CHAPTER - I

INTRODUCTION

1.1 Background of the Study

In today's business world, multinational corporations, computerization is a must for a business to be successful. However, management information systems began with simple manual systems such as customer databases on index cards. As early as 1642, the French mathematician and philosopher Blaise Pascal invented the first mechanical adding machine so that figures could be added to provide information. Almost two hundred years later, Charles Babbage, a professor of mathematics at Cambridge University in England, wanted to make a machine that would compute mathematical tables. He attempted to build a computing machine during the 1880s. He failed because his ideas were beyond his technical capabilities, not because the idea was flawed. Babbage is often called the father of the computer. With the advent of the computer, management information systems became automated.

In the late 1890s, because of the efforts of Herman Hollerith, who created a punch-card system to tabulate the data for the 1890 census, it was possible to begin to provide data-processing equipment. The punch card developed by Hollerith was later used to form a company to provide data-processing equipment. This company evolved into International Business Machines (IBM). Mainframe computers were used for management information systems from the 1940s, 50s, 60s, and up until the 1970s. In the 1970s, personal computers were first built by hobbyists. Then Apple computer developed one of the first practical personal computers. In the early 1980s, IBM developed its PC, and since then, the personal computer industry has mush roomed.

Almost every management information system revolves around some kind of computer hardware and software.

1.1.1 Management Information System (MIS)

MIS is a system consisting of people, machines, procedures, database and data models as its elements. The system gathers data from the internal and external sources of an organization process it and supplies it to assist managers in the process of decision making. Here, the word “system” implies that MIS follows a system approach, which means a holistic approach. It is based on the concept of synergy, where the output is greater than the sum of its parts. Thus, it clearly indicated that MIS is not a single system rather than it is an integrated system where parts fit into and overall design.

In other word “MIS is an automated system which presents information both internal and external to the business that aids in making a specific set or routine decisions”.

MIS is the combination of three components:

1. Management
2. Information
3. System

Management is usually defined as planning, organizing, directing, and controlling the business operation. This definition, which evolved from the work of Henri Fayol in the early 1900s. Management is the process of allocating an organization's inputs, including human and economic resources, by planning, organizing, directing, and controlling for the purpose of producing goods or services desired by customers so that organizational objectives are accomplished. If management has knowledge of the

planning, organizing, directing, and controlling of the business, its decisions can be made on the basis of facts, and decisions are more accurate and timely as a result.

Information

Information is what is used in the act of informing or the state of being informed. Information includes knowledge acquired by some means. Decision-making today in any field is very complex. Information plays vital role for the operations and management of any organization. Both strategic and tactical decisions rely on timely and accurate information. Therefore MIS provides an integrated information system, which provides management with needed information on a regular basis.

The information provided by MIS can be used for various purposes,

- strategic planning
- delivering increased productivity
- increasing the understanding of customers' needs
- Facilitating business and process re-engineering.

MIS can also be used across the organization as an information utility to

- meet regulatory and legislative requirements
- support policy making
- support research and development
- support consistent and rapid decision making
- enable effective and efficient utilization of resources
- provide evidence of business transactions
- identify and manage risks
- evaluate and document quality, performance and achievements

The information needs and decision making activities of the various levels of management.

Senior Management: Strategic business direction

- information for strategically positioning the organization,
- competitive analysis and performance evaluation,
- strategic planning and policy,
- external factors that influence the direction etc
- allow executives to see where a problem or opportunity exists

Mid Level Management: Organizational and operational functions

- information for coordination of work units
- information for delivery programmes
- evaluation of resources usage
- budget control
- problem solving
- operational planning etc

Mid Level Management: Programme Management within units

- information for implementing programmes
- information for managing programmes
- management of resources usage
- project scheduling
- problem solving
- operational planning etc

Line Management: Activity management

- information for routine decision making
- information for problem solving
- Information for service delivery etc.

System

A *system* is a combination or arrangement of parts to form an integrated whole. A system includes an orderly arrangement according to some common principles or rules. A system is a plan or method of doing something.

A system is a scientific method of inquiry, that is, observation, the formulation of an idea, the testing of that idea, and the application of the results. The scientific method of problem solving is systems analysis in its broadest sense. Data are facts and figures. However, data have no value until they are compiled into a system and can provide information for decision making.

Management information systems are those systems that allow managers to make decisions for the successful operation of businesses. Management information systems consist of computer resources, people, and procedures used in the modern business enterprise.

In the conclusion, MIS is 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 an effective decisions for planning, directing and controlling the activities for which they are responsible. The actual process will involve the collection, organization, distribution and storage of organization wide information for managerial analysis and control.

1.1.2 Payroll

Man is a social animal and has endless wants and needs. The days of the primitive man are gone. Gone too are the days when survival meant just food, clothing and shelter. Technology has changed the way one live. The invention of currency has ushered in a new breed of humans. Most business transactions are clinched by fiscal exchanges. To sustain themselves, people put in hours of work. The average adult spends approximately one-third of his or her life working. Businesses are booming. A considerable proportion of the expenditure of the business is on the compensation given to its employees. The regular wages or other compensation provided to the employees is referred as Payroll.

Payroll is the second major element of cost in most manufacturing undertaking. The term remuneration is used to cover the total monetary earnings of employee. Wages are paid to the workers as a reward of their labor and services. Thus wages are paid to the workers either for the time spent by them in an organization or the goods or services produced for it. So there are two basic system of remuneration labor. One is related to the time and the other to the quantum of work.

The following expenses are included under labor cost:

I. Pecuniary Benefits

Remuneration paid in cash to labor for the service rendered by his called pecuniary benefits. Basic salary, dearness allowance, local allowance, remote allowance, food allowance are the examples of pecuniary benefits.

II. Deferred Monetary Benefits

Arrangement of extra monetary benefits to be paid on the expiry of a stipulated period instead of paying immediate cash for his service is

called deferred monetary benefits. Gratuity, pension, old citizen allowance, employees contribution towards provident fund are the examples of deferred benefits.

III. Fringe or Non pecuniary Benefits

Benefits provided other than cash are called fringe or non-pecuniary benefits. Lunch or dinner, accommodation, entertainment, educational expenses or medical facility provided by the employer to his employees either free of cost or on concession basis are the examples of fringe benefits.

Some employees may be paid a steady salary while others are paid for hours worked or the number of items produced. All of these different payment methods are calculated by a accountant/payroll specialist and the appropriate paychecks are issued. Companies often use objective measuring tools such as timecards or timesheets completed by supervisors to determine the total amount of payroll due each pay period. It becomes necessary for an organization to maintain an accurate account of the amount spent on salaries and wages. How does one go about determining the amount that is to be compensated? What are the factors that determine the compensation given to its employee? Such considerations are based on two aspects- internal adequacy and external adequacy.

1.1.2.1 Compensation Factor

It is necessary to consider that the salaries adequate for a decent standard of living. The employee should be able to afford food, clothing and shelter, medical treatment, children's education and entertainment. This is referred to as internal adequacy.

Salaries across companies with the same background requirements for a specific job normally conform to a standard. This is referred to as external adequacy. For instance, salaries of computer professionals in the same cadre across different companies conform to a standard. Apart from these factors, government legislation and trade unions also influence compensation of and employee.

Accountability Factor

The payroll department of an organization maintains the record of:

- The assignment
- The departments of the employees, and
- The monetary reimbursements for the employees

To do that, the Department:

- Records the total time spent by each employee on his or her job, and accordingly compute the employee's earnings.
- Prepares the payroll for each department, showing the total amount earned for the period by each employee.
- Keeps track over time, leave etc.
- Keeps track of any deductions and savings made in the salary to prepare the paycheck.
- Produces regular reports for the management giving the total expenditure incurred on compensation.

Management needs to know details like department-wise expenditure, region-wise expenditure, and so on, to effectively manage the organization.

1.1.2.2 Types of Employees

Employees can be divided into full-time workers, part time workers. Their salaries can be given monthly, weekly, daily or hourly. A payroll system needs to consider all of these factors.

To generate employee paychecks, the payroll department needs to maintain current, quarterly and yearly compensation history of each employee. Depending on the position in the hierarchy of an organization, a salaried employee receives a fixed amount as compensation. For convenience, let us refer to this compensation as the basic compensation/ basic pay. Basic pay is a component of the paycheck.

1.1.2.3 Allowances

An employee is given various allowances that form a part of the salary structure. Allowance is the amount of money that an employee gets above the normal salary. Most of the allowances are calculate as a percentage of the salary. Let us now look at the typical allowances that employee gets.

Dearness Allowance: It is the name given to the allowance that is provided because of ever increasing cost living. This is because almost all countries have a high degree of inflation, and the cost of living keeps on going up. So it is the sort of compensation provided by the organization.

- Accommodation Allowance: If the employee lives in the apartment, then it would be difficult to pay for accommodation with a given salary, so company allows compensation for accommodation.
- Conveyance Allowance: It is compensation provided by the organization for transportation.

- City Compensatory Allowance: Different city have different standard of living, so such type of compensation is provided to the employees living in 'high cost' area.
- Leave Travel Allowance: At times, the employees are fully or partially compensated for their vacation.
- Medical Allowance: It is the compensation provided by the organization for the cost of treatment at the time when employee falls ill.
- The total of the basic-pay and all the allowances that an employee earns are called the Gross Pay.

1.1.2.4 Deduction

There are standard deductions made from the gross compensation payable to an employee. Some of these deductions are as follows:

- As and employee's salary increases, he or she falls under the taxable bracket. The employee is taxed by the government on the income, which is referred to as income tax. Income tax is deducted for all employees who fall in the taxable category.
- When an employee does not attend office, how does this affect the employee's compensation? Every organization has its own rules that determine how many days an employee can stay away from work, and still be paid for it. Normally, companies give casual leave, earned leave and privilege leave (depending on the length of service), medical leave and maternity leave. Any leave taken beyond limit leads to leave without pay. During Leave without Pay, the employees are not paid for the period of absence.
- In most countries, a certain percentage of the gross-pay is deducted by the organization, and saved in an account as providence for future. An equal

amount is contributed by the organization to the account. This is a kind of forced saving and is primarily for the welfare of the employee. In some places, this is referred to as Provident Fund.

- Many employees take loans from their companies, which they pay back fully or in installments. The repayment amount appears as a loan deduction on the paycheck.

For the Payroll Processing:

1.1.2.5 Attendance

Attendance refers to the days or hours that the employee spends at the job. The methods to record employee attendance details are:

- Time Tickets: They indicate the time spent on a specific job. A time ticket contains employee number, name, department, regular work hours, overtime hours, and so on.
- Attendance Register: This contains details like employee number, name and department, and records the time when the employee arrives for work and time when he or she leaves.

Time tickets are used for hourly workers whereas the attendance register is used for permanent or semi-permanent type workers.

After the employees retire, how do they sustain themselves? The organization compensates all employees who retire after rendering service. The total retirement compensation can be taken upon retirement, but is usually taken on a monthly basis, Pension. There are various schemes for the retired, and some of them are governed by the laws of the country. One such scheme is the pension scheme. It is paid only to regular employees. Most organizations stop the pension after the deaths of the

employee.

Net Earning (Take-home Pay) After all the deductions have been made from the gross-pay, what the employee finally gets is known as the net earnings or the take-home pay.

1.1.3 Payroll System

Pay is the key to work. It is very important for the organizations as well as employee's points of view. This important calculation cannot be error-prone or miss-timed. So, with the help of MIS –Payroll system can enhance speedier and accurate generation of the payroll to the employee of the organization. The Payroll system is designed to make the payroll function as convenient as possible.

The Payroll System maintains detailed records of all employees, and permits authorized personnel to obtain a variety of reports based on:

- An individual employee, or
- A selected group of employees

The payroll data file should contain information on:

- Each employee's profile
- Each employee's pay history
- Pension Plan
- Vacation time accrual
- Sick time accrual
- Total Earning
- Loan Details Deductions

- Net earning

1.1.4 Introduction to the Company

Arte Namuna Housing Pvt. Ltd.

