawaha, Pokhara, Chiple Dhunga, Baglung, Ghorahi, Tulsipur, Nepalgunj, Dhangadi, Mahendranagar, Bhalwadi, Khandbari, Charikot, Gorkha, Chandragadhi, Dhulikhel, Besisahar, Power House Chowk – Birgunj, Maisthan - Birgunj and Kailali.

4.5.2 SCT ATM Network

Nabil Bank Provides Debit Card which is the easiest way to carry cash. Using Nabil Debit and Credit Card customers can withdraw cash as well as purchase goods from several merchants. Customers can use this card at any ATM/POS terminal that is under SCT

network and at a time customers can withdraw up to Rs. 1,00,000/- per day through 5 transaction in Nepal. Where as in India customer can withdraw 25,000 IC per day and per month 2,00,000/- IC only. It provides secured transaction with no queue hassle at Bank.

4.5.3 Global Connection

Nabil Bank has strategic alliance with ICICI Bank and Standard Chartered Bank of India, which facilitates customers to remit their money to more than 670 locations of India through branches of these banks and their correspondent Banks in India. Customers of the bank can affect their money transfer to India either through Speed Transfer Arrangement or through Demand Draft Arrangement. Under Speed Transfer Arrangement, money can be credited on-line to the beneficiary's account at more than 400 branches of ICICI Bank, India. Under Demand Draft Arrangement, the Bank can issue draft payable at more than 670 locations in India. Nabil Bank is globally connected through various prominent Banks in Asia, Europe and North America like American Express Bank, Standard Chartered Bank, UBAF etc. The services of the bank across the globe include remittance, draft arrangement, import and export business, guarantee etc.

4.5.4 International Network

Nabil Bank has a huge international network. It provides various currencies' draft for customers' convenience. They can transfer their university fees, business transfers and other transfers via swift at any corner of the world.

Correspondent Banks- NOSTRO A/C

The following are the banks where Nabil maintains an account (Nostro Banks). When you transfer your fund into your account in Nabil bank, you may use one of the following banks or route your fund through one of the following banks. For US Dollar its corresponding banks are Standard Chartered Bank, New York; CITIBANK N.A, New York; JP Morgan chase, NY and Kookmin Bank, South Korea. NostroBank for Indian rupee are Standard Chartered Bank, Kolkatta, India; ICICI BANK LIMITED, Mumbai, India; CITIBANK, Mumbai, India; BANK OF AMERICA, Mumbai, India; CENTRAL BANK OF INDIA, Raxaul, India; BANK OF INDIA, Mumbai, India and Axis Bank, Siliguri, India. Standard Chartered Bank, Singapore is the corresponding

bank for Singapore Dollar of Nabil Bank. Nostro Bank for Japanese Yen are Standard Chartered Bank, Tokyo and Bank of Tokyo Mitsubishi, Tokyo. Standard Chartered Bank, Frankfurt if for Euro; Commerz Bank AG, Frankfurt for Euro / Swiss Franc; Standard Chartered Bank, London for Sterling Pound; Royal Bank of Canada, Toronto for Canadian Dollar; Australia and New Zealand Banking Group for Aussie Dollar; Danske Bank, Copenhagen, Denmark for Danish Kroner and for Nepalese Rupee it has Nepal Bank Limited, Kathmandu, Nepal; Rastriya Banijya Bank, Kathmandu, Nepal and Agricultural Development Bank Kathmandu, Nepal. INR Draft Arrangement of Nabil Bank is with 350 banks of India. (Source : *www.nabilbank.com*)

FCY Draft Arrangement

Nabil Bank can issue drafts in the following currencies: USD, GBP, EUR, SGD, AUD & CAD, using Standard Chartered Bank, New York for US Dollar; Standard Chartered Bank, Singapore for Singapore Dollar, Standard Chartered Bank, Frankfurt for Euro; Standard Chartered Bank, London for St. Pound and Royal Bank of Canada, Toronto, Canada for Canadian Dollar.

Import LC Advising Bank

To advise import LC, Nabil bank use the Standard Chartered Bank, Mashreq Bank, Axis Bank, ICICI Bank, Saudi Hollandi Bank, Citi Bank, Commerz Bank and a host of other banks depending on the customers' requirements. Relationship Management Application of Nabil Bank exists with 65 country, 323 corresponding banks.

4.6 Limitation of Existing System

From this study some of the following limitation were drawn out from personal observation and with the help of interview with various concerned personnel.

- In comparison to paper based system, the new system performs better but it still has long procedures. User get bored with this long procedure and working performance may also decrease.
- Security is the vital element of the bank, there is no doubt on that. But the system doesn’t provide full and unbreakable security for the bank’s data and information.
- Lack of regular support from vendor.

4.7 Analysis of Primary Data

Under this heading we deal with the analysis and interpretation of the data collected form various sources and research methodology. In the course of analysis, data gathered from the various sources have been presented in tabular form. Data has been analyzed by using various tools.

4.7.1 Public Opinion Survey Data Analysis

The data table below is the primary data collected from card holder customer of Nabil Bank Ltd.

Table: 4.1

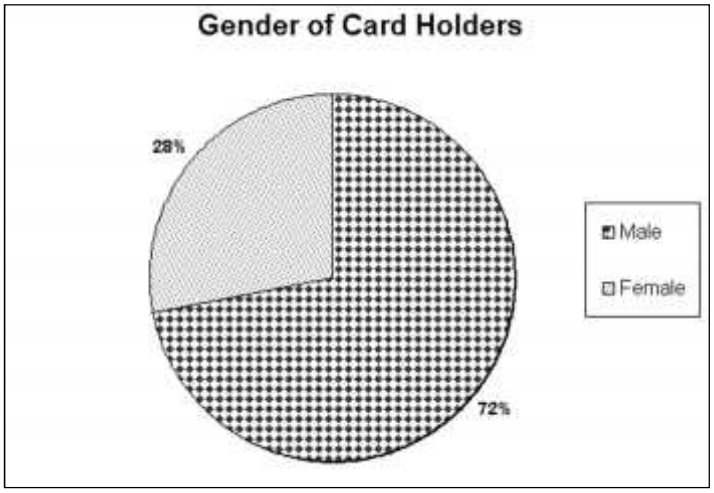
Gender of ATM Card Holders

Option Details	No. of Respondents
Male	18
Female	7

(Source : *Field Visit*)

Figure: 4.22

Gender of ATM Card Holders



Gender Wise analysis showed that 72% of the card holders were male and 28% of them were female. It clearly depicted that the usage is widely prevalent among Men than Women. This may be due to the following reasons: men are more educated than women and they are economically stronger than women. It showed that female cardholders were not tapped fully and they were not given dominance position in spending the money.

Table: 4.2

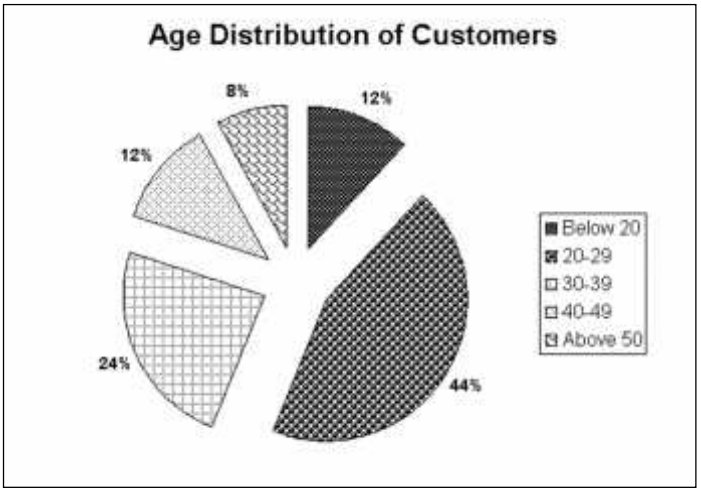
Age Distribution of Customers

Option Details	No. of Respondents
Below 20	3
20-29	11
30-39	6
40-49	3
Above 50	2

(Source : *Field Visit*)

Figure: 4.23

Age Distribution of Customers



Age was considered as an important parameter in the study as the needs, wants, interests, capabilities, of a person vary with age. It was seen that 44% of ATM

cardholders were in the age group of 20-29 years, 24% of 30-39 years, 12% of both 40-49 years and below 20 years, 8% were above 50 years. The above information highlights that majority of the ATM card holders were in the age group of 20-29 years, the age where most of the people complete their education and enter into earning phase. They spend most of their time outside with friends and colleagues. They find pleasure in spending the money, as many of them do not have family responsibilities at this age. They tend to spend substantial amount on personal consumption items, food, clothing, transportation, luxury goods, entertainment etc. There is more individuality in spending their money.

Table: 4.3

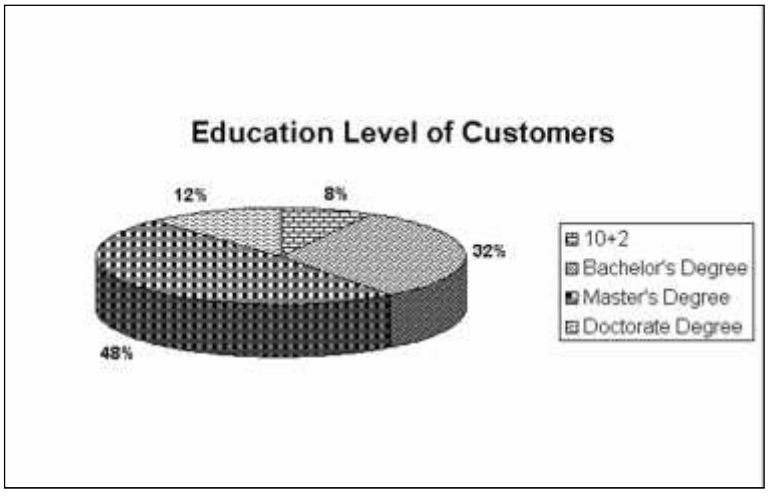
Education Level of Customers

Option Details	No. of Respondents
10+2	2
Bachelor's Degree	12
Master's Degree	8
Doctorate Degree	3

(Source : *Field Visit*)

Figure: 4.24

Education Level of Customers



Education level of customer was considered as an important parameter in the study. It was seen that 8% of cardholders were having the education level of 10+2, 48% were Bachelor's Degree, 32% were Master's Degree and 12% of Doctorate Degree. The above information highlights that majority of the card holders were of the education level of Bachelor's Degree, the age where most of the people enter into earning phase. They spend most of their time outside with friends and colleagues. They find pleasure in spending the money, as many of them do not have family responsibilities at this age. They tend to spend substantial amount on personal consumption items, food, clothing, transportation, luxury goods, entertainment etc. There is more individuality in spending their money.

Table: 4.4

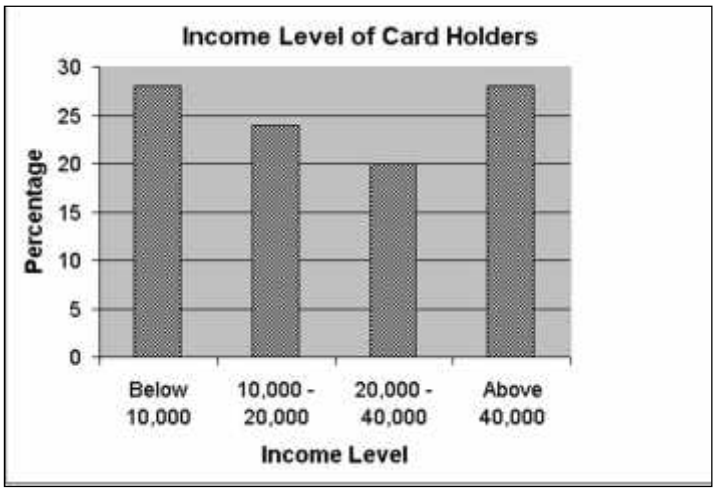
Income Level of Card Holders

Option Details	No. of Respondents
Below 10,000	8
10,000 - 20,000	6
20,000 - 40,000	5
Above 40,000	6

(Source : *Field Visit*)

Figure: 4.25

Income Level of Card Holders



Income level of card holders was taken into view as the level of spending money depends upon economic position of consumers. Out of the total sample space 2 of them were students, the card was provided by their parents. It showed that 32% of the card holders belongs to the income group of below 10,000/- followed by 24% in the income group of Rs.10,000/- to 20,000/- and 20% in the income group of Rs.20, 000/- to 40,000/- and 24% in the income group of above Rs.40, 000/-. It revealed that majority of the card holders were in the income group of below 10,000/-. This shows that they may be in the age of 20-29 years whose income is low relative to future earnings, since most of them just begin their careers. They spend majority of the money they earn. They do not have family burdens. They find pleasure in spending money.