Arte Namuna Housing Pvt. Ltd is established in 2005 AD. It is located in the heart of traditional city, Bhaktapur – Nagpokhari. It is a Spanish Nepalese Joint Venture company, The company aims to conserve traditional houses, temples, heritage and to build community of traditional styled houses and apartments with modern amenities. The company has built many houses, apartments, school, and temples with maintaining traditional styles with modern amenities. To cope with the changing Nepalese lifestyle, considering the fact the promoters of Arte Namuna Housing Company has focused to build apartments in the culturally rich places like in Bhaktapur, Panauti, Sanga, Phulbari and in many parts of Kathmandu etc.

1.1.4.1 About Arte Express

Company History

ARTE EXPRESS S.A is a family business founded in March of 1985 with the objective to recover and to restore unique and important buildings in historic city centers in Spain and in Peru.

In the past 23 years it has become the head and owner of companies instigating and handling rehabilitation and restoration projects in Madrid, Bilbao, Barcelona, Palma de Majorca, Begur in the north of Catalonia, Bhaktapur in Nepal and Lima in Peru.

1.1.4.2 Branches of Arte Express

Arte Express SA (Palma de Mallorca)

Building Calatrava SL (Palma de Mallorca)

Casas Goticas Del Mediterraneo SL (Palma Da Mallorca)

Building Express Barcelona SL (Barcelona)

LE CASE DI ALDO SL (Begur – Norte de Cataluna)

Arte Namuna Housing (Bhaktapur Cultural Leisure Center – Bhaktapur, Nepal)

Arte Express Y Compania SAC (Lima - Peru)

Arte Express Decimononico SAC (Lima - Peru)

Palacio De Lanacaster BV Y Compania S.C.

Arte Express has chosen various places in the world in which to initiate, developed and mature projects of acquisition, restoration, construction and hotel conversion, as well as work on new projects in environment fitting the following five criteria:

Nepal is one the most culturally rich country with demographic variation and large number of domestic migrations, from rural as well as townships. People are moving into the valley due to various reasons such as in pursuit of job hunting, seeking better quality of life, security concerns and so on. The increase in the population and their business influence the growing demand for better area to make residential area. The real state business is the most on demand business at this time. The business is flourishing and due to its unique features – merging of traditional and modern facilities it has succeeded to attract from higher level middle class family to ministers, foreigners, foreign diplomats etc.

The company in Nepal is growing rapidly and so is the number of staffs increasing rapidly with different organizational and management levels – permanent, non

permanent, engineer, designer, architect, worker, labor, mason etc. It is evident that there is a big challenge for the company to improve the present position to make strong gains in the present competitive external and internal environment.

1.1.4.3 Presently Running Projects of the Company:

Section 1.01 Sanga

Section 1.02 The company owns the area of 373.732.2 Square feet in Sanga, the land is located on top of the green mountain with the access of road - Highway. The company has planned to built 100 houses in the traditional style with modern facilities.

Nag Pokhari 1, Bhaktapur: Apartment Project

The project site is located in Nag Pokhari, Bhaktapur. It has an area of 6348 Square feet. The company has planned to build 26 apartments with underground parking area and two common court yard.

Nag Pokhari 2, Bhaktapur – Apartment Project

The Nag Pokhari 2 project is located in Nag Pokhari, Bhaktapur. The company has planned to built 12 apartment traditional style with modern amenities with one common courtyard.

Durbar Square Project, Bhaktapur

Durbar square project is located at the most exclusive and sophisticated area of Bhaktapur- Durbar Square (Palace Area) World Heritage Site of UNESCO. The

company owns 1275.56 Square feet area and has planned to built the house is suitable for office purpose.

1.2 Statement of the Problem

Payroll System, the first basic need of every Organization, is wished to be judicious and precise. The company uses semi- computerized Payroll System made by the Account Officer himself in excel sheet. The present system is only used for simple Payroll Calculation. Housing company being huge organization employing more than 100 staffs (including workers, plumber, masons, electricians) and as the company is growing larger with time, it needs a better Payroll System for better Management, which can handle large Database and to well organize the System. Development of an advanced information system such as MIS (Management Information System) will certainly enhance the efficiency and effectiveness of the payroll system of Arte Namuna Housing. This study has been carried out to facilitate the design of a proper MIS (Management Information System) for a operation in the company.

1.3 Objectives of the study

The basic objective of this study is to study Payroll System in Arte Namuna Housing. The specific objectives of this study are as follow:

- To examine existing payroll system of Arte Namuna Hosing Pvt.Ltd.
- To suggest a theoretical framework for MIS – Payroll system in Arte Namuna Housing Pvt. Ltd.

1.4 Need of the Study

Arte Namuna Housing is a large, growing and complex organization, with different organizational and management levels. Each level has its own informational requirements, which may be action & non-action information, recurring & non-recurring information, internal & external information, planning information, control information, operational information etc with the additional responsibility of reporting each an every information to foreign Parties. To fulfill these informational requirements, MIS (Management Information System) has become a necessity in the near future.

It is evident that there is a big challenge for Arte Namuna Housing for improving the present position to make strong gains in the present competitive external and internal environment. The findings and recommendations of the present study, if implemented, can play a significant role in this critical situation for the enhancement and uplift of the organization. This study is significant in itself since it deals with potential practical and beneficial aspects of MIS-use in a large and complex organization for effectively improving the work performance of each level of workers, employees and decision-makers.

The present study is mainly intended towards payroll system of Arte Namuna Housing for effective and efficiency in timely payment. Management Information System –Payroll system is one of the most important factors for maintaining transparency regarding the attendance to the management and workers, employee and decision makers. So, this project has a good scope in future for making the environment of Arte Namuna Housing better and in overall growth of housing sector

in the country. So, the company and its stakeholders will find the present study very fruitful. As for the researcher, it will be a good opportunity to have an insight of the implication of MIS in a real organization.

1.5 Limitations of Study

The present study is limited only for the case of Arte Namuna Housing and for the payroll system only of the organization. It is mainly intended towards the theoretical aspects of MIS and its implications in the case of Arte Namuna Housing. This project is limited only up to the DFD analysis and ER-diagram. This project does not include coding of programs based on this study. This study just gives a basis for further programming and other future activities. Due to limited time period a compromise has to be reached in the present study, especially in data gathering.

1.6 Organization of Study

Chapter – I: Introduction

The first chapter provides the summery of overall study. This chapter has introduction to the subject, statement of the problem, objective of the study, needs of the study, limitation of study and organization of study.

Chapter – II: Review of Literature

Review of literature is an important part of this research. This chapter includes the theoretical background of MIS. Review of various literatures in application of information technology in library management and practices of some of the other countries in personal information management etc.

- Conceptual review of theoretical concept of the subject area

- Review of case studies
- Review of case studies from different websites
- Review of master's degree thesis

Chapter – III: Research Methodology

The research methodology contains introduction, research design, population, data

Chapter- IV: System analysis, design and data presentation

This is very important chapter of the thesis where the research presents its collected data in different forms and analysis. Finally, research findings are presented interpreting the results obtained from analysis.

Chapter – V: Summary, Conclusion and Recommendations

This chapter contains summary, conclusions and recommendations. In this chapter, the final conclusions are drawn from the study and the recommendations are made. At the end of the five chapters, "Bibliography" and "Appendix" has also been given.

a. *Chapter- II*

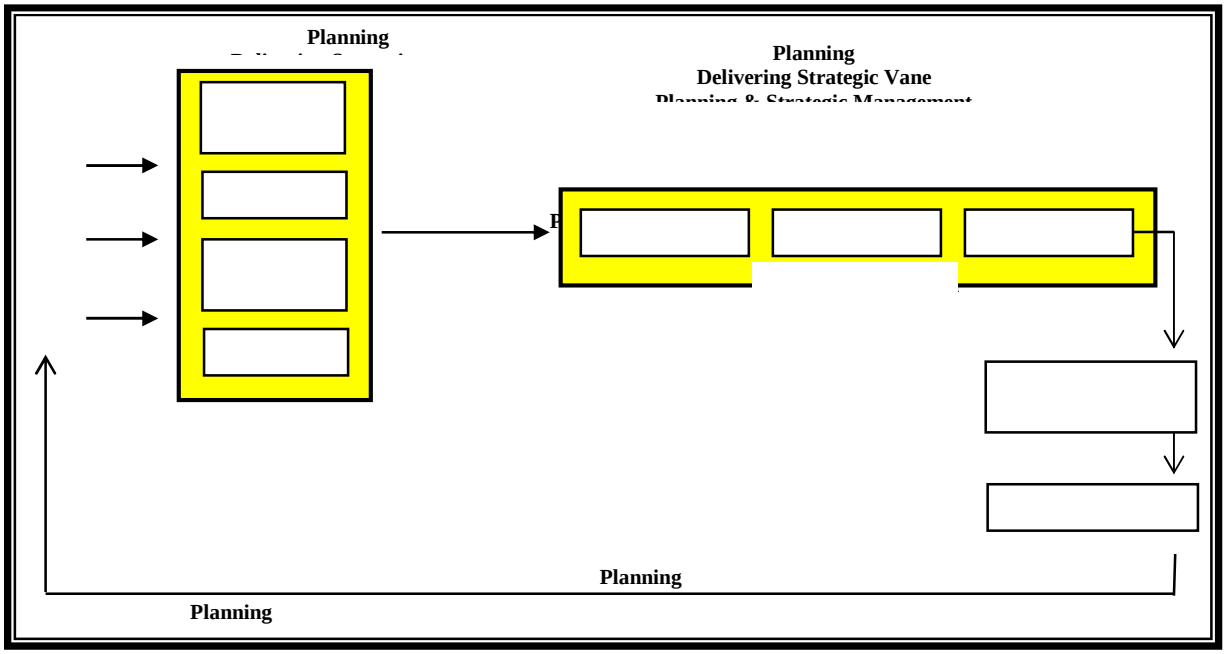
b. REVIEW OF LITERATURE

2.1 Conceptual View of MIS

Globalization of economies and financial liberalization within the economies has opened new opportunities of growth for techno-savvy institutions, while for others these have resulted in the shrinkage of revenues. The ever-increasing complexities of the business environment, a growing need for guidance on concept, issues and strategies for understanding, developing and managing information systems in organizations are being felt all over the world. Most of the organizations are building the information system to face the competition in the competent world. The development of the organizational information system adds the value to the products and services in order to achieve the competitive edge.

Figure 2.1

MIS; Managerial Perspective



(Source: Goyal D.P, MIS; Managerial Perspective, 2000)

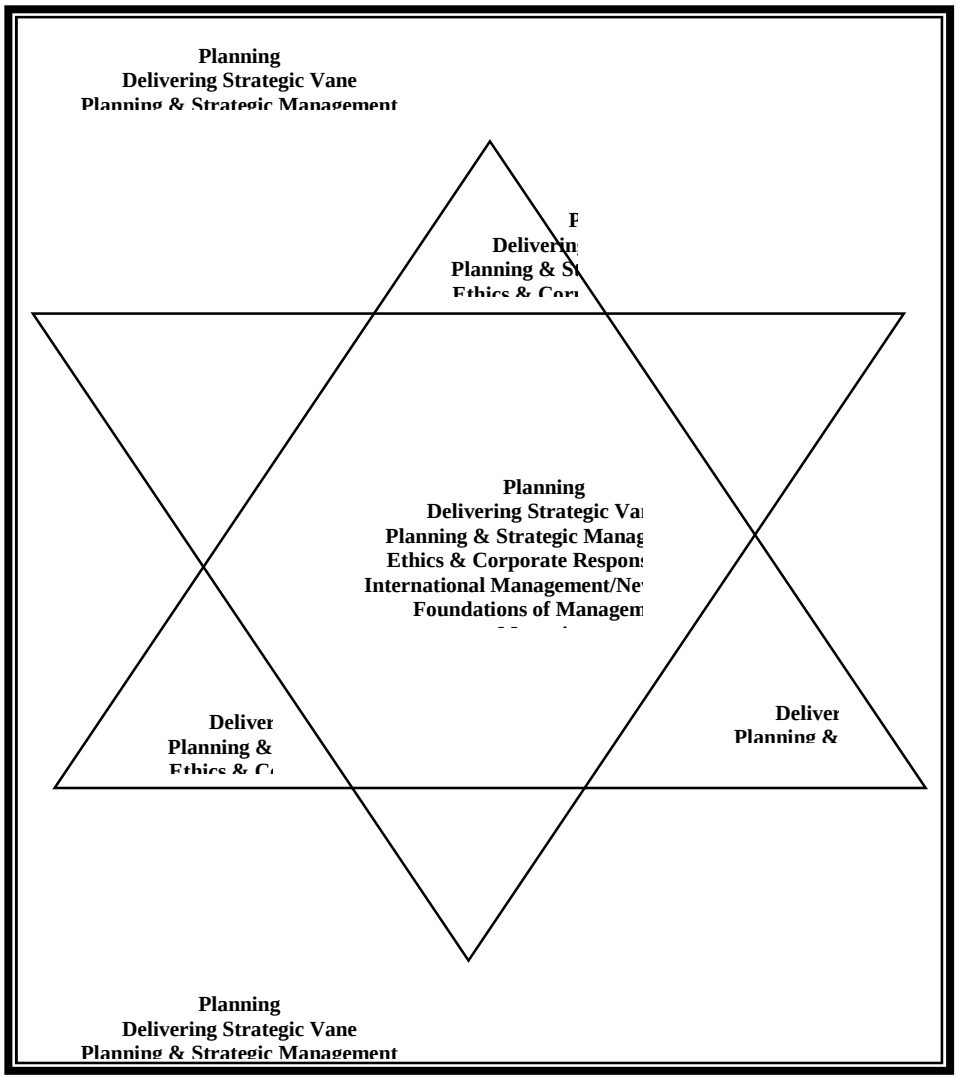
The three subcomponents of MIS are: Management, Information and System. These three subcomponents are dealt individually as follows.

2.1.1 Management

Greater management knows how to lead to better performance by enabling the manager to increase the output and quality of the work group. It helps the manager better understand the objectives and functions of the company as a whole. Effective management is the key to a better world but mismanagement squanders the resources and jeopardizes our well- being. Organizational objectives or goals always require collective action.

Figure 2.2

Key Aspects of Management Process



Along with major functions, another gateway to the understanding of management is an analysis of the activities actually performed by managers. The importance of the different functions varies in particular with the three levels of management. Organizations are usually more successful when their activities are guided by challenging, and achievable goals and objectives.

Management is the social process of working with and through others to achieve organizational objectives in a changing environment (Kreitner Robert, 1999:p5). Managers are responsible for getting things done by working with and through others.

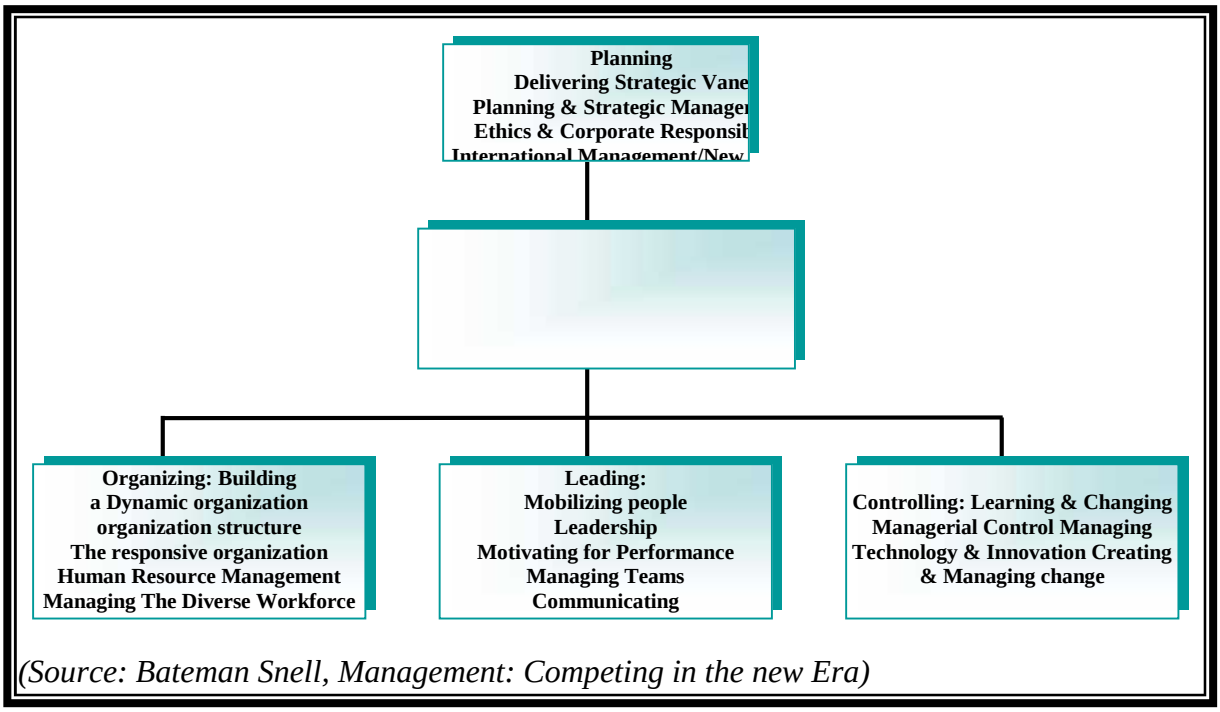
Management can be defined as a set of activities directed at the efficient and effective utilization of resources in the pursuit of one or more goals(Fleet Van,1991:p8). Successful management is the achievement of both efficiency and effectiveness.

Managers must be aware that balance between effectiveness(Kreitner,1999) and efficiency(Kreitner,1999) is the key to competitiveness today. Successful managers predict and alter to changing circumstances rather than being passively swept along or jammed unprepared. Management functions are the sets of activities inherent in most managerial jobs.

Managerial functions are general administrative duties that need to be carried out in virtually all productive organizations to achieve desired outcomes. (Supranote, 15: p 14) Management is the process of working with people and resources to accomplish organizational goals and to be efficient is to achieve goals with minimum waste of resources; i.e. to make the best possible use of money, time, materials and people (Bateman Thomas S,2002:p14).

Figure 2.3

Function of Management



(Source: Bateman Snell, Management: Competing in the new Era)

According to Bateman and Snell, the major functions of the management are divided into Planning, Organizing, Leading and Controlling.

Planning

Planning process in management is principally "Delivering strategic value", specifying the goals to be achieved and deciding in advance the appropriate actions taken to achieve those goals. It includes analyzing current situations, anticipating the future, determining objectives, deciding in what types of activities the company will engage, choosing corporate and business strategies and determining the resources needed to achieve the organization's goals.

It is impossible to organize or control something that has not been planned. The start of every act of management must be the making of a plan. Plans should exist for

everything a manager does. Unplanned activities may occur in the best of organizations once in a while, as a response to unusual events.

Organizing

The major aspect of organizing is "Building a dynamic organization" to assemble and coordinate human, financial, physical, information and other resources needed to achieve goals. "The three basic concepts of organizing are creating, or designing jobs; grouping jobs; and delegating authority."(supranote 16: p211) It includes the attracting of people to the organization, specifying jobs into work units, marshalling and allocating resources and creating conditions so that people and things work together to achieve maximum success.

Leading

Leading- the set of processes associated with guiding and directing employees toward goal attainment (ibid:p16). Mainly leading focuses on directing, motivating and communicating with the employees individually and in groups to stimulate them to be a high performer. Managers must be good at mobilizing people to contribute their ideas, to use their brains in ways never needed to dream of in the past.

Controlling

The controlling process chiefly highlights the learning and changing practice. It monitors progress and implements the necessary changes and makes sure that the goals are met.

Managers not devoted adequately to attention for functions will be failures and will not be deemed as good managers.

The major jobs of management are categorized as "Decision making, organizing, staffing planning, controlling, communicating and directing".Henry Mintzberg, a psychologist has proposed the three interrelated managerial roles as

a. Interpersonal
b. Informational
c. Decisional

Interpersonal role refers to teaching and leading the employees. Informational task is to transfer the information throughout the organization and the decisional role involves evaluating and choosing direction that benefits the firm.

2.1.1.1 Management Levels and Skills

Top Level Managers

The top level managers are responsible for organization's overall management and focus on long term issues and emphasize the survival, growth and overall effectiveness of the organization. This level is accountable for interaction with organization and external environment.

Middle Level Managers

This level bridges the gap between higher and lower levels channeling and translating of information from front lines to upward. The major responsibility is for translating the general goals and plans developed by strategic manager into more specific objectives and activities. The theme is "to help develop the people to develop the business." (Bateman,2002:p17)

Frontline Managers

The frontline managers are directly involved with non-management employees, implementing the specific plans developed with the middle management. This level supervises the operational activities of the organization and link between management and non-management personnel. They are increasingly called upon to be innovative and entrepreneurial, managing for growth and new business development.

Managers need a variety of skills to perform well. Skills are specific abilities that result from knowledge, information, practice and aptitude. The major rated skills are technical skills, conceptual and decision skills and interpersonal and communicating skills.

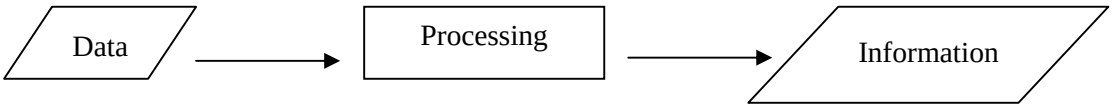
Managers must focus more on interpersonal skills, sharing information with others and teaching and helping people learn. The result is a high performance work environment when the key management functions are performed by managers who have these critical management skills.

2.2 Information

Information is data that has been processed in such a way as to be meaningful to the person who receives it. An organization requires information for a range of purposes. The recipient may then use it to improve the quality of decision making.

Figure 2.4

Date Processing



Data------ facts

Data + Meaning = Information

Fig 2.4 Information flow

The information is the summarization of data. Technically, data are raw facts and figures that are processes into information. Often information is viewed as a type of input to an organism or designed device.

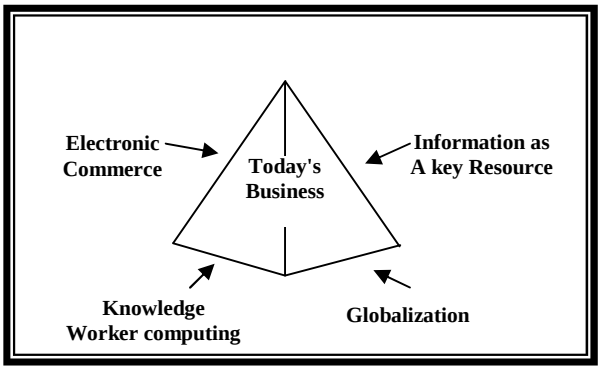
Information is a critical resource in the operation and management of organizations. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading and control. Information is data that have been put into a meaningful and useful context and communicated to a recipient who uses it to make decisions.

The foundation of management rest with information or data made useful for decision making. The intelligence information is needed to deal effectively with competitors, government agencies, creditors, suppliers and stockholders. Management information system use information technology to meet the information needs of managers in daily decisions.

Information as a Key Resource in Today's Business

Figure 2.5

Today's Business



2.2.1 The qualities of good information

A raw data can be processed into good or bad information. Good information is information which has value to the user. It is useful to the recipient, can be relied upon and helps in the decision making process. The qualities of good information can be evaluated as:

- complete
- relevant
- timely
- as accurate as is required
- understandable
- significant
- communicated to the right person
- communicated via an appropriate channel

Good information commands the confidence of the user and is useful so long as its value is higher than the cost of generating it. Managers at all levels should be provided with the information to assist them with planning and controlling activities. The different factors like the objectives of the organization, the size and diversity of its operations, management structure, and management style influence the principles of providing the information.