Table: 4.5

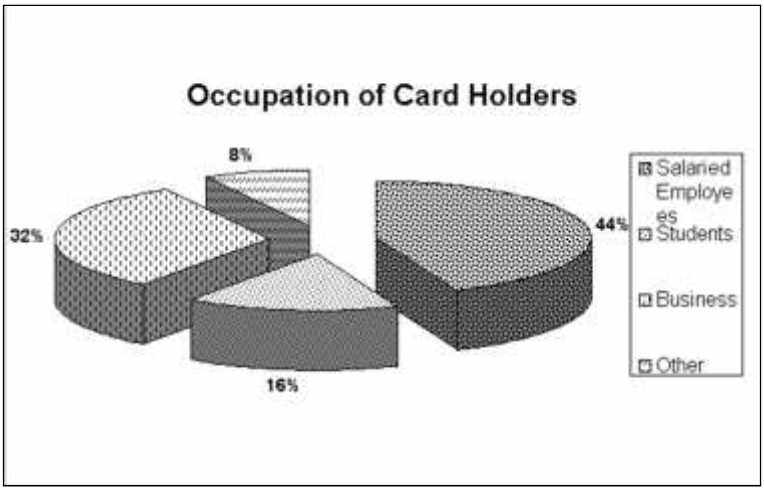
Occupation of Card Holders

Option Details	No. of Respondents
Salaried Employees	11
Students	4
Business	8
Other	2

(Source : *Field Visit*)

Figure: 4.26

Occupation of Card Holders



Occupation also influences consumption patterns. It showed that 44% were salaried employees, 16% were students, 32% were in business, 8% belonged to other categories. It was observed that salaried employees were in majority when compared to other people. This may be due to following reasons: For salaried employees their organizations directly deposit their salaries to the banks. Some organizations are offering card to their employees. So employees draw their salaries by using ATM cards. Next majority comes students. Parents feel safety in giving card to their children so that they need not maintain large amounts of cash and withdraw whenever they are in need. And also they can have individuality in spending the money.

Table: 4.6

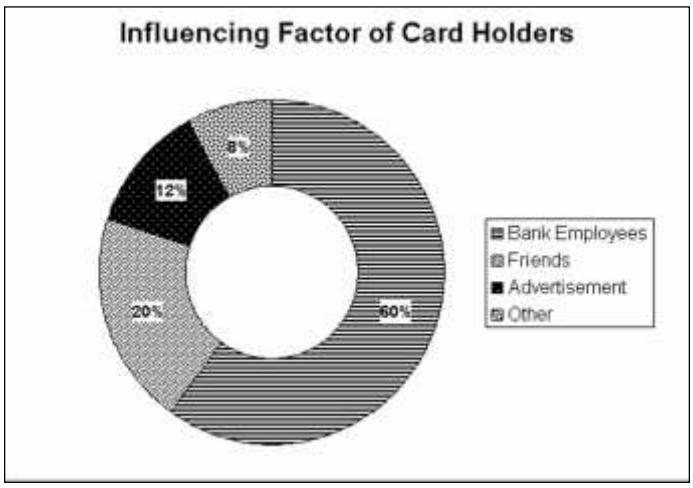
Influencing Factor of Card Holders

Option Details	No. of Respondents
Bank Employees	15
Friends	5
Advertisement	3
Other	2

(Source : *Field Visit*)

Figure: 4.27

Influencing Factor of Card Holders



Influencing factors play an important role in the usage of ATM cards as the interest of a person to purchase a product depends to a large extent on them. It was observed that

60% of ATM card holders were influenced by the bank employees in having a card, 20% were influenced by friends and 12% influenced by both advertisement and word of mouth and 8% of them were influenced by other factors like magazines, websites etc. Impression of Bank Employees could be the main reason for the bank ranking as major influencing factor. Banks find cards as profitable business with less staff and more turnovers through card.

Table: 4.7

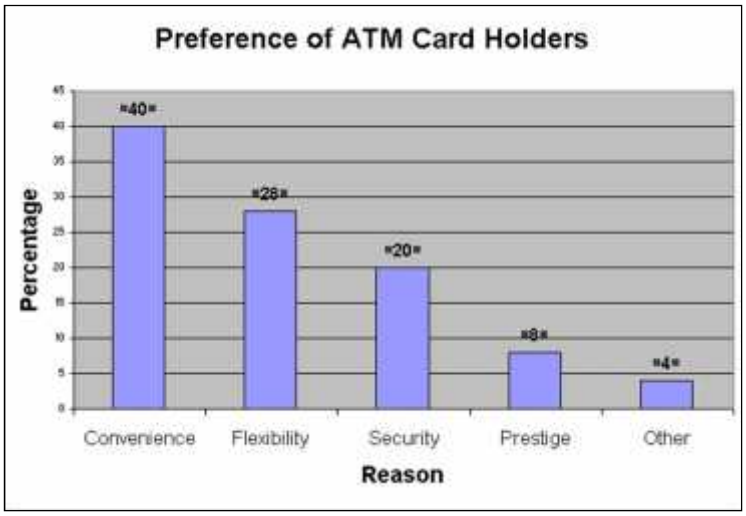
Preference of ATM Card Holders

Option Details	No. of Respondents
Convenience	10
Flexibility	7
Security	5
Prestige	2
Other	1

(Source : *Field Visit*)

Figure: 4.28

Preference of ATM Card Holders



Preference of ATM card holders was taken into consideration to know the usage pattern and if ATM cards had any parlance with the factors opted for. Analysis showed that 40% preferred it for convenience, 28% for Flexibility, 20% for Security,

8% for Prestige, 4% for other factors. It can be inferred that the main reason to prefer ATM cards is mainly due to the convenience offered by the cards. It reduces carrying large amounts of cash in their wallets, as ATM centers were present almost in all the places. They are a good substitute for cash and cheque. ATM centers are available 24 hours even in non-banking hours and holidays and provides any time banking facilities. And also it occupies less space compared to cash.

Table: 4.8

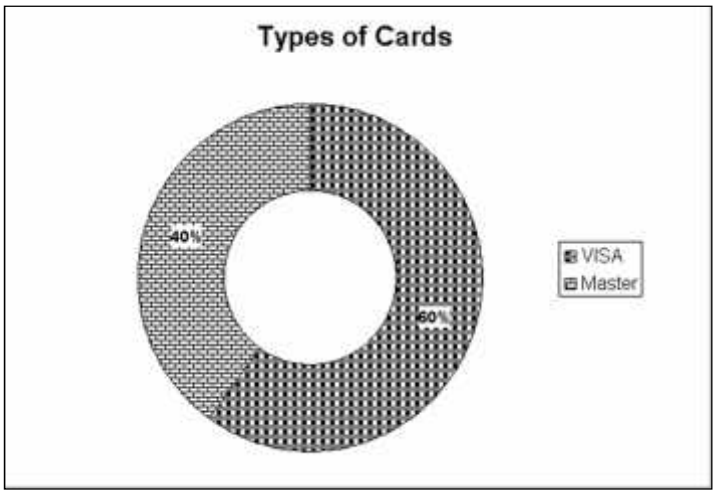
Types of Cards

Option Details	No. of Respondents
VISA	15
Master	10

(Source : *Field Visit*)

Figure: 4.29

Types of Cards



Study of types of card usage showed that 60% of the user used VISA and 40% of the user used Master Card. It can be inferred that the main reason to prefer VISA is mainly due to the convenience offered by the cards. Wide acceptance of VISA acceptance is yet another factor to be noted.

Table: 4.9

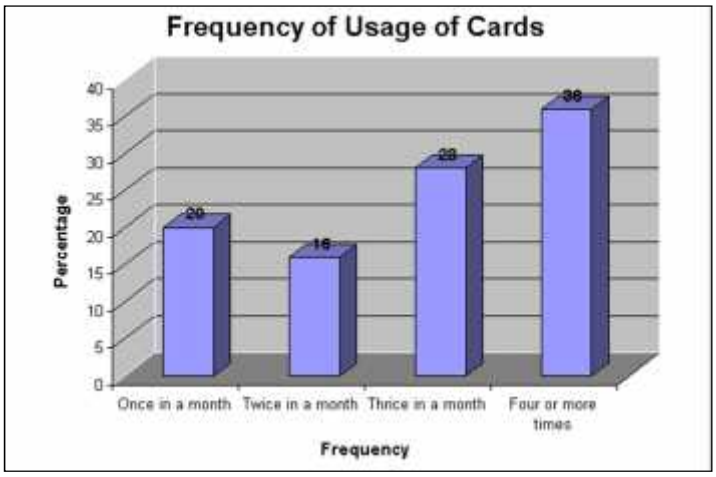
Frequency of Usage of Cards by the Respondents

Option Details	No. of Respondents
Once in a month	5
Twice in a month	4
Thrice in a month	7
Four or more times	9

(Source : *Field Visit*)

Figure: 4.30

Frequency of Usage of Cards by the Respondents



Frequency of usage of cards by card holders was taken into consideration to know the usage pattern and if ATM cards had any parlance with the factors opted for. Analysis showed that 20% use it once in a month, 16% use twice in a month, 28% use thrice in a month and 36% use for four and more times a month. It can be inferred that the main reason to prefer cards is mainly due to the convenience offered by the cards. It reduces carrying large amounts of cash in their wallets, as cards are accepted in many places these days. People started to purchase house hold goods to fancy materials through cards. Offices sending salaries to the bank is yet another supporting factor for this fact.

Table: 4.10

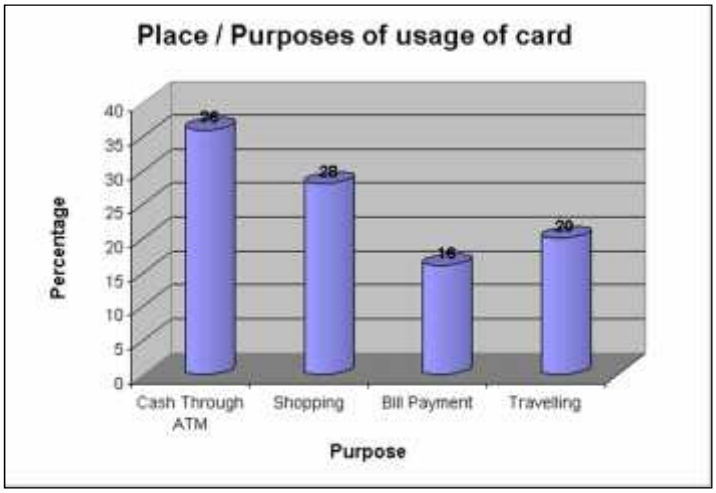
Place / Purpose of Usage of Card

Option Details	No. of Respondents
Cash Through ATM	13
Shopping	7
Bill Payment	3
Traveling	2

(Source : *Field Visit*)

Figure: 4.31

Place / Purpose of Usage of Card



Place and purpose of usage of cards by card holders was taken into consideration to know the usage pattern and if ATM cards had any idiom with the factors opted for. Analysis showed that 52% use it for cash through ATM, 28% use for shopping, 11% use for Bill Payment and 9% use for Traveling. It can be inferred that the main reason to prefer cards is mainly to reduce carrying large amounts of cash in their wallets. Most of the offices started to send salaries of its employees directly to the bank account.

Table: 4.11

Levels of Satisfaction of Card

Option Details	No. of Respondents
Very good	10
Good	9
Satisfactory	5
Not Satisfactory	1

(Source : *Field Visit*)

Figure: 4.32

Levels of Satisfaction of Card

Levels of satisfaction of card users was taken into consideration to know the usage satisfaction of the service rendered through the cards and ATM. Analysis showed that 40% of the card holder declare the satisfaction level as very good, 36% of the users feels good, 20% feel satisfactory and 4% feel not satisfactory. It can be predicted that user need not stay in a line for the cash withdraw in a bank by the use of ATM. ATM of the bank and its SCT member make it more available and easy to the card holders.

Table: 4.12

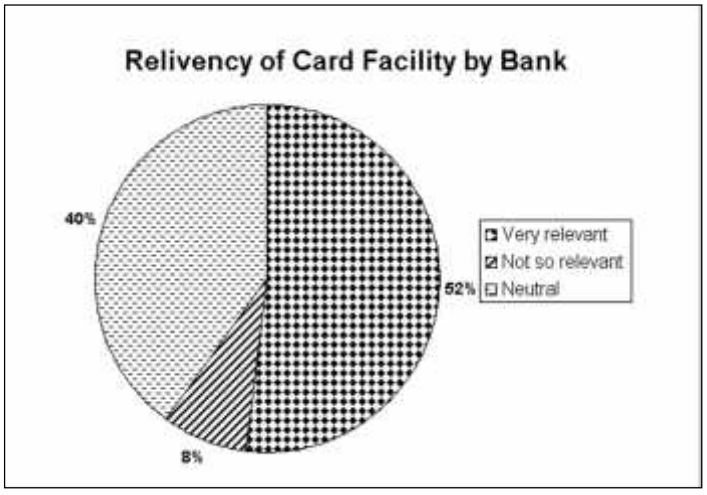
Relevancy of Card Facility by Bank

Option Details	No. of Respondents
Very relevant	13
Not so relevant	2
Neutral	10

(Source : *Field Visit*)

Figure: 4.33

Relevancy of Card Facility by Bank



Relevancy of card facility by the bank was taken into consideration to know the satisfaction of the service rendered through the cards and ATM terminals of the bank. Analysis showed that 52% of the card holder declare the relevancy of card facility by bank as very relevant, 40% are neutral and 8% say not so relevant. It can be inferred that large number of users feels easy to use card and ATM and POS terminals with respect to time, money and service.

Table: 4.13

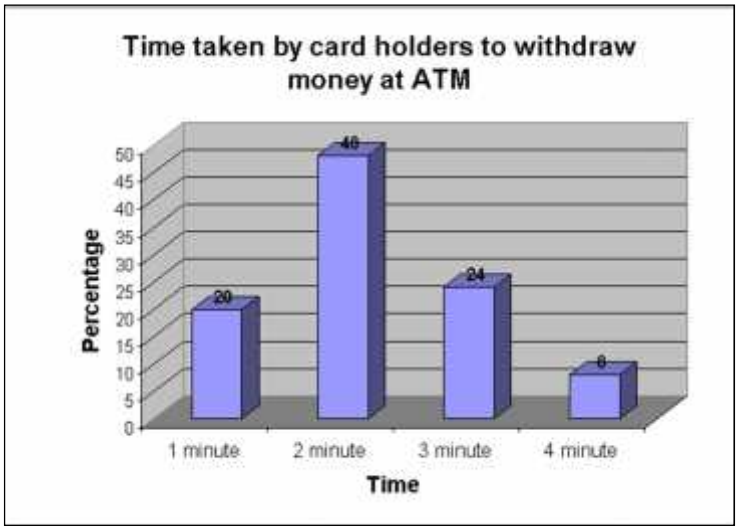
Time Taken by Card Holders to Withdraw Money at ATM

Option Details	No. of Respondents
1 minute	5
2 minute	12
3 minute	6
4 minute	2

(Source : *Field Visit*)

Figure: 4.34

Time Taken by Card Holders to Withdraw Money at ATM



Time taken by card holders to withdraw money at ATM was taken into consideration to know the satisfaction of the customers through ATM terminals. Analysis showed that 48% of the card holders take 2 minute to withdraw money at ATM, 24% take 3 minute, 20% take 1 minute and 8% take 4 minute time. It can be inferred that large number of users take time of 2 minute to withdraw money they may check the balance and withdraw money. Some of them use fast cash option to withdraw large amount in repeated manner.

Table: 4.14

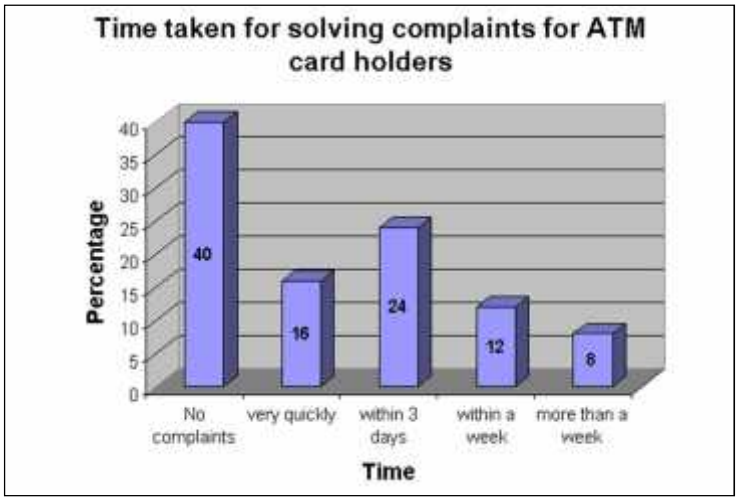
Time Taken for Solving Complaints for ATM Card Holders

Option Details	No. of Respondents
No complaints	10
very quickly	4
within 3 days	6
within a week	3
more than a week	2

(Source : *Field Visit*)

Figure: 4.35

Time Taken for Solving Complaints for ATM Card Holders



Time taken for solving complaints for ATM card holder was taken into consideration to know the satisfaction of the service rendered through the cards and ATM terminals of the bank. Analysis showed that 40% of the card holder have no complain, 16 % said the complaints were solved very quickly, 24% said within 3 days, 12% said within a week, 8% said more than a week. The study inferred that the card holders are running the ATM system smoothly.

Table: 4.15

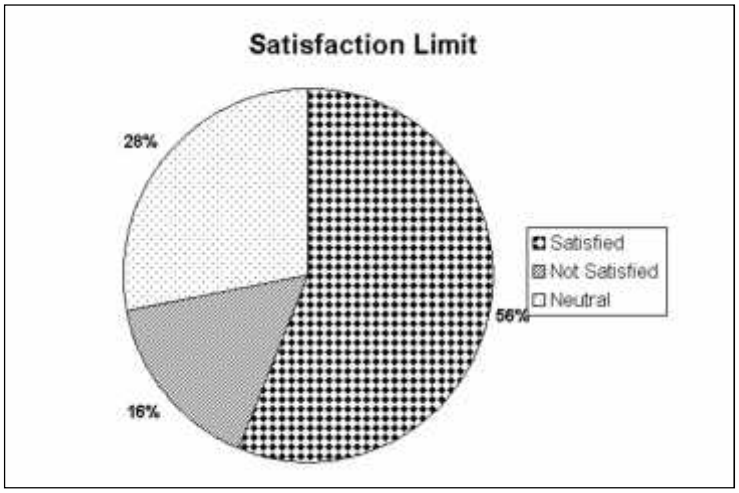
Satisfaction in Limit Made by Bank

Option Details	No. of Respondents
Satisfied	14
Not Satisfied	4
Neutral	7

(Source : *Field Visit*)

Figure: 4.36

Satisfaction in Limit Made by Bank



Satisfaction in limit made by the bank was taken into consideration to know the satisfaction of limit stated by the bank for card uses. Analysis showed that 56% of the card holders are satisfied with the limit, 28% are neutral and 16% are not satisfied. It can be inferred that large number of users are satisfied with the limit of debit card and credit card by the bank. Cssh withdraw for half of the amount of the salary to purchase goods through credit card makes the user comfortable in daily household activities. Cash bound through debit card makes the user bound not to expense high.

Table: 4.16

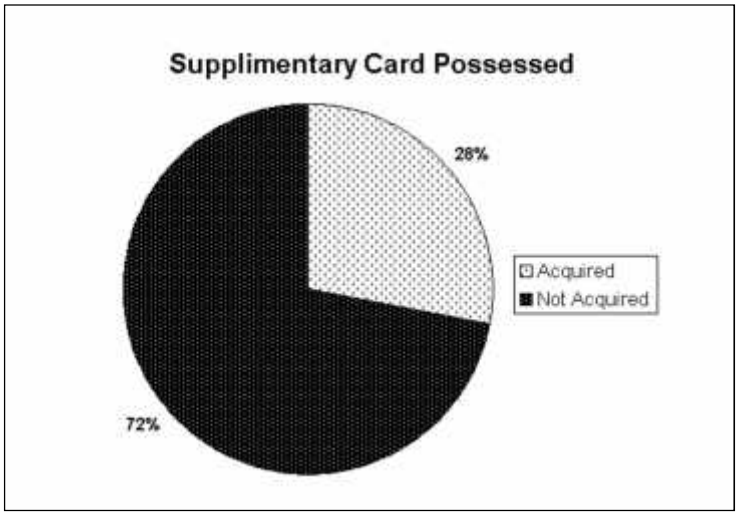
Supplementary Card Possessed

Option Details	No. of Respondents
Acquired	7
Not Acquired	18

(Source : *Field Visit*)

Figure: 4.37

Supplementary Card Possessed



The study of Supplementary card processed was taken into consideration to know the usefulness of supplementary card service provided by the bank. Analysis showed that 28% of the card holders are acquiring the supplementary card service where as 72% are not acquiring it. It can be inferred that large number of users are using separate card through separate account numbers.

Table: 4.17

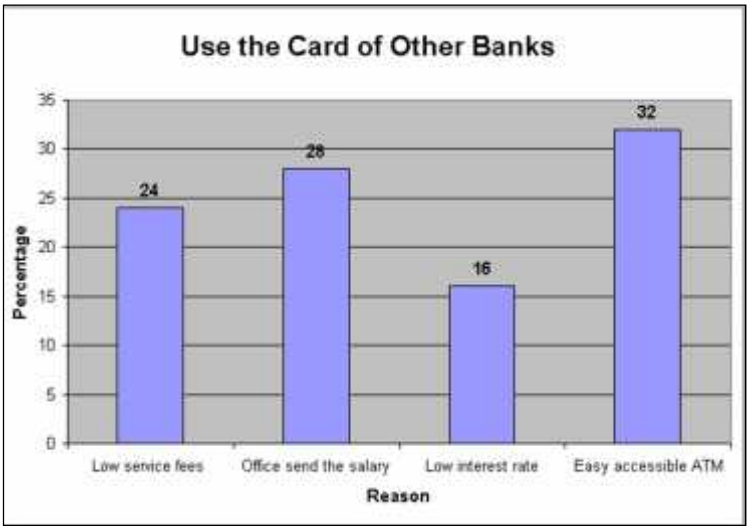
Reason to Use the Card of Other Banks

Option Details	No. of Respondents
Low service fees	6
Office send the salary	7
Low interest rate	4
Easy accessible ATM	8

(Source : *Field Visit*)

Figure: 4.38

Reason to Use the Card of Other Banks



The study of the use of card of other banks was taken into consideration to know the reason from the customers to get service of other banks too. Analysis showed that 24% of the card holders use other banks for low service fees, 28% customer's salary was send to the other bank, 16% use because of low interest rate and 32% select because of easy accessible of ATM. It can be inferred that large number of users are using card of other banks for easy accessible of ATM terminals.