Information is defined as a 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. (Jawadekar,2002:p88)

Information is recognized as competitive advantage. Organizations that make a good use of information in decision making, and which use new technologies to access, process and exchange information are likely to be best placed to survive in increasingly competitive world markets.

Information has a great impact on decision making, and hence its value is closely tied to the decision that results from its use. Its value is related to those who use it, when it is used, and what situation it is used. Information supports decisions, decisions trigger actions, and actions affect the achievements or performance of the organization.

People in the organizations are constantly converting knowledge into various forms of information and acquiring information for others to improve their knowledge. A modern organization requires a wide range of systems to hold process and analyze information. Information Technology access to deliver information to different levels in the organization.

Organization and Information

The management consists of a group of people who are placed in organization at various levels with assigned task, job and responsibility to achieve the goals. Information plays a key role in the organization hence concepts are applicable to all of them. It is very necessary to understand the use of information, the nature of the information, the value of the information, the media and the structure of reporting with reference to the type and levels in the organization. (Jawadekar,2002:p104).

2.3 System

A system is a set of interacting components that operate together to accomplish a purpose. A system is also regarded as a group of interrelated components working

together toward a common goal by accepting inputs and producing outputs in an organized transformation process.

The system approach to management views the organization as a unified, purposeful system composed of interrelated parts. This approach gives manager a way of looking at the organization as a whole and as a part of the larger, external environment.

An organization itself is a whole system and has different sub systems which directly or indirectly affect the information systems of the organization. System is also used to describe a collection of hardware, software, instructions and people working together in a similar environment to perform a common task.

2.3.1 The component parts of a system:

Figure 2.6

Components of System

-Input
-Processes and
-Outputs.

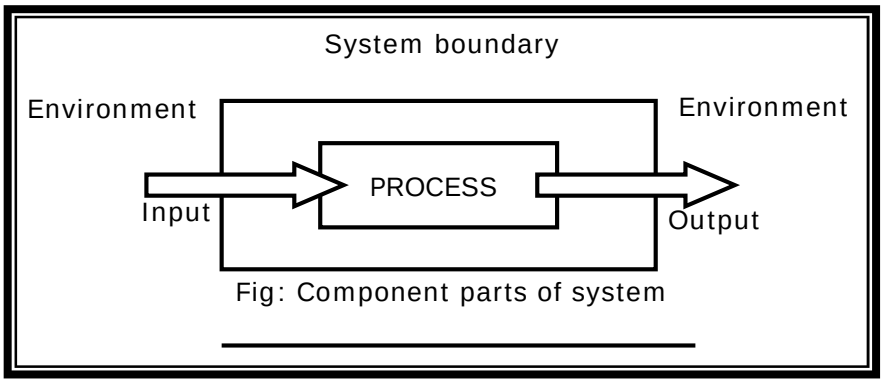


Fig: Component parts of system

The set of elements for a system may be understood as Input, Process and Output. A system may have single input and multiple outputs or may have multiple inputs and outputs. An organization is itself a whole system having different sub systems which directly or indirectly affect the information system of that particular organization.

The system approach to management views the organization as a unified, purposeful system composed of interrelated parts. This approach gives managers a way of looking at the organization as a whole and as a part of the larger, external environment.

2.4 Management Information System

People have relied on information systems to correspond with each other via a variety of physical devices (hardware), information processing instructions and procedures (software), communication channels (networks) and stored data(data resources) since the dawn of civilization. All information systems use people, hardware, software, data and network resources to perform input, processing, output, storage and control activities that transform data resources into information products.

From a business perspective, an information system is an organizational and management solution, based on information technology, to a challenge posed by the environment. Managers cannot ignore information systems because they play such a critical role in contemporary organizations. Today’s systems directly affect how managers decide, how senior managers plan, and in many cases what products and services are produced (and how), responsibility for information systems cannot be delegated to technical decision makers. Information systems today play a strategic role in the life of a firm and its focus is on information that management needs to prepare its job.

"Management Information System is a general term for the computer systems in an enterprise that provide information about its business operations. It is also used to refer to the people who manage these systems."

"An information system is the system consisting of the network of all communication channels used within an organization. A management information system may also be 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. An information system is comprised of al the components that collect, manipulate, and disseminate data or information."

Management Information System —usually called MIS—is the career of choice for business professionals who investigate, design, build and manage business information systems. MIS is a dynamic mix of people, business and technology.

MIS is the system helping managers run the company: a system for gathering the financial, production, and other information that managers need to operate a business, especially a system that is computerized.

Information system is defined as the interrelated parts or components working together to assemble, process, store and distribute information to facilitate and support decision making, coordination, control, analysis, and transparency in an organization.

"MIS is usually used within large organizations and is generally understood as an integrated, user-machine system that converts data from internal and external sources into information that provides a full range of functions. It will communicate this information to managers at all levels, in all functions, to enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. MIS is responsible for managing and administrating information as well as developing and managing all networking and computer resources."

The fundamental ingredients in business systems are information, people and technology. MIS business analysts provide the tools that manage information, making it useful and powerful. MIS professionals look for new ways to generate, store and manipulate information using technology.

MIS is defined as a formal method of making available to management the accurate and timely information necessary to facilitate the decision making process and enable the organization's planning, control and operational functions to be carried out effectively.

Management information system is a system that gathers, organizes, summarizes and reports data for use by managers, sometimes called information reporting systems, MIS serve to help link the several parts of an organization together.

An information system in an organization is like the nervous system in the human body: it is the link that connects all the organization's components together and provides for better operation and survival in a competitive environment. The term information system usually refers to a computer-based system, one that is designed to support the operations, management, and decision functions of an organization. Information systems in organizations thus provide information support for decision makers.

2.4.1 Positive Impacts of Information System

- Information systems help the companies learn more about the purchase patterns and preferences of their customers.
- It provides new efficiencies through services such as ATMs, telephone systems, computer controlled airplanes and air terminals

- Internet distributes information instantly to millions of people across the world.

2.4.2 Negative Impacts of Information System

- Information system may eliminate jobs by automating activities previously done by people.
- It may allow the organization to collect personal details of the people that violate their privacy.
- System outage can cause shutdown of businesses or transportation services, paralyzing communities.

"Management Information system is a combination of planned procedures, suitably designed forms, an appropriate organization structure and managers who are capable of utilizing the output which is produced to assist them in the administration and use of available resources."

Management information system is the original type of information system developed to support managerial decision making that produces information to support many of day-to day decision making needs of managers and business professionals.

Management information system is an organized combination of people, hardware, software, communications networks and data resources that collects, transforms and disseminates information in an organization.

Nearly every business uses information technology —in fact, the rapid pace of development is forcing businesses world-wide to redesign the way they do business. They rely on MIS professionals' use of information technology to help build long-term sustainable competitive advantage in local and global markets. People are often confused with the difference between Computer Science and MIS. Computer Science

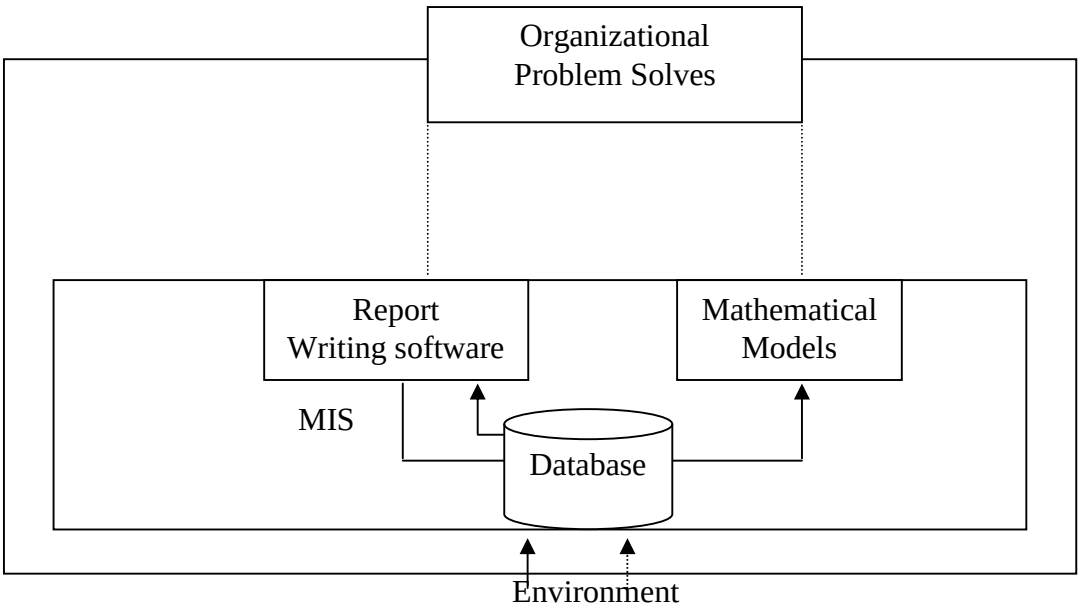
is concerned with computer application design and programming while MIS uses many different kinds of information technology to solve business problems.

"MIS refers broadly to a computer-based system that provides managers with the tools for organizing, evaluating and efficiently running their departments. In order to provide past, present and prediction information, an MIS can include software that helps in decision making, data resources such as databases, the hardware resources of a system, decision support systems, people management and project management applications, and any computerized processes that enable the department to run efficiently."

2.4.3 Model of MIS

Figure 2.7

Model of MIS



MIS can be defined as the systematic or organized way of providing informational support to the managerial functions of an organization. The system utilizes computer hardware, software, manual procedures, and models for analysis, planning control and

decision-making and a database. In other words, MIS is an automated system which presents information both internal and external to the business that aids in making a specific set of routine decisions.

Information management, information systems and information technology are distinguished with each other. The growth in IT/IS outsourcing, leads us to make explicit the need for IT/IS sourcing strategy and supportive capabilities within the contemporary organization.

2.4.4 SWOT for a new information systems installation:

Strengths:

- excitement, opportunity
- state of the art
- Training for staff
- Everyone else' has one

Weakness:

- Cost
- Teething troubles
- Access to advice and problem solving

Opportunities:

- Develop expertise
- Develop quality access and use of information
- Develop staff
- Change culture(if required)

Threats:

- Costs, on- costs and hidden costs

- May be at the mercy of suppliers
- Staff may not like it, and will not use it.

2.4.5 The four faces of IS function are

- The business face is concerned with the elicitation and delivers of business requirements. The information system strategy is concerned where the relevant interrelationship and interdependencies with other systems.
- The technical face, concerned with the business, has access to the technical capability and the information technology strategy is to provide technical support for delivery of the IT strategy.
- The governance face, concerned with information management strategy, defines the governance and co-ordination of the organization's IT/IS activity.
- The supply face encompasses understanding and use of the external IS/IT services market, its activity is driven by decisions about the sourcing of activity.

2.5 REVIEW OF CASE STUDIES

Review of Case Studies from Book and website www.metastorm.com – customer success story -Skandianbanken

Professor Donald A. Marchand and Katarina Paddack (Laudon and Laudon, Management Information System; Managing the digital firm, 2004) has conducted the case study of "SkandiaBanken: Developing Information capabilities for an effective E-business strategy." A summary of this case study is as follows.

In December 2000, SkandiaBanken had been awarded 'The Best Bank of the Year' for the third year in a row and was the only bank to have been awarded the honor more than once in the competition's 10-year history. SkandiaBanken, Sweden's first branchless bank was created in October 1994, marking the first successful entry of a non- bank into Swedish banking market. Relying solely on Internet and telephone channels, SkandiaBanken had grown to become Sweden's fifth largest bank in personal banking by 2000 and its fourth largest bank in terms of Internet customers. By the end of 2000, eight months after beginning its Norway operations.

SkandiaBanken, Stockholm, Sweden, is one of the leading providers of electronic banking services in Sweden, now offers the first full WAP banking service using the Infinite Enterprise WAP Server from Infinite.com. SkandiaBanken has developed a completely customized WAP banking application for the new service based upon the WTLS version of Infinite's Enterprise WAP. SkandiaBanken customers gain secure access to their account information using any WAP mobile phone or device. Transactions are transmitted from the phone to the bank's secure WAP server through one of the regions leading mobile operators.

SkandiaBanken has become the top internet retail banking firm by 2007 for customers in Sweden, Norway, and Denmark and is part of the Skandia Global Finance Group. SkandiaBanken has over 840,000 customers and offers a full range of banking services focusing on fund selection, concept development, and market support and services for private and business customers.

With the help of WAP, SkandiaBanken customers are able to view balances on all of their accessible accounts, transfer money between accounts, view statements and look for user-defined transactions. Trading with stocks and funds, checking the status of

orders, as well as news and other information services are also available. SkandiaBanken expects that WAP banking will be widely popular among users of WAP mobile phones in a short time, and help the bank reach a wide range of new customers.

The Infinite Enterprise WAP Server is a **software product** that enables companies to provide mobile access to electronic mail and other services available on the Internet and private Intranets as well as other information systems.

The second part of the philosophy involved getting both business and IT people to adopt a "customer viewpoint" of the organization. Most people only talk about IT without thinking of the concept more holistically in products and services, process and IT interrelations. People are the ones who create value in the company and think of new ways to use the technology to better the customer experience.

Previously they started with the call center, a computer- based monitoring system tracked-in real time- service levels, average call times, down times, and customer response rates for both individuals and teams. They used the system as a tool for setting and attaining goals rather than as a watch-dog system.

SkandiaBanken managers stressed on customer sensitivity through a policy on new products or IT services. They emphasized on providing the relevant information to the customers. To maintain the customer viewpoint of the information process and test its convenience. While developing the new information system, the managers always approached from the customer's point of view. They kept the information process simple, eliminating as many sub-processes and instructions as possible to satisfy the largest number of customers.

SkandiaBanken has realized tangible, competitive results from the implementation of the system, including a decrease in the manual work required by the customer service staff and the simplification of the online registration process for new customers. This enables SkandiaBanken's customer service employees to focus on more critical projects and enables its

In the development of SkandiaBanken IT system, three principles were guided: low cost, practicality and simplicity, and the outsourcing of non-value-adding systems. The development of an IT application allowed SkandiaBanken not only to link all of its databases and systems into one integrated structure but also to add new databases or remove old ones quickly and easily. In a joint venture with Ericsson and IBM, SkandiaBanken became the first bank in Europe to develop an application link for telephone-activated pop-up screens in the call center, WAP service with improving customer service. With the development of the IT systems, SkandiaBanken began its first cross- border expansion into neighboring Norway and other and is the largest internet-based bank in Scandinavia.

2.6 REVIEW OF CASE STUDIES FROM DIFFERENT WEBSITES

i) Project Report on Electronic Business – Current Scenario, Challenges and Opportunity in Nepal – Bal Mukunda Bista KU and from website www.thamel.com

Thamel.com was established in 1999 by a group of Nepalese entrepreneurs. Originally, it was founded as a Web portal targeted to tourists visiting Nepal (Digitaldividend.org 2004b). Its physical office is currently located in Lazimpat. The company selected operating systems, MIS programs DMS (Daily Management

System) as per the need of the daily operation of the company and other technologies that satisfied the requirement of the local infrastructure.

Thamel Dot Com Pvt. Ltd. has been providing various information technology based services using ICT (Information and Communication Technologies) as a key tool of development and deployment. It has been maintaining a portal with a registered name as www.thamel.com and extending different types of services to Nepalese Diaspora, Expatriate Community, Local and International customers' base. It has corporate office in United States and branch office in United Kingdom and Hong Kong. For its noble business model, thamel.com has been honored with globally acclaimed **Tony Zeitoun Award WSIS 2003** by IICD (International Institute for Communication and Development), infoDev and GKP platform in Geneva.

Thamel.com has participated as one of the keynote speakers on "Sustainable Enterprises for e-Inclusion" at the Global Junior challenge award ceremony in Rome, Italy that took place from 16th to the 19th of November, 2004 and it was an honor for us to be taken an example of "Sustainable Enterprises for e-Inclusion" for the kingdom of Nepal.

Thamel Dot Com has partnered with Annapurna Asia Limited for gift delivery services, who has been serving Nepalese Diaspora living in Hong Kong for last five years by providing different services in the area of COMMUNICATION -- Tele-online radio (providing live FM from Nepal), IDD (connecting you to you to your family and loved ones in Nepal). Annapurna's core business philosophy is 'always respect' customer's sentiment towards family bond, language and culture.

The company gradually expanded its scope and added functions that are not performed by a typical Web Portal. By the mid-2007, Thamel.com had grown to 50 full-time employees. During major holidays, the company hires additional 100 to 150 temporary employees mainly to deliver gifts that are sold on its website. Its 2007, Thamel.com's revenue was about $2 million and the company expects to double it by 2010.

Word-of-mouth became a valuable tool to expand the customer base. By 2007, it has a customer base of over 30,000 people in 25 countries . To attract more visitors on its Web site, the portal also offers Nepalese news, e-mail services and real-time Internet chats. By the mid-2007, Thamel.com had over 10,000 products featured on its website. The products ranged from Flowers, Golden –Silver Jweleries, French Chiffon, Pashmina Shawl, and Bavarian Chocolates to ceremonial goat, cakes from Hotel Yak & Yeti, Annapurna, Radission etc and many more.

The company found its niche as a provider of gift to the families and friends of Nepalese expatriates. The company also found that such services are attractive to the relatives of foreign expatriates that live in Nepal. In the mid-2007, 80% of Thamel.com's customers were Nepalese living abroad and remaining 20% were foreigners.

By the mid-2004, the company was receiving 15-20 orders a day on its website during non-peak seasons and 300-350 during major holidays. Thamel.com has 500 local business affiliates that sell the products featured on its website.

Article III. Redefining the functions of a portal

A commercial transaction can be divided into three phases: the advertising and searching phase, the ordering and payment phase and the delivery phase. These three phases can also be described as pre transaction phase, transaction phase and post transaction phase. One or more of these phases may be carried out electronically and may therefore be covered by electronic commerce. A Web portal adds value mainly by facilitating the pre-transaction phase of the transaction.

Buyers are different from consumers

Proof of gift delivery became critical because the consumer of the gift lived far away from the buyer. Given a lower telephone penetration in Nepal, it is also likely that a gift recipient may not have a telephone, let alone access to the Internet. As a proof of gift delivery, the company makes use of digital photos (Digitaldividend.org 2004a). The moment of gift delivery is thus captured in a digital picture, which is then sent to the gift buyer as a proof of delivery as well as a thank you note (Globalknowledge.org 2004).

Thamel.com has helped to stimulate e-commerce in Nepal by influencing the demand and supply side factors. On the demand side, Thamel.com's customers would have never bought products listed on the company's website if it had just acted as a typical portal. In addition to its role as a facilitator in the pre-transaction phase of e-business, Thamel.com also provided payment and delivery mechanism that facilitated e-commerce.

On the supply side, the company's affiliates are being "forced" to increase the adoption and assimilate technologies in their businesses. Trading relationship between two firms is a function of the degree of 'fit' between the technologies used by them or what Ford et al (1998) refer to as the 'technological distance'. Because the downstream and upstream firms became more dependent on Thamel.com, they started taking measures to reduce their technological distances with the latter. For instance, the cake business of a 5-star rated hotel increased by 30% annually after it collaborated with Thamel.com. By the early 2007, a third of Thamel.com's 500 affiliates had added some type of IT to their businesses and about 80 of them had their own websites (Globalknowledge.org 2004).

Some of the affiliates have started their own e-businesses. One of the vendors that sells Nepali knives (also known as "Khukuri" or "Khukuri knives"i) has launched its own website powered by Thamel.com. In 2003, the vendor's monthly revenue amounted US $10,000, more than that from the store[ii]. In this way, Thamel.com, to some extent, has been able to reduce the supply-side bottlenecks in the Nepalese electronic marketplace.

The company has four mutually reinforcing business divisions:

Thamel Gift Shoppe: sells gifts to the Nepalese delivered locally to family and friends still living in Nepal.

Thamel Remit: provides remittance and insurance services

Export Div ision: helps entrepreneurs ex port products

Thamel International: replicating Thamel.com's successes globally

ii) http://www.is.cityu.edu.hk/research/ejisdc/vol8/v8r3.pdf

The case study on *"Information Technology in Nepal: What Role for the Government?"* by **Junelee Pradhan**, Information Systems Doctoral School, University of South Australia, Adelaide, Australia focuses on the importance of information technology in the developing countries in reference to Nepal. The author believes that developing countries, in particular Nepal, need to urgently develop a culturally appropriate national strategy if they wish IT to have a positive impact on their overall socio-economic development.

This paper argues that Nepal needs to base its national IT strategy on a much greater consideration of local cultural and social issues. IT is the most important factor separating the developing and developed countries. The government has a major role to play if the country wants to stand in the information arena. She has focused that the countries being encouraged to attract economic growth by entering the 'information age', and being able to compete at the multinational level. The government must play an important role, not only as a major user, but also through its other role as regulator, promoter and diffuser.

Nepal has a hierarchical society and is built upon traditional criteria such as kinship, residence, age and sex, but has become merged with the top-down authority. Powerful top -down authority operates in the line of strict task division. In a broad sense, juniors execute while seniors supervise and delegate. An understanding of the potential influences of organizational structures and control is a must, especially if the acquisition of new technology is aimed to be effective.

IT is of critical importance for a number of reasons for Nepal: IT makes it easier and more plausible for a small land-locked country to acquire a global perspective through

direct links with the rest of the world; and it is an essential part of restructuring and moving upstream into high value-added, highly skilled activities.

In conclusion, the case study has intensified that the appropriate information technology at the level of the policy maker means IT provides the means for or supports activities, which in national terms are seen as desirable. Formulating an appropriate information strategy, which is favorable and supportive to development, a country can best use information technology for overall progress.

iii) http://www.angelfire.com/journal2/williamcurto/mis/mispaper.htm

The case study performed by **William G. Curto**, Rochester Institute of Technology on *"Bricks and Clicks: The Supplementation of Banking Transactions with Online Banking"* has tried to focus on the concerns of the customers about the security and comfort level associated with online transactions whereas there is limited awareness of the benefits achieved through augmenting an account with online features.

Banks that want customers to augment their current service with online banking face difficult challenges. These challenges do not include the banks' willingness to offer online banking to their customers, as the overwhelming majority of banks have some online transactional interface for their customers.

This case study has the primary purpose of highlighting the problems that banks face in implementing online banking as part of their offering to customers and to discuss possible solutions. Customers using online banking, in addition to traditional banking transactions, have a special set of needs in order to have complacency using such services. Banks that address these special needs for online banking users are progressing towards a successful, long-lasting relationship with their customers.

Advancements in hardware and software technologies have allowed for faster, more dependable transactions to occur. There exist tremendous convenience factors achieved for customers through the use of online banking. Banks that offer online transactions achieve cost savings through reduced manual record-keeping activities and costs associated with person-to-person (P2P) transactions.

The main focus of this study is specifically those who make decisions concerning the implementation of online banking. This could include the marketing department, website designers, and strategic management of firms engaging in online banking. The marketing department and website designers are imperative to the customer's decision to accept of online banking because each plays a role in developing the interaction relationship with customers. Strategic management, on the other hand, is important in the decision-making process for dedication and allocation of financing for developing online banking. The overwhelming majority of these problems can be quantified into a monetary amount. Other problems have time allocations associated with them.