Table: 4.18

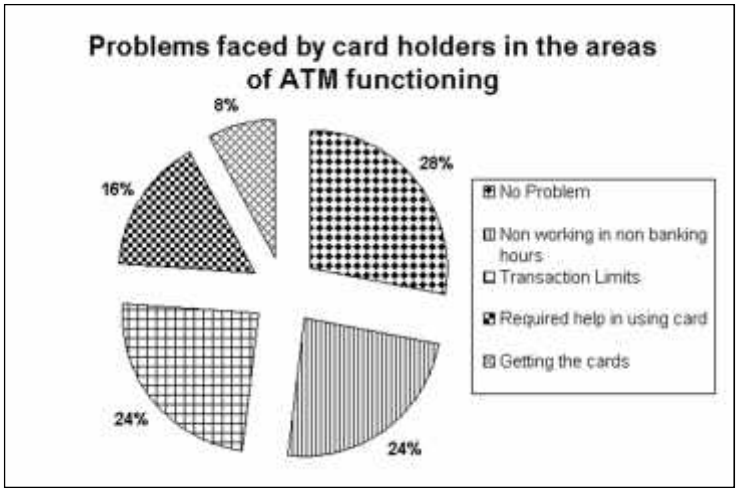
Problems Faced by Card Holders in the Areas of ATM Functioning

Option Details	No. of Respondents
No Problem	7
Non working in non banking hours	6
Transaction Limits	6
Required help in using card	4
Getting the cards	2

(Source : *Field Visit*)

Figure: 4.39

Problems Faced by Card Holders in the Areas of ATM Functioning



The study of the problems faced by card holders in the areas of ATM functioning was taken into consideration. It was observed that 28% of ATM card holders were facing no problems of ATM functioning, 24% faced non working in non banking hours, 24% faced with transaction limits, 16% require help in using card and 8% faced problems in getting the cards back. The study reveals that non working problem is being faced by customer in some cases. High percentage of customer of this study are not facing any problems.

Table: 4.19

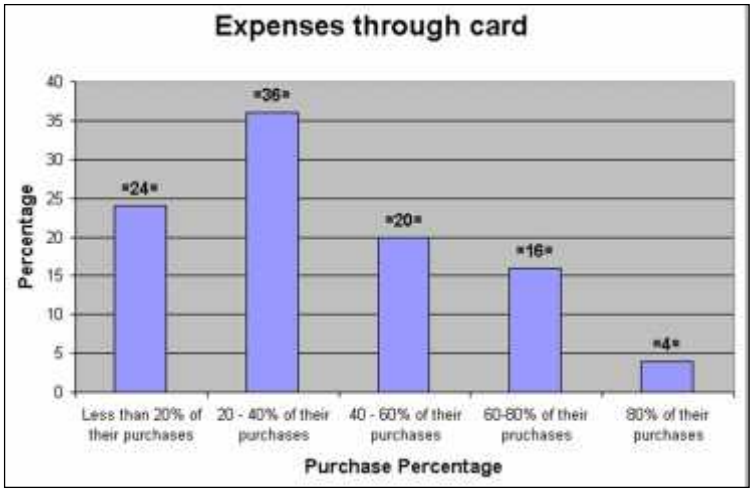
Expenses through Card

Option Details	No. of Respondents
Less than 20% of their purchases	9
20 - 40% of their purchases	6
40 - 60% of their purchases	5
60-80% of their purchases	4
80% of their purchases	1

(Source : *Field Visit*)

Figure: 4.40

Expenses through Card



The study of the expenses through card was taken into consideration to know the percentage of purchase against level of income of the customer. It was observed that 36% of card holders purchase less than 20% through cards, 24% expense 20 – 40% through card, 20% were in the range of 40 – 60%, 16% of the customer purchase 60 – 80% and 4% make 80% of their purchase. The study reveals that higher percentage of customer made less than 20% of their purchase through cards. This is because all the shops of the city are not accepting cards to purchase through the POS terminal.

Table: 4.20

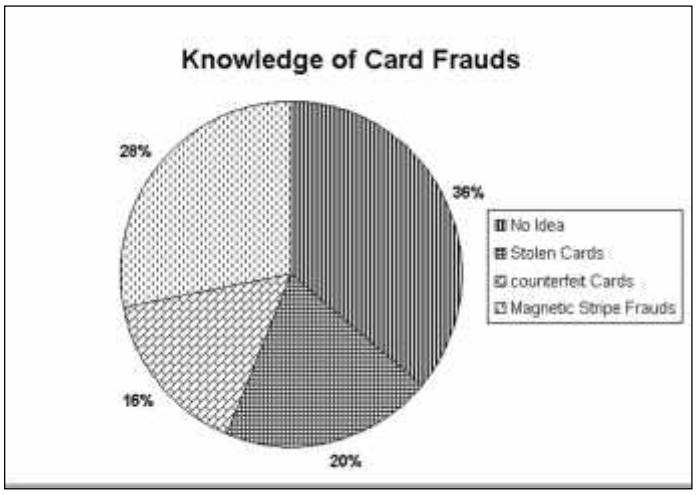
Knowledge of Card Frauds

Option Details	No. of Respondents
No Idea	9
Stolen Cards	5
counterfeit Cards	4
Magnetic Stripe Frauds	7

(Source : *Field Visit*)

Figure: 4.41

Knowledge of Card Frauds



The study of the knowledge of card frauds was taken into consideration to know about the awareness of card frauds to the card holders. It was observed that 36% of card holders have no idea about card frauds, 20% know about stolen cards, 16% know about counterfeit cards, 28% know about magnetic stripe frauds. The study reveals that higher percentages of customers are unaware of the card frauds.

4.7.2 Staff Opinion Survey Data Analysis

The questionnaires as appear on the Appendix II of this research work were designed to survey the opinion of concerned personnel at Durbarmarg Branch. Questionnaire methods is used for data collection from total of 9 staff of the Durbarmarg branch

representing different level of management as respondents and were interviewed to take their opinion on different ten questions. Moreover, objective of this survey is to find how the concerned personnel perceive the Card division of the Bank as well. The summarized data is given below:

Table: 4.21

No of Staff Taken Sample at Durbarmarg Branch

Management level	Total
Top level	1
Middle level	3
Lower level	5

Table: 4.22

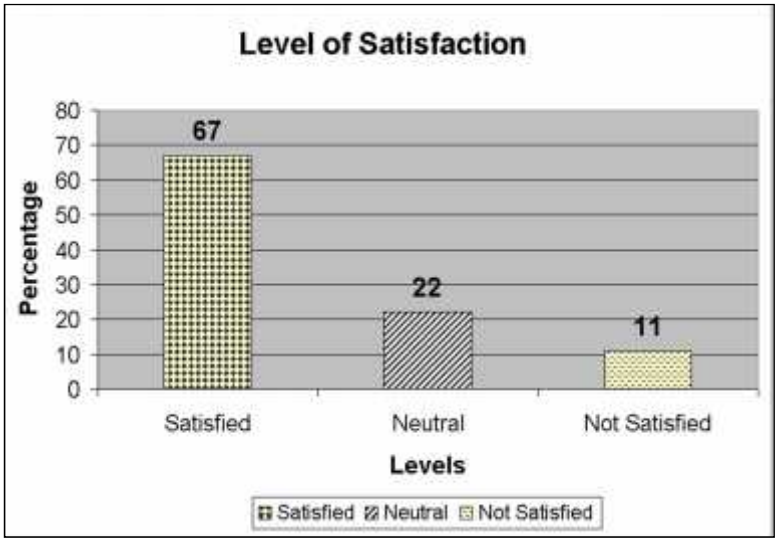
Level of Satisfaction with Various Aspects of the Card Section & ATMs

Option Details	No. of Respondents
Satisfied	6
Neutral	2
Not Satisfied	1

(Source : *Field Visit*)

Figure: 4.42

Level of Satisfaction with Various Aspects of the Card Section & ATMs



The study of the satisfaction level of staff for the cards and ATM was taken into consideration to know about their comments on satisfaction. It was observed that 62% of staff card holders are satisfied, 26% were neutral, 12% were not satisfied with the performance. The study reveals that staff ATM users are at more than neutral state of satisfaction with respect to various aspects of ATM. Staff ATM users are satisfied with respect to the performance of Nabil ATM, Its service quality and quality of notes (currency).

Table: 4.23

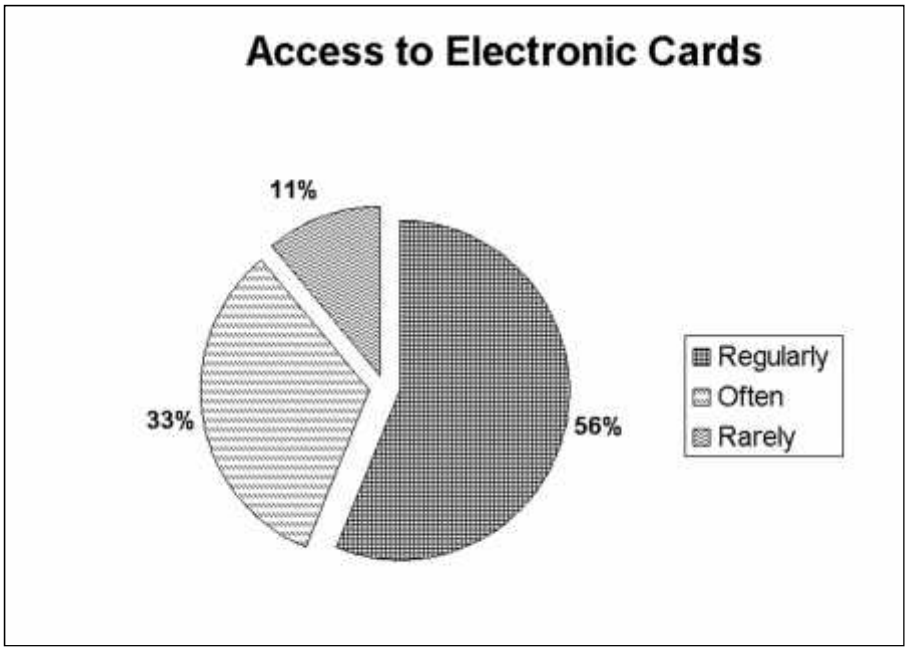
Access to Electronic Cards

Option Details	No. of Respondents
Regularly	5
Often	2
Rarely	2

(Source : *Field Visit*)

Figure: 4.43

Access to Electronic Cards



The study of the access of electronic cards of Nabil Bank for the staff was taken into consideration to know about the card uses pattern of the staff. It was observed that 54% of card holders use it regularly, 26% use it often, 20% use it rarely. The study reveals that higher percentage of the staff use the cards regularly. This is many staff use cards to pay even for the lunch around Durbarmarg area.

Table: 4.24

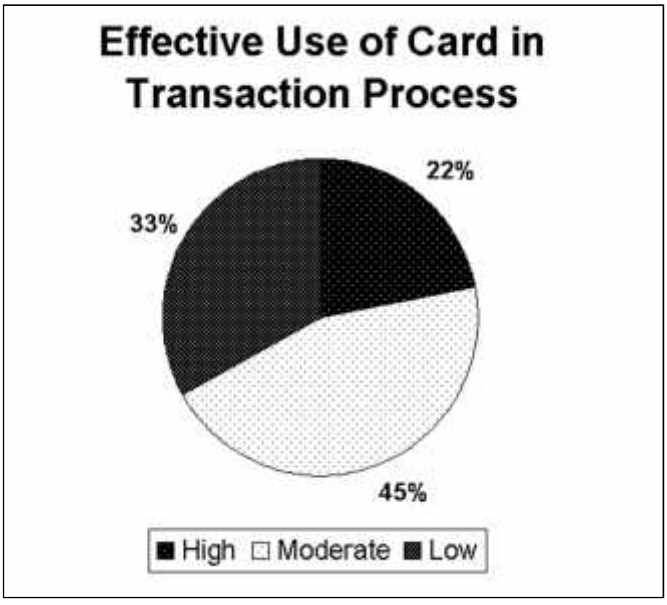
Effective Use of Card in Transaction Process

Option Details	No. of Respondents
High	2
Moderate	4
Low	3

(Source : *Field Visit*)

Figure: 4.44

Effective Use of Card in Transaction Process



The study of the effective use of card in transaction process was taken into consideration to know about the electronic transaction's trend. It was observed that 22% of staff feel high, 48% feels moderate and 30% feels low use. The study reveals that higher percentage of the staff believe that the card are used in transaction process

moderately. This is due to the lack of awareness and card users are less in number. The ATM users are high rather than POS users.