There exist many problems relating to the low adoption rates of online banking to both banks and customers. The strategic management carries the burden of making executive decisions. These decisions include, but are not limited to, approving marketing plans, developing executive goals and missions, deciding viability of projects, and allocating resources to the implementation of online banking. Without properly considered decisions being made by the strategic management, online banking cannot succeed.

iv) Hardcat at ANZ Bank: www.hardcat.co.uk/casestudyanz.html

ANZ Bank is one of the largest companies in Australia and it ranks amongst the leading financial institutions of the world. It has been established in the UK for more than 50 years, where it employs around 500 people. ANZ in London operates as a division of the Australia and New Zealand Banking Group Limited and, organizationally, its business is concentrated in Investment Banking, Private Banking and International network services.

Before Hardcat, auditing and asset control were traditionally undertaken using a paper-based hard copy system but this was time consuming, and inevitably prone to inaccuracies, with the risk that not all assets were being recorded. This meant that depreciation calculations were imprecise and, in the event of disaster like a fire, flood or theft, difficult to ensure that accurate insurance claims could be made. Ron Condron, Head of Operations Support at ANZ Bank, realized the hard copy system as inept to keep track of the assets with real accuracy. With more and more IT equipment going into the offices, the bank decided that proper control was required.

ANZ looked at several tracking and management packages without being convinced they were entirely right, until a recommendation from their headquarters in Melbourne, Australia pointed the British offices towards Hardcat Systems (UK) Ltd. ANZ selected the Hardcat Core System, together with the Bar coding, Purchasing, Depreciation, Preventative Maintenance and Helpdesk modules, ensuring that they had a comprehensive asset management system that tracked their assets from ‘cradle to retirement’.

After the Implementation of Hardcat, the large number of assets to be collected, recorded and entered on the system took less time than previous audits and provided much more accurate and reliable information. As well as delivering a complete fixed

asset management system to the bank, Hardcat also assisted in the review, design and implementation of a new asset management policies and procedures process.

The accuracy of Hardcat records ahead of the savings on time and resources the system makes possible. Hardcat has the facility for the functions to be carried out quickly and easily. ANZ can now be confident that their Hardcat system is now accurate and being administered in an easy and manageable way. There is no better promotion for a company than that of a customer's own opinion.

2.7 Review of Master's Degree Thesis

1. Lohoni, Ashok (2005) carried out study on "Online College Management Information System (OCMIS) for Acme Engineering College." Overview of his study is as under:–

The specific objectives of this research are:

- To examine the existing information system of Acme Engineering College.
- To analyze the existing information system of Acme Engineering College.
- To propose the basis for developing an advanced MIS (Management Information System) for Acme Engineering College, by managing the associated relationships between the various entities such as students, teachers, courses, classes, sessions, programs, departments, other campuses and the University.

The study was carried out by using the following methodology:

The study was concentrated for development of OCMIS for Acme Engineering College, the basis for the analysis were the past records and problems. The question of primary data collection techniques did not occur at any point of the research. Secondary data was the type of data used in this research. The secondary data sources

used for the present study included the various departments, library, labs and research and consultancy unit. Similarly, Principal, Vice-Principal, key personnel, faculty members, administrative staff and the students also furnished the researcher with considerable amount of secondary data.

Different Tools and techniques were used viz. Tables & Figures, Flowcharts, ER Diagram and Data Flow Diagram.

His research findings are:

- Lack of proper and timely information is one of the challenges for the college. So, Online College Management Information System (OCMIS) has been proposed for the college so as to cater its information needs.
- All the departments in Acme Engineering College are interrelated and interdependent. So, the need of a proper Management Information System (MIS) was felt from a long time for systematic and timely flow of information between them. OCMIS has been proposed to take care of this requirement.
- The beneficiaries from the proposed OCMIS will be the college, its departments, faculty members, staff, guardians, students and all those who directly or indirectly use the system. All those concerned will find the access and retrieval of the required data much easier and quicker than at present. OCMIS will certainly facilitate their jobs and help in improving their overall efficiency and effectiveness.
- Introduction of OCMIS as an information system will transform the existing human based information system into a systematic and scientific one. This would certainly reduce various deficiencies in the present system such as delay

in information flow, ill matching of generated data, irrelevant information and under utilization and poor feedback.

- Earlier, the study and practice of OCMIS has been too few to mention. The present study will therefore be a milestone for practice and reference in future. Hence, the present study may be valuable not only for Acme Engineering College but also for other similar institutions.
- The use of computerization information system OCMIS will certainly prove a leap for Acme Engineering College. The adopting and upgrading of the advanced technology has already been a necessity and challenge for leading engineering institutions like Acme Engineering College. So, it will be a source of motivation and inspiration for all concerned to upgrade their performance, efficiency and effectiveness.

The conclusions drawn from this research are:

- To fulfill information requirements on different organizational and management levels MIS (Management Information System) has become a necessity in the near future and the proposed OCMIS is capable to handle the challenge.
- Access information needed for an efficient and effective management.
- The main aim of OCMIS is to make the tasks smooth and easier.
- OCMIS is one of the most important factors for the growth of the college in terms of better education, better facilities and better management.

The shortcomings of this research is that the research failed to give proper guidelines for training and does not show any cultural and behavior consideration for better utilization and performance of MIS.

2. Sangraula, Sangita (2006) carried out study on "Library Management Information System for Shanker Dev Campus". Overview of her study is as under:-

This research is based on the study of existing situation of information technology application in Library and proposes Library management information system. Shanker Dev Campus is one of the biggest and oldest Campus in Nepal. There are three groups MBS, BBA and BBS in the campus. Around 1600 students appear exams in MBS, 1300 in BBS and 50 students in BBA annually. There are around 46 full timer teacher and around 50 part timer teachers. In Library there are around 25000 books. Though the accession number for the book is 49800, only around 25000 books are present in the library and yet Campus library is operated manually.

The specific objectives of this research are:

- To identify various problems of the existing system.
- To study the existing status of IT application in library management in SDC.
- To identify basic information required for library management purpose
- To develop MIS and DSS information system models and architectures for the Library management information system
- To develop conceptual DFD and ER models for the proposed LMIS

The study was carried out by using the following methodology:

A simple survey is made to collect the opinion of the students, teaching staffs and the library staffs. The collection and analysis of survey data is less involved however collection and analysis of the data entity required for the proposed Library information is involved. The total population is considered as the total public in

some territory based on the scope of the study. The sampling technique is taken as follows.

The sampling has been taken randomly from students, Teaching staffs and library staffs of Shanker Dev Campus to accommodate the opinion of different peoples. The Shanker Dev Students, Teaching Staffs and Library Staffs are the sources of Primary Data who are interviewed to collect the opinion on the appreciation of the proposed Library management information system.

The researcher has used software tools like

- Database Management: Microsoft Access 2000/2003
- Programming Language: Visual Basic 6.0
- Case Tools: Microsoft Visio 2000
- Report Writing: Microsoft Office 2003

Tools used for the documentation are Data flow diagrams, Flowcharts, Entity relation diagrams.

Her research findings:

- Shanker Dev Campus – Library Management System is operated manually, though there is computerized Library Management Information System it has not been implemented due to the lack of the technology and the unawareness of the use of IS in Library management.
- The information system in Shanker Dev Campus is purely paper based and the library uses traditional Library management system. There is a manual flow of information, computer is used to type the notices, or making the list of students and books enrolled in library. Library uses computers for entering the

books record only. All the records like students registration, the details of the book, are done manually. Library card is used to identify the students.

- Due to the lack of trained staff, there is lack of effective use of computer in each and every department of the college. The use of computer in library is limited to a single person only and other person do not have any idea to use it. Although there is a computer system to manage the library, it has not been initiated to use it for the students. There are no proper methods to keep the records of thesis; they are indexed in a book without any proper systematic manner.
- Most of the people appreciate the computerized library management information system as it helps in management and college administration to take right information at right time.

The conclusion drawn by the researcher:

Computerized Library management information system will assist in solving the library management and decision making problems in many ways. Deployment of the system will have direct as well as indirect effects in the library management. The impact of library management information system in the library management will be strategic in nature. The information system will strengthen the planning and administration capability of the library management organization.

1. Observation on the nature and function of the library management department, it can be concluded that the personal information, book information and the book location information are the most vital information essential for the library management purpose.

2. The library management information system will provide a sound information support in planning, decision-making, evaluation, monitoring, and research on library management issues and library service delivery.

3. LMIS provides quality and reliable information that will be available to the library personnel at right time about the situations, individuals, and book location so that they can take appropriate action. This will help from the top planning level down to operation level from.

Further the information will help the library department to make strategic planning with accurate personal information integrated with book information and book address.

3. Pandey, Anil (2008) carried out study on "Management Information System for Design Cell Pvt. Ltd." Overview of his study is as under:–

This research is based on the existing information system of Design cell Pvt. Ltd. Design cell was established by architects and planners having over 10 years of experience in the field. The firm was set up with the aim of bringing forth creative yet practical solutions to the architectural, interior design and planning scene.

The firm comprises of personnel from various backgrounds who are committed to excellence in design. Having worked in the field, all are conversant with real world conditions and coming together, they have an opportunity to refine and develop design ideas through mutual cooperation.

The specific objectives of this research are:

- To study the Existing Information System, Decision Making practices and provides suggestions to develop MIS.

- To study the effectiveness and Efficiency in Decision Making through MIS.
- To study the following aspects.
    1. Setting up standards and comparison system in Estimating Department.
    2. Setting an information system that will reflect the productivity and profit of individual projects.
    3. Suggesting System that would provide the information for evaluating performance of employees and resources.
    4. Monitoring System of Running Projects and Sites.

The study was carried out by using the following methodology:

Analysis of the historical data has been conducted to set various standards; the incomes and expenses of individual projects have been compared to find out the profit and productivity of each project. Information of site performance is gathered to form monitoring system.

While setting the standards, sample of historical data were collected and analyzed. The samples are taken around 25% of the total data.

The required data were gathered through following data gathering process:

a) Interview

b) Historical Data

The information required by different level of personnel in the organization was collected through interview. Historical data were used to set various standards and benchmarks.

Tools used for the documentation are Data flow diagrams, Flowcharts, Entity relation diagrams.

His research findings :

1. Existing BOQ system needs more calculations, repetition of data entry. Since there was no provision of standards so the errors couldn't be traced. In average it requires15 days to compute BOQ for building with 2000 sft built up area. Computer has been merely used for calculation propose only. Since there was no link between data repetition work would be tedious and time consuming.

   In proposed system of BOQ it needs less calculation work since links are set up. The time to compute BOQ for building with 2000 sft built up are will need only 3 days that is 5 times earlier than earlier system. It also has more accuracy since standards and parameters are used to find out the significance and accuracy of output. The time taken for repetition work would be reduced by around 10 times. There is less chance of error since less calculation has to be done and control measures are available to check the validity of the output.

2. There is no proper HRMS used by the firm so there was difficulty for management to know how much time is needed to perform certain task or job. The existing system is unable to provide information about overstaffing or understaffing in the organization.

   The proposed system would provide management with the information about the time needed to complete various jobs and tasks. This information could be used to control the efficiency of staffs. Punishment or reward system could be set up considering this information. The information would help management

to find out the future demand of employee; hence it helps in strategic management.

3. The existing system lacks the information system about site supervision and management. A new system is proposed in which periodic report will be provided that gives required information to the management and client regarding the construction work. Effective control system could be maintained with the help of the system and hence good quality of building is obtained.
4. The current system lacks the information about the various projects. The proposed information system about overall information of projects will help to find the weak and strong type of projects. The system would also provide information about the opportunity and threat of the external environment. The information would help management to form effective strategy regarding the future plans.

The conclusions drawn from this research are:

Proposed MIS will assist in solving many decision making problem in the organization. The application of MIS will strengthen decision making capacity of decision maker as well as it will bring effectiveness and efficiency in the capacity of operation level staffs. The introduction of control system would help management to track the variations, delay and errors.

The proposed Management Information System incorporates BOQ System, Human Resource Management System, Site Supervision System and Overall Information of Projects.

1. To apply BOQ Information system initially the projects are categorized into homogeneous groups which help in forming realistic standards and

parameters. The standards would provide a range of data or ratios which could be compared with actual output and hence accuracy and reliability of output could be tested. The standard could be used by operation level staffs to perform their job more accurately and efficiently and it will act as vital information to management level which would enhance their decision making capacity.

2. A new Human Resource Management System is proposed which would help to evaluate the performance of staff and to predict the future human resource requirement in the firm.

3. Site Supervision and management system is proposed in which periodical site report is to be prepared, BOQ is to be computed complying the sequence of Running bill and summary of specification of quality control should be given to concerned person. The system would help site incharge to perform his duty effectively where as it helps management to control the time factor and quality of site effectively and efficiently.

4. The information system related to overall information of project would help the organization to evaluate each project in terms of profit and to find trend of various projects. Initially each project should be categorized accordingly to their homogeneity. Analysis of cost and profit of each project is done to build standards. Actual ratio of project is compared with standard ratio to find out the profitability and productivity of each project. The trend of the project would give a glimpse of external environment and opportunity and threats .With the help of this information management would be able to built proper strategy related to weak and strong projects.

4. **Shrestha, Prabin (2008)** carried out study on "**MIS in Chaudhary Group: A Case Study of Electronic Division**" Overview of his study is as under:–

This research is based on the study of existing system of Electronic division of Chaudhary Group.

The specific objectives of this research are:

- To examine the MIS and Billing system of Electronic Division of Chaudhary Group.
- To analysis the factors affecting proper design of MIS.
- To provide guidelines for proper training and installation of new modified system.

The study was carried out by using the following methodology:

This research is focused on a use of MIS in Electronic Division of Chaudhary Group. This research work is a type of survey study which was generally conducted to assess the opinions, behaviors, or characteristics of a given population towards the awareness and the utilization of MIS and to describe the situation and events occurring at the time of study. Hence, the type of research design followed was Descriptive.

For data collection, Judgmental Sampling technique was used. However, the researcher has selected Electronic Division of Chaudhary Group as a sub-group which represented the whole population of managers and IT professional. Data were collected through direct communication and observation – primary data was collected mainly through direct communication and observation to person or department who may concern. However Research did not use any structured questionnaire. Secondary

data .were used in supplement to primary data .Secondary data were collected from materials like booklets, bulletins and various other reports of the company.

Tools used for the documentation are Data flow diagrams, Flowcharts, Entity relation diagrams.

His research major findings mentioned below imply to Billing System & MIS of Electronic Division of Chaudhary Group:

Though the division seems to have adequate facilities of hardware and software most of them are not upgraded to newer version. Due to which data processing becoming slow and users are facing system and hardware failure from time to time.

- There is no proper management information system. Although there is provision of storing the information in computer and in office files, one cannot view and retrieve all the necessary information when needed in the form that one required.
- The other major deficiency is that different levels of staffs still maintain their own files both manually and in their own computer hard disk. So, the same information is recorded in many different files. This may cause information redundancy and data integrity due to redundancy (i.e. data is scattered in many files.) Only proper MIS and Database Management System could avoid this repetitive and multiple filing system.
- The persons at decision level are also not well informed about the concept of MIS. Some are even not well trained to use computer. Whenever the idea of new and improved system is generated they simply try to avoid as much as possible any stay behind. But the major disappointment is that the users working in present systems are not aware about lots of functions and

utilities existed in present system as well. So, it proves that the half knowledge is quite shaky and it can be eliminated only by proper training. The people at IT department are concern only for maintenance and administration of computer system. They must prepare themselves for the action and given the authority to improve the system as needed.

The conclusions drawn from this research are:

- From analysis of the existing system of Electronic Division of Chaudhary Group, it is found that there is no any systematic analysis and design followed for generating information for decision. All the reports are prepared haphazardly. The accounting software *Swastik*, where lies Billing system, is not bug free. It sometime gives run-time errors. Some features and fields shown on forms are useless and some are even dysfunctional. It has also unable to fulfill some of the requirements as demanded by management.

  So-called MIS report is also completely distort form for real significance of MIS. Though present MIS gives result, its preparation involves lots of time due to repetitive data entry. This is preventing user from doing other productive work.

  So, there is unsystematic way of preparing reports in Electronic division of CG.

- The line mangers and user who are responsible for Billing system and MIS are also not aware about the concept and principle of management information system. They are following the same format and trend set by

previous managers or users. Even the helpful features and facilities existed in present system of application/software are going unnoticed. In some cases they are not sure or clear themselves about how more benefits can be drawn from proper system design and its implementation. It can be clearly observed that this is lack of right knowledge and proper trainings.

So, it proves that even good system do fail if users are not aware about its usage and benefits.

- For any system to be properly implemented and successful, the positive support from top-level management is always necessary. If top-level management does not show care and interest then development and survival of any system will be restrain in the absence of requirements needed to establish and raise the system.

In Electronic Division of CG, it sometime faces budget constrain when required for upgrading the computer system. This is further hampering smooth operation and data presentation.

- Though Chaudhary Group has separate department of IT, it does not have manpower who has good understanding of MIS and database management system required for proper implementation of MIS. IT Department is concerned only about computer maintenance and networking. So, when even people from IT sectors are not able to show way to develop and implement proper and relevant MIS as per management requirements then little can be expected from other people.

So, IT people should develop the knowledge on MIS and take initiative to develop relevant MIS as per individual requirements of managers and users. Moreover, an

organization like Chaudhary Group must include systems analysts (designers), computer and data communications specialists who have the responsibility to develop mathematical relationships for processing raw data into useful information.

5) **Subedi, Navaraj (2009)** carried out study on "**Management Information System In Medialogic Inc.**" Overview of his study is as under:–

This study is based on the study of existing manual system of Medialogic and propose (Management Information System) for Project Management to the company. Medialogic was established in 2000 AD. The company has a team of professional web-developers and software personals with good knowledge and years of experience in IT sector. It aims to provide quality service in software development sector. Medialogic specializes in providing information technology solutions and service. Medialogic offers Software Development, web site development, web application development, maintenance for custom software applications, Web design solutions and providing other services in latest technologies and platforms.

The specific objectives of this research are:

- To examine the existing management information system of Medialogic.
- To evaluate existing Information System
- To suggest a theoretical framework for an appropriate MIS

The study was carried out by using the following methodology:

The collection and analysis of survey data is less. Use of internet has been more used to review the literatures and design the system for Management Information System in Medialogic. The data were collected through direct communication, observation, informal & unstructured interview and historical data.

The study was conducted on the basis of primary data, which was collected mainly through direct communication and observation to person or department who may concern. Research did not use any structured questionnaire in order to get opinion about the systems, its problems and advice for improvement in existing system. Secondary data were used in supplement to primary data wherever it seems necessary.

Different Tools and techniques were used viz. Tables & Figures, Flowcharts, ER Diagram and Data Flow Diagram.

His research findings on Project Management Information System of Medialogic are as follow:

- Though established in 2000 AD, Medialogic one of the fast growing and prominent Software Development company of the country. Lack of proper and timely information is one of the challenges for the company. So, Project Management Information System has been proposed for the company so as to cater its information needs.
- There is no proper management information system in company. Although there is provision of storing the information in computer and in documents, one cannot view and retrieve all the necessary information when needed in the form that one required.
- The other major deficiency is that different levels of staffs still maintain their own files both manually and in their own computer or in Email. So, the same information is recorded in many different files. This may cause information redundancy and data integrity due to redundancy (i.e. data is scattered in many files.) Only proper Project Management Information System System could avoid this repetitive and multiple filing system.

- The beneficiaries from the proposed Project Management Information System will be the company, its departments, Managers, Programmers, Client of the company. All those concerned will find the access and retrieval of the required data much easier and quicker than at present. Project Management Information System will certainly facilitate their jobs and help in improving their overall efficiency and effectiveness.

- Introduction of Project Management Information System as an information system will transform the existing human based information system into a systematic and scientific one. This would certainly reduce various deficiencies in the present system such as delay in information flow, ill matching of generated data, irrelevant information and under utilization and poor feedback.

- Earlier, the study and practice of Project Management Information System has been too few to mention. The present study will therefore be a milestone for practice and reference in future. Hence, the present study may be valuable not only for Medialogic but also for other similar software company.

- The use of computerized information system Project Management Information System will certainly prove a leap for Medialogic. The adopting and upgrading of the advanced technology has already been a necessity and challenge for leading software compnay like Medialogic. So, it will be a source of motivation and inspiration for all concerned to upgrade their performance, efficiency and effectiveness.

The conclusions drawn from this research are:

- This study entitled “Management Information System in Medialogic Inc.” emphasized on the analysis of the activities of the different management level

of Medicalogic, and the problems they are facing. At the end of the present study, the basic study for establishing the Management Information System in Medialogic was completed, which will be a base for programming and other different necessary steps in the future.

- It is obvious that Medialogic is a fast growing organization, with different management levels. Each level has its own informational requirements, which may be action & non-action information, recurring & non-recurring information, internal & external information, planning information, control information, operational information etc. To fulfill these informational requirements, MIS (Management Information System) has become a necessity in the near future and the proposed Management Information System is capable to handle the challenge.

- The overall perception of the system is to develop a systematic way for maintaining and retrieving the information of the Projects. Manager and Programmers can easily search the information about the project they want at any time. In doing so, it has to undergo a number of steps in which the most important is maintaining a database.

- .Above all, the system, hence generated on the basis of the present study, will certainly prove to be an effective achievement regarding inserting, deleting, and updating the record. The study is mainly intended towards making the project management effective and efficient in Medialogic in terms of cost, time and resources. Management Information System is one of the most important factors for the growth of the Software Company Like Medialogic. Hopefully, this study will prove helpful to the future scholars, taking interest in the subject.

2.8 Research Gap

Review of Masters Degree thesis reveals that, research have been done in Online College Management Information System (OCMIS) for Acme Engineering College, Library Management Information System in Shanker Dev Campus, Management Information System for Design Cell Pvt. Ltd, MIS in Chaudhary Group: A Case Study of Electronic Division, Management Information System In Medialogic Inc. which are all related to information system. This research is also about the implication of MIS system – but completely new subject Payroll System.

However, from the observation and analysis of the past works, the problem raised by the researcher has not been tried in the past. As per the study it is assumed that Payroll system is still new in the context Nepal. So, the researcher feels that it will prove a new study and will be of interest in the future to those, who are interested in the subject and also could be useful to the organizations.

Chapter IV

System Analysis, Design and Data Presentation

4.1 Organizational Structure

Arte Namuna Housing Pvt. Ltd is established in 2005 AD. The company is a real state business organizations, it aims to conserve traditional houses, temples, and heritage and at the same time build traditional styled houses and apartments with modern amenities. The company has built many houses, apartments, school, and temples with maintaining traditional styles with modern amenities

The organization comprises of the following level and departments- Chairman, Managing Director, Deputy General Managers, Engineers, Overseer, Senior Accountants, Finance Manager Assistant accountant, Head of workers, Plumbers, Electricians etc. Sometime Executives and Assistants are responsible for reporting directly to Managing director. Head accountant and assistant account is responsible for the payroll of the entire organizations.

Chief Executive Officer (C.E.O.) and Managing Director is the topmost position in the organization. Prominent decisions related to the organizational structure, organization development, recruitments, acceptance/rejection of projects are taken by them with the suggestions of Managers, Senior Engineer, Architects, Senior Finance Manager and other Manager level staffs. Below them are operation level staffs that performs respective jobs reporting to and being monitored by their superior staffs.

Figure 4.1

Organization structure of Arte Namuna Housing.