Table: 4.25

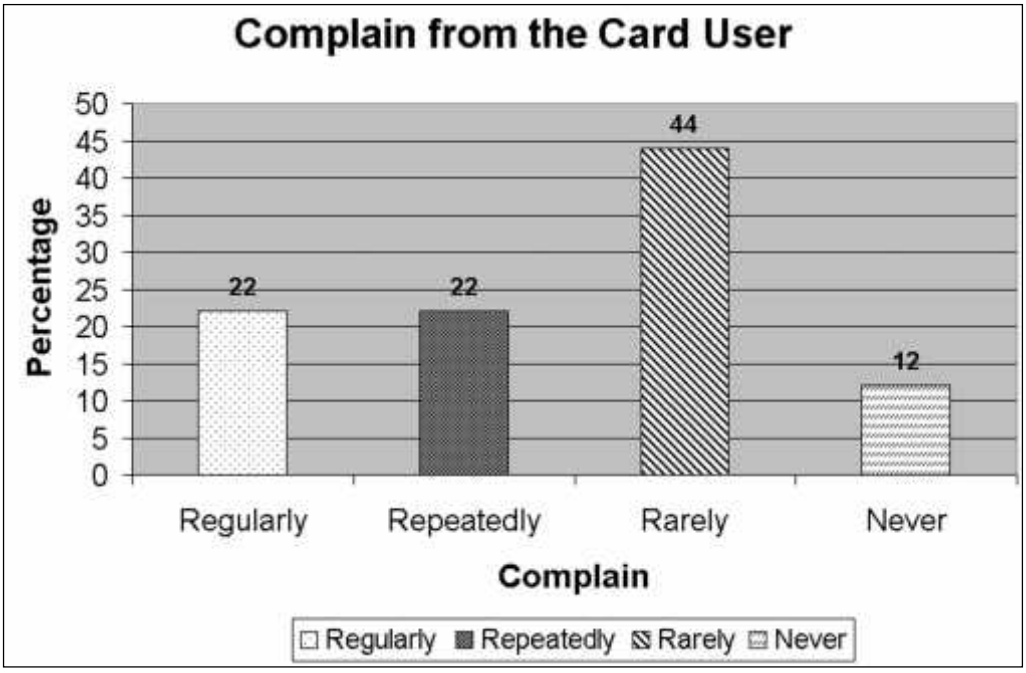
Complain from the Card User

Option Details	No. of Respondents
Regularly	2
Repeatedly	2
Rarely	4
Never	1

(Source : *Field Visit*)

Figure: 4.45

Complain from the Card User



The study of the complain from the card user was taken into consideration to know about the trend of problem to the customer. It was observed that 22% of staff find regularly, 22% find repeatedly, 44% find rarely and 12% never find the complain. The study reveals that higher percentage of the staff rarely find the complain from the card user. This is due to the customer satisfaction regarding the cards of Nabil Bank.

Table: 4.26

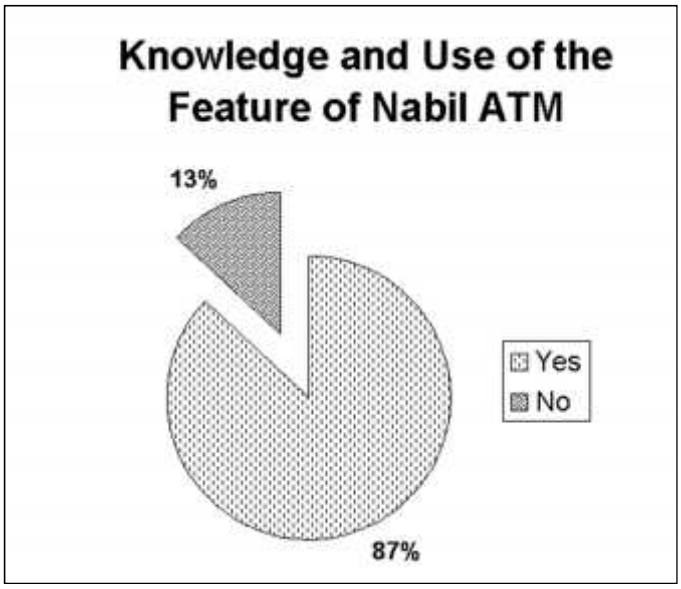
Knowledge and Use of the Entire Features of Nabil ATM

Option Details	No. of Respondents
Yes	8
No	1

(Source : *Field Visit*)

Figure: 4.46

Knowledge and Use of the Entire Features of Nabil ATM



The study of the knowledge about entire features/services of Nabil ATM was taken into consideration to know all the features of Nabil ATM and whether they ever use the facilities other than cash withdrawal. It was observed that 84% of staff have good knowledge of other features of ATM and 16% did not use other more features. The study reveals that higher percentage of the staff use more features of ATM other than cash withdraw.

Table: 4.27

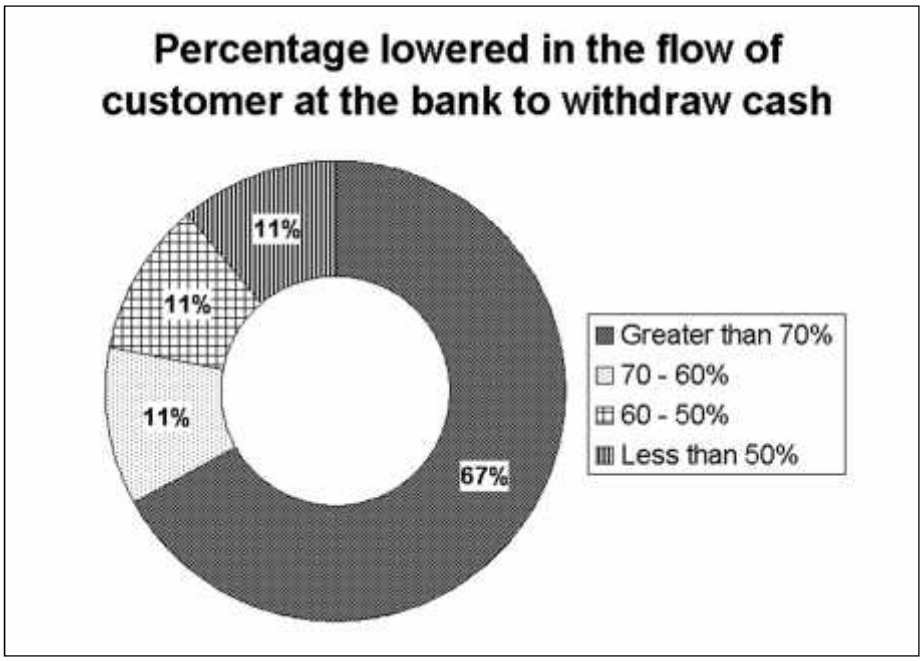
Percentage Lowered in the Flow of Customer at the Bank to Withdraw Cash

Option Details	No. of Respondents
Greater than 70%	6
70 – 60%	1
60 – 50%	1
Less than 50%	1

(Source : *Field Visit*)

Figure: 4.47

Percentage Lowered in the Flow of Customer at the Bank to Withdraw Cash



The study of the percentage lowered in the flow of customer at the bank to withdraw cash was taken into consideration to know the reduction of flow of customer due to ATM. It was observed that greater than 70% of the customer was suggested by 67% staff and 11% staff comment for 70-60% range, 11% comment for 50-60% range and for less than 50% was commented by 11% staff. The study reveals that staff consider the cash withdrawal, service quality of ATM personnel, offshore ATMs, time savings, easiness in use, prompt card delivery as the positive features of Nabil ATMs. In the

salary account of Nabil bank no cheque book is provided and only ATM card is provided to customer. This also increase the flow of customer at ATM

Table: 4.28

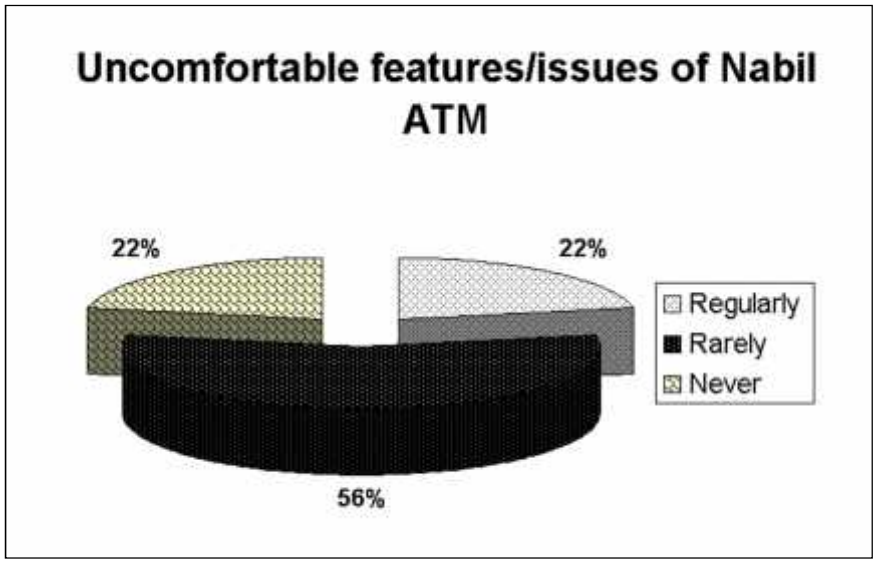
Uncomfortable Features/Issues of Nabil ATM

Option Details	No. of Respondents
Regularly	2
Rarely	5
Never	2

(Source : *Field Visit*)

Figure: 4.48

Uncomfortable Features/Issues of Nabil ATM



The study of the facing uncomfortable features / issues of Nabil ATM was taken into consideration to know the staff opinion on real life problem of the Nabil ATM. It was observed that 22% of staff face it regularly, 58% mentioned the problem as rarely and 20% staff never face any problems. The study reveals that large percentage of staff rarely face uncomfortable features / issues of Nabil ATM. The reason of this may be of poor money quality, machine breakdown, unsuitable location, delays in card delivery are the main problems of Nabil ATM.

Table: 4.29

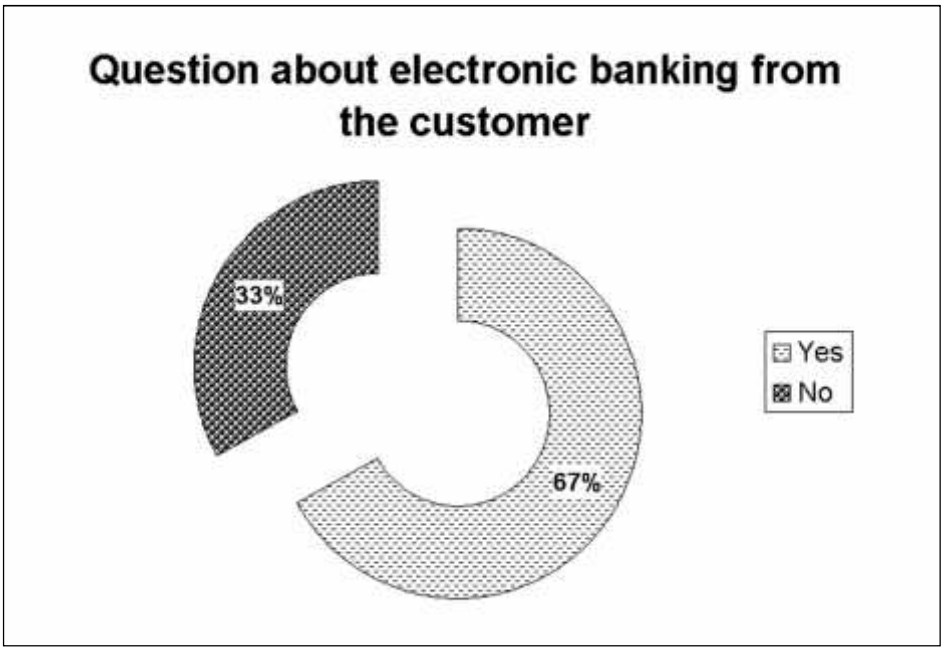
Question about Electronic Banking from the Customer

Option Details	No. of Respondents
Yes	6
No	3

(Source : *Field Visit*)

Figure: 4.49

Question About Electronic Banking from the Customer



The study about the query of electronic banking from the customer was taken into consideration to know affinity of customer in the electronic banking. It was observed that 64% of staff were asked by the customer where as 36% not asked about it. The study reveals that large percentage of staff used to have query by the customer about electronic banking. The reason of this may be customer used to heard lot of e-banking feature day by day and want to have such facility in the bank, where they have their account.

Table: 4.30

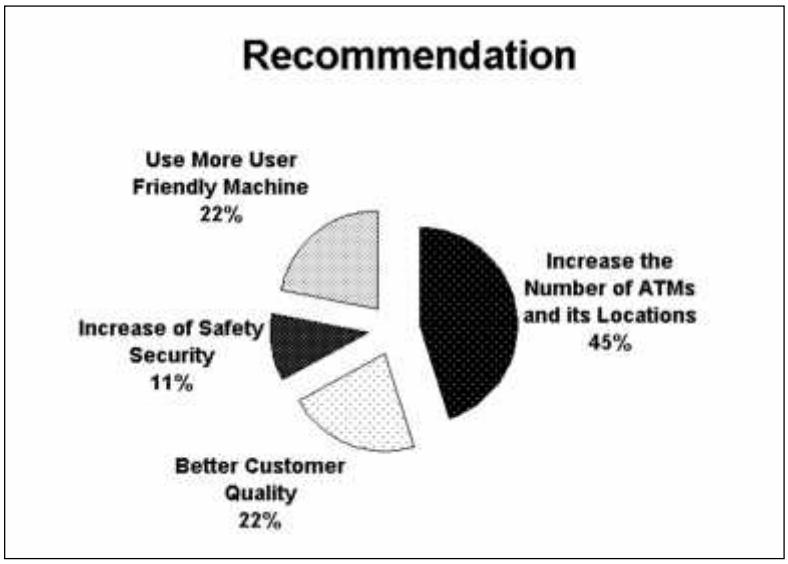
Recommendation

Option Details	No. of Respondents
Increase the number of ATMs and its locations	4
Better customer quality	3
Use more user friendly machine	2
Other	1

(Source : *Field Visit*)

Figure: 4.50

Recommendation



For the betterment of the performance of the ATM 42% staff opine to increase the number of ATMs and its locations, 28% staff opine to better customer quality, 20% staff recommend to use more user friendly machine and 10% staff recommend other points like increase of safety security. The study reveals that large percentage of staff wish to increase the number of ATM locations.

4.8 Immediate Finding of Current System

The research findings regarding the Electronic Payment System through card division of Nabil Bank are descriptive in nature. Due to the nature of the study, it could not be shown in quantitative value, however opinion survey of general public and staff have been made to reveal positive and negative aspects of card division of the bank. Current system of card division of Nabil bank is functioning well. Recent update from Pumori to Fincale is performing smooth transaction. There is no problem in settlement process. So, efficient settlement process is going on. The findings are based on the review of the literatures, researcher own experiences, researcher visit and observation and interaction with concerned personnel of Durbarmarg branch. Further, the researcher made opinion survey of staff of the bank and general public who often visits the bank.

Regarding the use of computer based information system, Nabil Bank has already introduced a computer based information system (CBIS) and is providing its services through fully computerized branches and well trained personnel. After the restoration of democracy, the Government of Nepal launched an economical liberalization policy. This has led to an increasing number of commercial banks in the country, due to such increment of commercial banks, competition also increased among them, which have resulted in enhanced services to the customers getting more competitive advantage.

Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Currently, Nabil bank is providing a full range of commercial banking services through its 43 points of representation across the nation and over 277 reputed correspondent banks across the globe.The values that drive the bank and its staff all the time which the bank also call its mission statement is CRISP (C-Customer Focused, R-Result Oriented, I- Innovative, S-Synergetic, P- Professional).

Nabil Bank is managed by a professional management team. The members of the management have proven track record in the banking sector. Nabil Bank has been trying to enhance the personal competencies of the officials of the Bank on the one hand and to improve the capabilities of the Bank on the other. In this process, the publication of the book with Annual report of the bank is trying to accommodate pertinent information on Branch Information, Product Information and Financial

Sector Review etc. with a view to arouse interest among staff members and existing and potential customers and corporate so that they will be able to update their knowledge about the financial sector and Nabil Bank.

At present, the Bank is using the Finacle banking software, one of the latest software in banking sector of Nepal and offers Any Branch Banking Services (ABBS). Telex and SWIFT are other modes of communication for efficient and effective transmission and transaction. At Durbarmarg, Card division is functioning well for the service of different types of cards as well as the E-banking services to the customer. The card division satisfies the diverse needs through a variety of services such as Credit Cards like MasterCard Local, MasterCard International, VISA Local, Diners Card as well as Debit Cards like VISA Electron / ATM Card, NABILPREPAID / NABILKOOLCASH Card along with their Operational Control, and Transaction Processing.

Survey result shows that most of the public, who visits the bank, is positive towards the current system in the bank. There can be many problems regarding the implementation of full fledged Electronic Payment system in Nabil, for instance, training of the staff, acceptation of new system, motivation towards new working process, software and hardware maintenance, lack of well trained technician within the bank etc. There are some constraints through the Central Bank in the electronic transaction too. It is very difficult for the general public to start e business and to open the account for the transaction of foreign currency from Nepal. On top of that, in this modern era of Fast Growing Information Technology there has been various Advance Banking technologies introduced and are being implemented in Banks all over the Globe, to satisfy their Customers. “Internet Banking”, “Mobile Banking”, “Credit /Debit Card” are some of the Most Demanding facilities that the customers seek from their bank. With these technologies in hand, banks can benefit in various aspects like worldwide network of its own, worldwide customers, Better Management, on top of that Customer Satisfaction. Implementation of these Technologies with more features will help and lead the Bank to be Worldwide competitive.

It is found that the card holder feels himself secured with the electronic card rather than the cash. Similarly the card holder can withdraw cash at any time of need from the ATM and also swipe the card at the POS terminal. One of the plus points of Credit card section of Nabil bank is last year if we the total transaction amount through

Credit card transaction exceeds 60,000 then the yearly charge against credit card was waved off.

Demerits:

- It will be better to update the system (hardware) of the bank and card division.
- Value added service needs to be implemented
- The bank is absence of research and development department in particular
- The non staff ATM users feel that the Nabil ATM suffers from a number of uncomfortable features such as Machine breakdown, Unsuitable location and insufficient number of ATMs; Poor money quality, Security problem in ATM.
- According to the respondents selected on the basis of convenience some of the problems of Nabil ATM are poor money quality, machine breakdown, unsuitable location, delays in card delivery.
- It is found that the expense rate of citizen will be high if card is used instead of Cash. The consumer will not hesitate and will not need to worry about the money while using the card. User may make expenses widely.

4.9 Justify Your Statement

In the course of analysis, data gathered from the various sources have been studied. For this we deal with the analysis and interpretation of the data collected form various sources and research methodology.

Men are economically stronger than women. It showed that female cardholders were not tapped fully and they were not given dominance position in spending the money. Thus gender wise analysis showed that 72% of them were male and 28% of them were female. The age group of 20-29 years is the age where most of the people complete their education and enter into earning phase. They find pleasure in spending the money, as many of them do not have family responsibilities at this age. They tend to spend substantial amount on personal consumption items, food, clothing, transportation, luxury goods, entertainment etc. There is more individuality in spending their money. So it was seen that 44% of ATM cardholders were in the age group of 20-29 years. Similarly majority of the card holders were of the education level of Bachelor's Degree. The age of 20-29 years whose income is low relative to future earnings, since most of them just begin their career. They spend majority of the

money they earn. They do not have family burdens. They find pleasure in spending money. So income level of card holders reveals that 32% of the card holders belongs to the income group of below 10,000/-.

Occupation also influences consumption patterns. For salaried employees their organizations directly deposit their salaries to the banks. So employees draw their salaries by using ATM cards. It was observed that 44% were salaried employees in the study, who can have individuality in spending the money.

Impression of Bank Employees could be the main reason for the bank ranking as major influencing factor. Banks find cards as profitable business with less staff and more turnovers through card. According to the influencing factors it was observed that 60% of ATM card holders were influenced by the bank employees in having a card and few of them were influenced by other factors like magazines, websites etc.

Cards are a good substitute for cash and cheque. ATM centers are available 24 hours for 365 days and provides any time banking facilities. The study of preference of ATM card holders showed that 40% preferred it for convenience and card reduces carrying large amounts of cash in their wallets, as ATM centers were present almost in all the places. Frequency of usage of cards by card holders was increased due to the change in habit that People started to purchase house hold goods to fancy materials from shopping centers through cards. Many of them started to use cards to purchase goods from shopping centre through cards. This is also due to the non-bargaining or fixed price store where customer feels secured that they will not be cheated for the price. Wide acceptance of card is yet another factor to be noted. The study of place and purpose of usage of cards by card holders showed that 52% use it for cash through ATM.

Card holder need not stay in a long line for the cash withdraw in a bank by the use of ATM. ATM of the bank and its SCT member make it more available and easy to the card holders. So levels of satisfaction of card users showed that 40% of them declare the satisfaction level as very good. The analysis showed that 52% of the card holders declare the relevancy of card facility by bank as very relevant. The large number of users feels easy to use card at ATM and POS terminals with respect to time, money and service.

The study of the time taken by card holders to withdraw money at ATM revealed that the card holders are running the ATM system smoothly. The study of the use of cards

of other banks reveals that users want to have easy accessible terminals. The study of Supplementary card process reveal that large number of users are not acquiring but are using separate card through separate account numbers. Non working problem of ATM is being faced by customer in some cases. The study of the problems faced by card holders in the areas of ATM functioning reveals that 24% faced non working in non banking hours where as high percentage of customer of this study are not facing any problems. Since all the shops of the city are not accepting cards to purchase through the POS terminal higher percentage of customer made less than 20% of their purchase through cards. The customers should have the knowledge of card frauds that they are using. The study of the knowledge of card frauds reveals that higher percentages of customer are unaware of it.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

5.1 Summary

Technology has inarguably made our lives easier. It has cut across distance, space and even time. One of the technological innovations in banking, finance and commerce is the Electronic Payment system. Electronic payment system has been emerged as a new concept in the field of banking to solve the problems generated by complex transaction and increased complexities of management due to industrial and technological revolution.

Electronic Payment System is a means of making payments over an electronic network or media such as the Internet. Today, many users make payments electronically. Hundreds of electronic payment systems have been developed to provide secure Internet transactions. Electronic payment systems are generally classified into four categories: credit card and debit cards; electronic cash; micro payment systems; and session-level protocols for secure communications. A secure electronic financial transaction has to meet the following four requirements: ensure that communications are private; verify that the communications have not been changed in transmission; ensure that the client and server are who each claims to be; and ensure that the data to be transferred was, in fact, generated by the signed author. To meet these objectives, every electronic payment system developed depends on some type of encryption or utilization of digital certificates.

Electronic card is the plastic card issued by a bank with a magnetic stripe that holds machine-readable identification code. These cards are used for electronic commerce (with magnetic stripe readers or via Internet) and for banking transactions through automatic teller machines (ATM). Two main types of cards are credit cards (which allow drawing of funds up to an approved credit limit) and debit cards (which allow drawing of funds up to the available balance in cardholder's account).

Electronic Payments (e-payments) refers to the technological breakthrough that enables us to perform financial transactions electronically, thus avoiding long lines and other hassles. It is reflected that Electronic Payments provides greater freedom to

individuals in making various payments and purchases at unconventional locations and at whichever time of the day, 365 days of the year. One of the alternatives of e-commerce payment systems at some countries are electronic cards. In fact, like many other studies, present study also reveals that the smart card based e-commerce payment system is best and it is expected that in the future smart cards will eventually replace the other electronic payment systems. Other alternative, given the limited users bases, e-cash is not a feasible payment option. Thus, there are number of factors which affect the usage of e-commerce payment systems. Among all these user base is most important. Added to this, success of e-commerce payment systems also depends on consumer preferences, ease of use, cost, industry agreement, authorization, security, authentication, non-refutability, accessibility and reliability and anonymity and public policy.

After the restoration of democracy, the Government of Nepal launched an economical liberalization policy. This has led to an increasing number of commercial banks in the country, due to such increment of commercial banks, competition also increased among them, which have resulted in enhanced services to the customers getting more advantage that is competitive. This is only possible through proper information technology. There are altogether 31 commercial banks in Nepal. NABIL Bank Limited was established in 1984 as a joint venture bank with Dubai Bank Ltd of Dubai. NABIL bank is the first joint venture bank to commence operations in Nepal. This bank is the leader in bringing the very best international standard of banking practices, products & services. The Durbarmarg branch is a full-fledged Branch proving the monitoring feature of Card & electronic payment system through card division of the Bank and is providing full array of E-Banking Services.

Nabil Bank has already introduced a computer based information system and is providing its services through fully computerized branches and well trained personnel. The entire branches of Nabil Banks use Finacle banking software, one of the latest banking software in banking sector of Nepal and offers Any Branch Banking Services (ABBS). Telex and SWIFT are other modes of communication for efficient and effective transmission of information and transaction. At Durbarmarg, Card division is functioning well for the service of different types of cards as well as the E-banking services to the customer.

At Nabil the IT department handles all the hardware and software need of the bank. The card division plays the vital role in the organization in general and e-banking in particular. The card division satisfies the diverse needs through a variety of services such as Credit Cards like MasterCard Local, Master Card International, VISA Local, Diners Card as well as Debit Cards like VISA Electron / ATM Card, NABILPREPAID / NABILKOOLCASH Card along with their Operational Control, and Transaction Processing.

Card division is diversified over many levels by management. This division also supplies decision makers with facts, it supports and enhances the overall decision making process regarding the e-banking and card business. Card division also enhances the performance of cards and electronic payments throughout an institution and abroad. Data of the card division reflect the way institution's activities about card business are monitored and information is distributed to management, employees, and customers.

5.2 Conclusion

Many developed countries today have entered into a kind of cashless transactions. Electronic cards have almost become a synonym for cash. As well as convenient, cards offer consumers an easy way to track expenses, which is necessary for both monitoring personal expenditures and the tracking of work-related expenses for taxation and reimbursement purposes. These days cards are accepted worldwide, and are available with a large variety of limits, repayment arrangement, and other perks (such as rewards schemes in which points earned by purchasing goods with the card can be redeemed for further goods and services or credit card cash back).

Hence most of the frequent travelers who visit abroad must have encountered much bitter experience without a card. In most of the big hotels and restaurants of the developed nations, card holders are materialistically valued more than those who produce hard cash. Cards are not only used to make purchase and withdraw cash but a range of other services are also available, to name a few are cash advances, making a utility payments, securing all the security data , privilege award etc, and most importantly, above all, it is very helpful to cope with emergency situations. Card business is one of most vigorously sought after and growing business in the world.

Credit card is a plastic card which allows the holder to purchase goods and services on credit and is mostly issued by banks or financial institutions. It is such a service where cardholder can enjoy credit facility even though he doesn't have sufficient balance in his account. It is the concept of buy now and pay later. Each month, the credit card user is sent a statement indicating the purchases undertaken with the card, any outstanding fees, and the total amount owed. After receiving the statement, the cardholder may dispute any charges that he or she thinks are incorrect otherwise, the cardholder must pay a defined minimum proportion of the bill by a due date, or may choose to pay a higher amount up to the entire amount owed. The credit provider charges interest on the amount owed (typically at a much higher rate than most other forms of debt).

Cards also minimize the risk associated with carrying money like loss of money, pick pocketing etc and also offers many discount and award schemes. From a merchant's points of view, it will increase the sales of the merchant as the trend today is of plastic money and also he gets rid from taking collected money to banks for deposits. Everything happens electronically and the merchants account gets credited very shortly after every purchases. Also it provides him safety from thefts by its own employee as well as looters.

Even though electronic card has so many advantages, the card business in Nepal has not gained its momentum as it has in other nations. Card business prospers in a volume driven nation where consumer financing plays a vital role to boost the economy of the nation. As stated earlier Nepalese populace have not yet developed their banking habit, they are mostly happy with hard cash and in most of the cases, even our highly educated ones, do not at all have the sagacity regarding cards. Another important factor which has constrained card business in Nepal is the acceptance infrastructure. Most of the merchants are departmental stores, travel agencies, big hotels etc; most of which cater the needs of tourist and higher or upper middle class people. Nepalese people are still not used to in visiting sophisticated departmental stores, travel agencies, and big restaurants though the trend is slowly increasing. Cards are not accepted at those places where most of the fixed income earners go for shopping such as Ason, Fancy Stores, our local grocery stores etc. Again unlike other nations, cards in Nepal cannot be used for making payments for regular expenses such as utility fees, school fees, membership fees etc though bank

has started online banking and acting as agents for utility payment collections in money. Hence, acceptance structure is an important factor and in Nepal's case, lack of adequate acceptance is one of key factor which has hindered the growth of card business. The positive aspects can be stated as these days debit card users were increasing day by day due to increase in the number of Banks with ATM service.

Since the usage of card is still considered as a novel concept in Nepal its usage is primarily limited to a selected people, so an in-depth study and research has to be made on this sector. This research has been undertaken in that sense and it attempts to determine ways of retaining present customers while attracting future customers as well. The card division of Nabil bank was analyzed in this research. For the analysis of the current system DFD, ER, Flowcharts are used and due to confidentiality maintained by banks, a complete picture could not be drawn. However, direct interviews and questionnaires were also held and the outcomes are displayed which reveals the current situation and future prospects of Electronic payment system through card division of Nabil Bank as well as the problems facing in the card market are also analyzed.

Risk is the major element of any kind of business. Card business is also a risky business. Though profitability is very high, the default chances from cardholder is also very high because cards are issued merely on the basis of salary sheet and few identification documents unlike in foreign countries where people can be easily traced by their Identification Number or Tax Code. In this high competition of card business NABIL has high risk in along with high growth rate in case of merchant. It has been able to maintain its growth rate in card issuance. It may be attributed to issuance of the one of the cheap domestic credit card it offers in the market in terms of annual and subscription fees, the various upcoming products and the offers and various marketing strategies the bank has adopted. Growth rate or movement of card business is different from each other and from previous year as well. Competition is not that fierce but still competition exists in terms of low fees and penal, cash advance fees, wider acceptance and different prize offers and schemes like travel and medical insurance, loyalty programs, discounts etc.

Although the card business started in Nepal more than a decade now, the industry has not been able to fully penetrate the market. Credit card still remains the niche area in banking which only few banks have managed to take up. The acquiring side has been

badly hurt by the ongoing slump in the tourism sector and particularly the instable political front. Besides these obvious reasons, one critical factor which negatively governs the credit card business is the societal factors. But the recent market growth of banks in terms of VISA debit cards and increased banking practice, we can only look for the brighter side in the card market to come in the future. The recent influx of commercial banks in the country and increased competition to provide excellence in banking and extra banking facilities only point out toward higher prospect of this card business in the days to come.

The profitability of card business in Nepal cannot be undermined. Banking habit among people is increasing and debit card market is also expanding in very high speed. This may be due to banks and organizations focusing on cultivating the banking habits for their employees by making salary payments through bank account opening which is a rather win-win situation for all. With it the infrastructure is also building and POS machines are also increasing. From the statistical analysis and outcomes of questionnaire also, it is obvious that card business is in optimistic track. In spite of the high profitability in credit card business only five banks are involved in this business among 30 commercials banks running in the country. The trend of credit card is increasing which becomes evident with the steady and positive growth rate that the banks involved in card business have been able to maintain amidst all the happenings in the country. All banks are increasing the number of their cardholders and merchants so there is high prospect and growing market for card business especially acquiring business nowadays. People are being aware on the advantages of holding a card which is gradually progressing in industrialization process and increasing income level among the higher and middle class society. So the possibilities of other banks or financial institutions entering in this field can not be underlined. So, in conclusion, Nepalese card industry and electronic payment system is moving ahead and in increasing trend. We can only hope for the situation of country to improve to fuel this business of in Nepal.

5.3 Recommendations

There are a wide variety of payment systems available to a consumer today. However there arises a need to provide a single universal payment system that provides the

advantages of all the existing payment system. In an effort towards this direction, an organization called Joint Electronic Payment Initiative (JEPI) has been formed. The objective of this group is to define a set of protocols and interfaces that can support the use of a wide variety of payment methods for network commerce.

Nepal too needs to develop the banking habits of its people. We just cannot make any more unsubstantial and detrimentally indigenous excuses for not having credit card. Nepal just cannot isolate itself with the fast moving world, where everything is changing day by day. The world is heading towards e-business and Nepal too is moving in the same direction. Without payment cards e-commerce is almost handicapped.

Although the business is heavily dependent on the external factors, which are not under the control of the card players itself, every step should be taken to boost the immature local market. It has been seen that the issuance business is more profitable than the acquiring business and since the acquiring business is mostly dependent on the performance of tourism industry which itself is facing the toughest time, possible efforts should be initiated by banks to get local customers in the card business by luring them by the associated core benefits of credit cards and introducing more and more attractive scheme and packages.

Further Banks can take the following steps for improving the services of Electronic payment system and E-Banking. The benefits of the E-Banking has to be explored to the current and potential customers so as to increase the use of Internet Banking among the customers. Since there is no payment gateway in Nepal, Nepalese e-business like www.nepalirudraksha.com, thamel.com. munchahouse.com should rely on gateway using international bank's account like yumori. Different Banks have to take initiative in formulation of strong cyber laws with Central Bank and concerned Authority. Customers need to be taught to avoid public-access Internet terminals, select appropriate passwords, and stop transaction when presented with an unexpected Internet screen or an unusual request for confidential information. Effective and Efficient Security systems have to be installed to make the transaction more secured. Establishing one Central Vigilance Commission (CVC) and direct all banks to compulsorily offer Anywhere Branch Banking System (ABBS) to their customers.

Advertising has to be done through Newspaper, Televisions, and Radios etc to make aware to the public for using the Internet banking services of the bank. Back up of the information has to be done in case of any damages by any cause. Proper training to the staffs has to be done in order to add value to the customers' satisfaction. Updating with the technologies had to be done to keep the pace with changing environment. Bank has to open their branch in the industrial and other areas of Nepal to provide the services of Internet banking to the customer and making aware of Internet banking services provided by their banks. Internet banking has the potential to provide a useful service to customers and banks alike. However, unless more consideration is given to the design of secure applications that can operate within an un-trusted environment, Internet Banking will remain an activity that is associated with a significant level of risk. Further research should be made in this area to see the effectiveness of the Finacle in the Nabil Bank Ltd. In the present context of globalization and technological age, electronic card plays a vital role in financial sectors as well as in personal life. On the basis of study following recommendations are suggested.

Gender wise analysis showed that 72% of them were male and 28% of them were female. It clearly depicted that female cardholders should be tapped providing more facilities to them.

Our questionnaire to card users revealed that 44% of ATM cardholders were in the age group of 20-29 years and according to the study of the Income level of card holders 32% of the card holders belongs to the income group of below 10,000/-. The education level of card holders highlights that majority of the card holders were of the education level of Bachelor's Degree, the age where most of the people enter into earning phase. They spend most of their time outside with friends and colleagues. So the bank should come-up with some attractive features to this high percentage targeted group.

According to the study of the Income level of card holders 32% of the card holders belongs to the income group of below 10,000/-. This shows that they may be in the age of 20-29 years whose income is low relative to future earning, since most of them just begin their careers. So bank should launch some easy facility to release cards to these groups of people. It will be better if bank reduce the salary limit of credit card holder from 10,000.

Study of the occupation of the card holders showed that 44% were salaried employees. Salaries of some salaried employees are directly deposited to the banks by their organizations. So bank should launch different scheme for the organization to deposit the salary of their employees through bank account. This will also make that office to start their transaction through the same bank.

According to the influencing factors of ATM cards 60% of ATM card holders were influenced by the bank employees in having a card. Impression of Bank Employees could be the main reason for the bank ranking as major influencing factor. So bank should encourage their staff to use cards providing them with more facility in electronic cards.

Analysis of preference of ATM card holders showed that 40% preferred it for convenience. It reduces carrying large amounts of cash in their wallets, as ATM centers were present almost in all the places. So the bank should try to reduce the disturbance that the card holder might bear like ATM machine should be increased, ATM halt problem should be minimized.

Analysis of place and purpose of usage of cards showed that 52% use it for cash through ATM, 28% use for shopping, 11% use for Bill Payment and 9% use for Traveling. So the number of ATM should be increased in various locations.

Analysis of relevancy of card facility showed that 52% of the card holders declare the relevancy of card facility by bank as very relevant. So, large number of users feels easy to use card and ATM and POS terminals with respect to time, money and service. Therefore, bank should also work to increase the number of POS terminals.

Analysis of Supplementary card processed showed that 72% are not acquiring it. This is because large number of users are using separate card through separate account numbers. So bank should advertise more to its card holder to issue supplementary card.

The study of the use of card of other banks was taken into consideration to know the reason from the customers to get service along with other banks. Analysis of the use of card of other banks showed that 24% of the card holders use other banks for low service fees, 28% customer’s salary was send to the other bank, 16% use because of low interest rate and 32% select because of easy accessible of ATM. This depicted that large number of users are using card of other banks for easy accessible of ATM

terminals. So bank should increase number of ATM at various locations and service charge should be amended.

The study of the problems faced by card holders in the areas of ATM functioning observed that 24% faced non working in non banking hours, 8% faced problems in getting the cards back. So bank should try to amend the problem of ATM that customer has to face. This problem might also be due to power failure, which can be corrected through proper enough powerful inverter or alike.

The study of the expenses through card observed that majority of card holders purchase less than 20% through cards. All the shops of the city are not accepting cards to purchase through the POS terminal. So POS terminal should be increased in numbers.

The study of the knowledge of card frauds reveals that higher percentages of customers are unaware of the card frauds. So bank should advertise as such to aware the card holders about various types of card frauds. According to the recommendation from the bank staff majority of the staff opine to increase the number of ATMs.

Some more recommendation to the banks are follows:

- Debit card account to credit card payment through internet banking is not in operation. Bank should facilitate the payment of the credit card uses through the online process. If the credit card holder is also having account at Nabil Bank with e-banking services the user should pay the credit card expensed amount from his account online.
- Credit limit of the card holder set out from the salary sheet should be upgraded upon request if the customer has the good credit history.
- Account holder should have the facility to deposit the amount in his account through ATM also. This service needs to be implemented in Nabil ATM.
- Nabil Bank should provide the facility to its customer about Cheque Book Request and Statement Request through ATM. So that customers can simply request these from nearest Nabil Bank ATM. The next working day, their check book/statement will be ready for collection.

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APPENDICES

APPENDIX -I

Questionnaire No. 1

For the Card Members

Please tick mark on the following question answers

1. Gender:
   ( ) Male ( ) Female
2. Age:
   ( ) below 20 ( ) 20-29 ( ) 30-39
   ( ) 40-49 ( ) above 50
3. Level of Education:
   ( ) 10+2 ( ) Bachelor ( ) Master ( ) Doctorate
4. Personal Monthly Income:
   ( ) < 10,000 ( ) 10,000-20,000 ( ) 20,000-40,000 ( ) >40,000
5. Occupation:
   ( ) Student ( ) Personal Business
   ( ) Salaried Employees ( ) Any other (*Please Specify*)
6. Influencing factor:
   ( ) Bank Employees ( ) Friends ( ) Advertisement ( ) other
7. Preference of card holders:
   ( ) Convenience ( ) Flexibility ( ) Security
   ( ) Prestige ( ) other
8. What kind of Debit / Credit card do you possess of Nabil Bank?
   ( ) VISA ( ) Master Card
9. How often do use your card to purchase?
   ( ) Once in a month ( ) Twice in a month
   ( ) Thrice in a month ( ) Four or more times
10. Where do you usually use your electronic Card & purpose?
    ( ) Travelling ( ) Shopping ( ) Bill Payment ( ) Cash through ATM
11. How satisfied are you with the card you possess?
    ( ) Very good ( ) Good ( ) Satisfactory ( ) Not Satisfactory

12. How did you find the relevancy of facility of card adopted by banks?

( ) Very relevant ( ) Not so relevant ( ) Neutral

13. How much time will you invest to withdraw money at ATM?

( ) 1 minute ( ) 2 minute ( ) 3 minute ( ) 4 minute

14. Time taken for solving complaints for ATM card holders:

( ) No complaints ( ) very quickly ( ) within 3 days

( ) within a week ( ) more than a week

15. Satisfaction in limit made by bank

( ) Satisfied ( ) Not Satisfied ( ) Neutral

16. Supplementary card possessed

( ) Acquired ( ) Not Acquired

17. If you also use the card of other banks then what is the reason?

( ) Low service fees ( ) Office send the salary

( ) High Interest rate ( ) easy accessible ATM

18. Problems faced by card holders in the areas of ATM functioning?

( ) Getting the cards ( ) No Problem ( ) Transaction Limits

( ) required help in using card ( ) Non working in non banking hours

19. Of your purchases what percentage is done through card?

( ) < 20% ( ) 20%-40% ( ) 40%-60%

( ) 60%-80% ( ) > 80%

20. Do you have any idea about fraud in card? If yes please tick mark on the types of fraud known to you?

( ) Stolen cards ( ) Counterfeit cards ( ) Magnetic Stripe fraud ( ) No Idea

Thank You

APPENDIX: II

Questionnaire No. 2

Questionnaire for opinion survey of staffs of Nabil Bank

The following questionnaire is designed to get opinion about the Card section from the bank's staff. The main objective of questionnaire is to survey that whether the bank's staffs are satisfied or not with the current service of the card section. **Please tick mark on the following question answers**

1) Please specify your level of management.

   ( ) Top Level ( ) Middle Level ( ) Lower Level

2) How do you rate your level of satisfaction with various aspects of the Card Section & ATMs of Nabil Bank?

   ( ) Satisfied ( ) Not satisfied ( ) Neutral

3) How often do you have access to electronic cards of Nabil Bank?

   ( ) Regularly ( ) Often ( ) Rarely

4) In your opinion, how effectively card is being used in transaction process?

   ( ) High ( ) Moderate ( ) Low

5) How often do you get complain from the card user?

   ( ) Regularly ( ) Repeatedly

   ( ) Rarely ( ) Never

6) How would you rank your Knowledge about the entire features of Nabil ATM and use of the features?

   ( ) Yes ( ) No

7) How would you rank the percentage lowered in the flow of customer at the bank to withdraw cash due to ATM

   ( ) Greater than 70% ( ) 70 - 60%

   ( ) 60 - 50% ( ) Less than 50%

8) How often do you face the uncomfortable features/issues of Nabil ATM:

   ( ) Regularly ( ) Rarely ( ) Never

9) Have you ever been asked about the electronic banking from the customer?

( ) Yes ( ) No

10) Recommendation made by staff:

( ) Increase the Number of ATMs and its locations

( ) User Friendly Machine

( ) Better Customer Quality

( ) Other if any ……..

Thank You

APPENDIX: III

Questionnaire Prepared for Interview with Concerned Personnel

The following questionnaire is designed for interview with concerned personnel of Nabil Bank; Questionnaires are put as per requirements. Objective of this questionnaire is to gain knowledge on appreciation of the existing system.

1. Why the name of bank was changed to Nabil bank?
2. At present, what facilities and services are provided by the bank?
3. What technologies are being used at the bank?
4. How many employees are working for continuously development of the system?
5. What kind of training program is used? Are they effective? Any research?
6. Are the new schemes liked and appreciated by the customers? Is it available in all the branches?
7. What are the basic objectives of the proposed/current system?
8. What is the volume of the data to be processed?
9. Is there any cost and benefit analysis carried out before introducing the current information system? Who conducted it and what is the result of the analysis?
10. What are the benefits expected from the system?
11. How many computers are under operation in card section?
12. How many computer experts are there in card section?
13. In an organizational chart, where the card section fall in?
14. What types of hardware are currently used by the bank? Is it sufficient for the effective Information System? If not, what types of hardware should be installed?
15. What types of data is used by the system as input and how the system processes it and what type of output (report) are generated by the system? Is this a regular work of the current system?
16. Is there any defect of the current system? (In your words)
17. What are the problems faced by your organization?
18. How do you coordinate different divisions of your section?

19. Which level of management does engage in this system?
20. How the managers perceive or believes in the report generated from the system?
21. Who are the end user of the system and how are they taking benefits from it?
22. What are the limitations of the current system?
23. What kind of networking is under operation?
24. How is a procedure performed? Could it be performed better, more efficiently or less expensively in some other manner?
25. Do you think there is possibility of improving the system for more convenient use as per your requirement for better decision making? What can be done?

APPENDIX: IV

Comparison of Electronic Payment Systems

Features	Online Credit Card Payment	Electronic Cash	Electronic Cheque	Smart Cards
Actual Payment Time	Paid later	Prepaid	Paid later	Prepaid
Transaction information transfer	The store and bank checks the status of the credit card	Free transfer. No need to leave the name of parties involved	Electronic checks or payment indication must be endorsed	The smart card of both parties make the transfer
Online and offline transactions	Online transactions	Online transactions	Offline transfers are allowed	Offline transfers are allowed
Bank account involvement	Credit card account makes the payment	No involvement	The bank account makes the payment	The smart card account makes the payment
Users	Any legitimate credit card users	Anyone	Anyone with a bank account	Anyone with a bank or credit card account
Party to which payment is made out	Distributing Bank	Store	Store	Store
Consumer's transaction risk	Most of the risk is borne by the distributing bank, consumers only have to bear part of the risk	Consumer is at risk of the electronic cash getting stolen, lost, or misused	Consumer bears most of the risk, but the consumer can stop check payments at any time	Consumer is at risk of the smart card getting stolen, lost or misused
Current degree of popularity	Credit card organizations check for certification then total the purchases. Therefore, it can be used internationally, and is the most popular payment type	Unable to meet financial internet standards in the areas of expansion potential and internationalis m.	Can not meet international standards, therefore its not very popular	Credit card organizations check for certification then total the purchases. Therefore it can be used internationally, and is becoming more widely used.

Features	Online Credit Card Payment	Electronic Cash	Electronic Cheque	Smart Cards
Anonymity	Partially or entirely anonymous	Entirely anonymous	No anonymity	Entirely anonymous, but if needed, the central processing agency can ask stores to provide information about a consumer
Small payments	Transaction costs are high. Not suitable for small payments	Transaction costs are low, suitable for small payments	Allows stores to accumulate debts until it reaches a limit before paying for it. Suitable for small payments	Transaction costs are low. Allows stores to accumulate debts until it reaches a limit before paying for it. Therefore, it is suitable for small payments
Database safeguarding	Safeguards regular credit card account information	Needs to safeguard a large database, and maintain records of the serial numbers of used electronic cash.	Safeguards regular account information	Safeguards regular account information
Transaction information face value	Can be signed and issued freely in compliance with the limit	Face value is often set, and cannot be changed	Can be signed and issued freely in compliance with the limit	Can be deducted freely in compliance with the limit
Real/Virtual world	Can be partially used in real world	Can only be used in the virtual world	Limited to virtual world, but can share a checking account in the real world.	Can be used in real or virtual worlds.
Limit on transfer	Depends on the limit of the credit card	Depends on how much is prepaid	No limit	Depends on how much money is saved.
Mobility	Yes	No	No	Yes