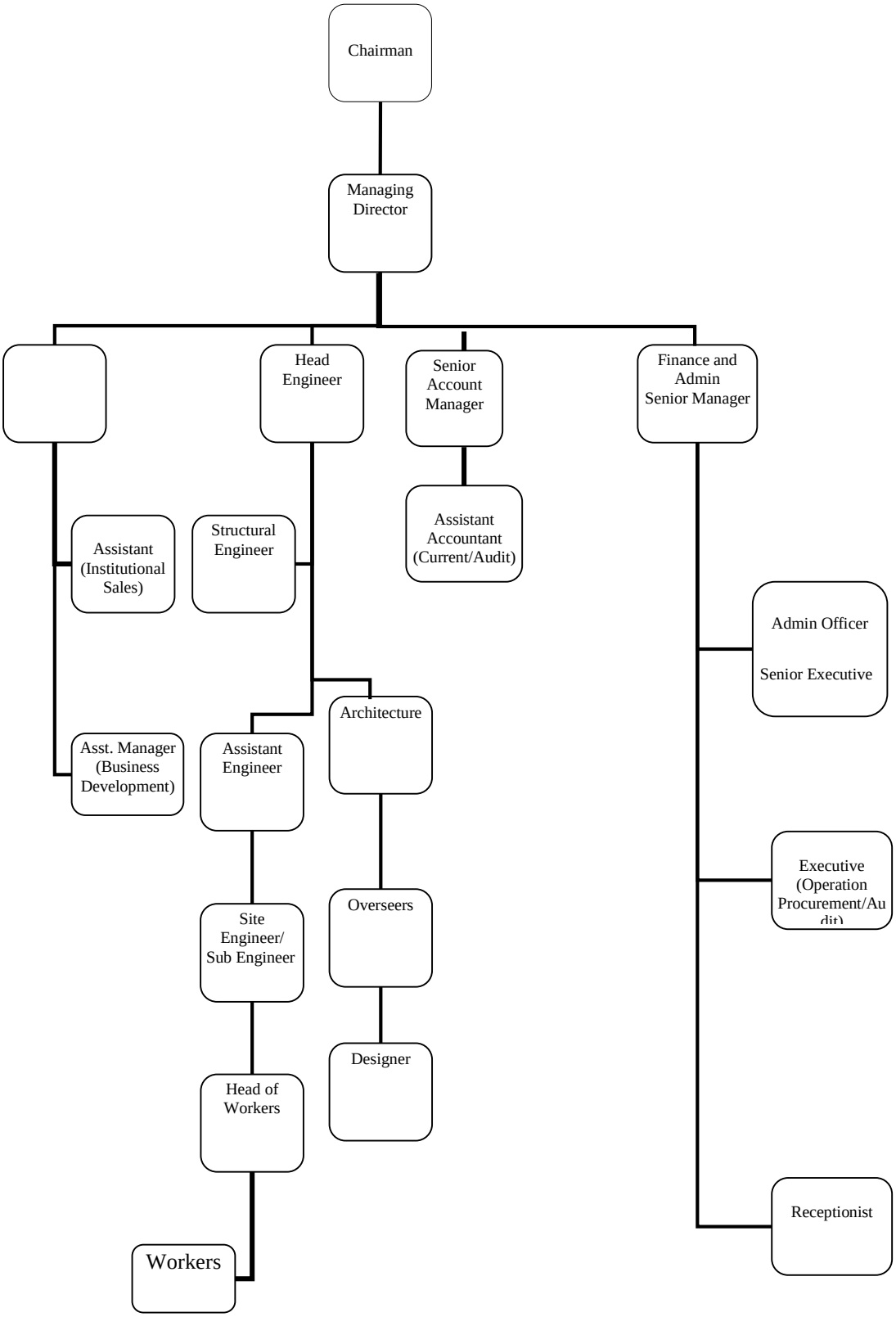
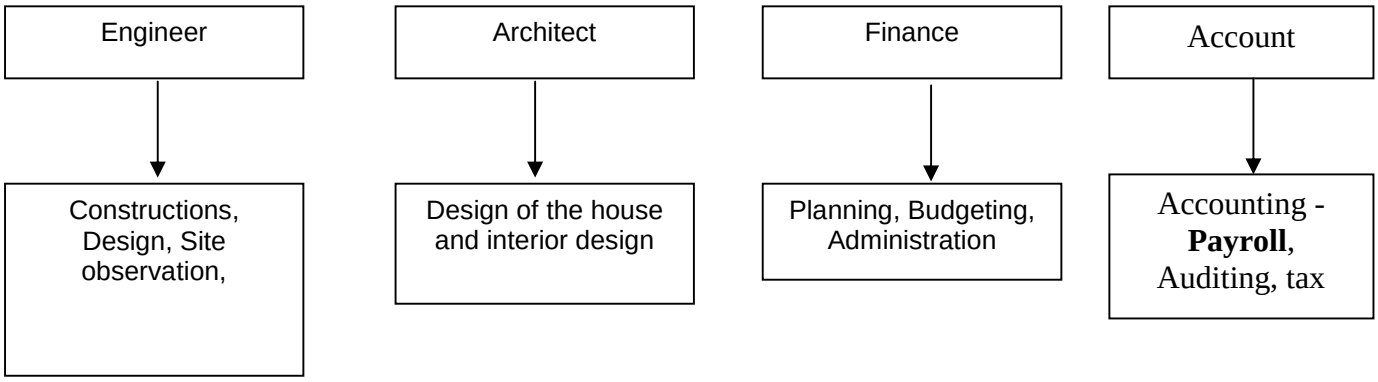


Figure 4.2

Functional Structure of Arte Namuna Housing



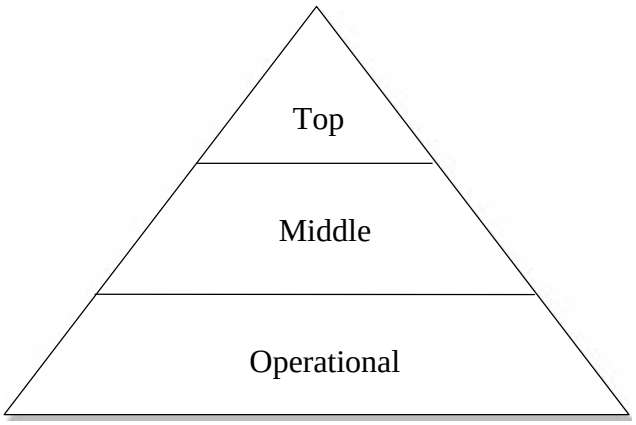
The organization has four functional departments i.e. Engineering, Architect, Finance & Account. Engineering department is responsible for construction, structural design and site related work, Architect department designs the internal and external design of the houses, Finance department does the planning, budgeting, loan management, adminstration work of the organization etc and Account department performs the accounting work. Payroll of all staffs and worker is done by Account department.

4.2 Hierarchy of Management of Arte Namuna Housing

The Company has 3 level of management Top level, Middle level and Operational level.

Figure 4.3

Hierarchy of Management



- Top or Strategic level
- Middle level
- Operational level

Table 4.1

Employee Summary

Employee Summary Level		**No. of Employee**	**Job Responsibilities**
Top level	Chairman	1	To look after whole jobs of the unit from account, construction, purchase and sales etc.
	Managing Director	1	To look after the job as per their assigned designation in respective field and assist chairman for decision making.
Middle level	Managers/Engineers/Overseer/Asst. Manager	12	To look after the job as per their assigned designation in respective field.
Operation Level	Executive/ Assistant/Workers/Plumber/Electrician/Carpenter/Masons	80	To assist their seniors, collect information, prepare reports and presentation, construction worker teams

All the three levels of management are equally important for the smooth operation of management. Even a small mistake of one level can affect the whole management in a great deal. All the levels are connected to each other.

Top or Strategical level management is the level where the final decisions are made. The Strategical level management includes Executive chairman & Managing Director. Being in the Strategical Level as the supreme bodies, these people's lays down all the policies, rules & regulations, determines strategies. Approves & disapproves plans and programs. Estimates annual budgets & priorities of the Company.

Middle Level Management is the level where some decision are made according to the plans, policies & strategies made by the Strategical Level management. Middle Level Management includes Mangers, Engineers, Architects etc. These peoples control the operation Level staffs and deals with daily work of the organization. The decision made by the Middle Level Management may be programmed and non-programmed, it depends upon the requirement of organization.

Operational Level Management is the level where actual work is done. This level includes Site Engineers, Designers, Workers, Electrician, Plumber, Assistant Accountant, and Admin Staffs. These peoples are not allowed to take any kind of decision. They performs the decision made by the Strategical & Tactical Level Management in these level people needs information about the project and tasks.

4.3 Source of Information

In order to know about the Payroll System of the company, the concerned people like Accountant from Current Account section, Managers, Engineers, Overseers, Architects, Admin officers, Workers, Carpenter etc interviewed. During direct communication with these concern persons, questions asked were something like this:

- ✓ In which date of the month you receive your salary, payment?
- ✓ How are the income tax deducted?

- ✓ Do you think the company needs to change/upgrade the system?
- ✓ What is the major weak-point of the present system?
- ✓ Do the employees, worker get their salary on time?
- ✓ Is the leave Rule same for all?

On the basis of answers received through direct communication and observation and manuals, the researcher conducted system analysis and presented the report.

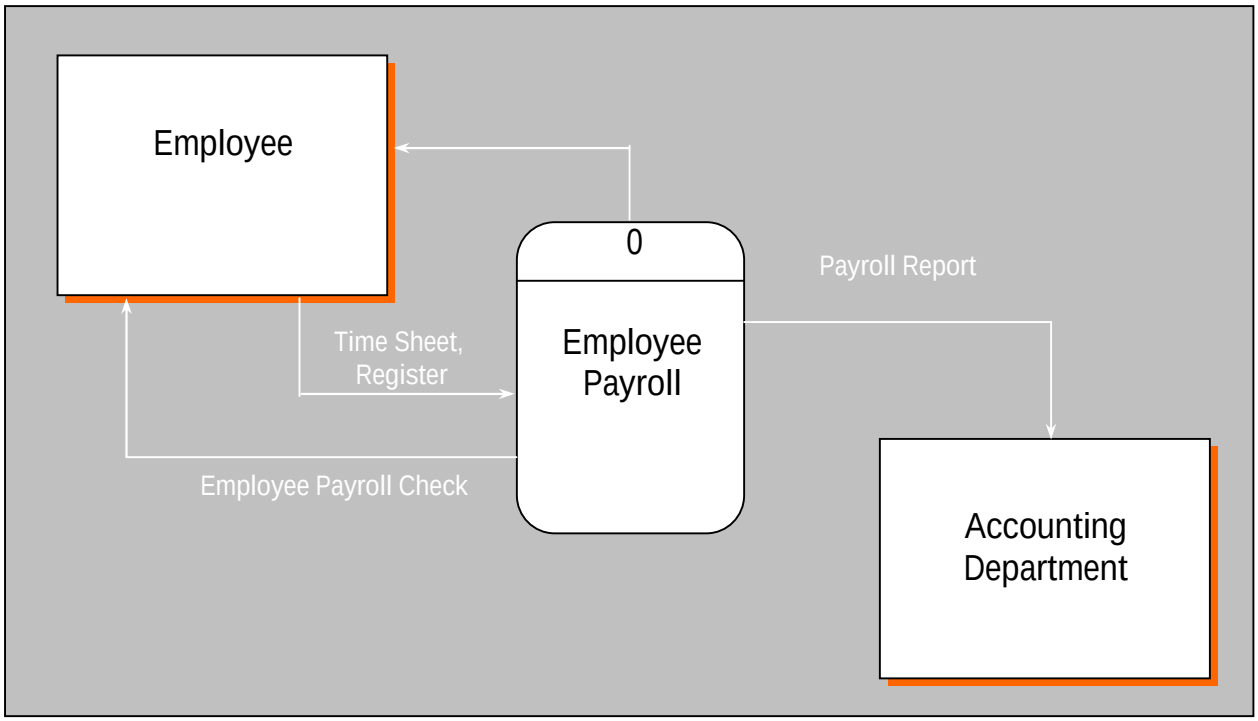
During this research, it is observed that most of the reports are prepared on MS Excel by Accountant.

4.4 DFD of existing system

4.4.1 Context Level Diagram

Figure 4.4

Context Level Diagram of existing system



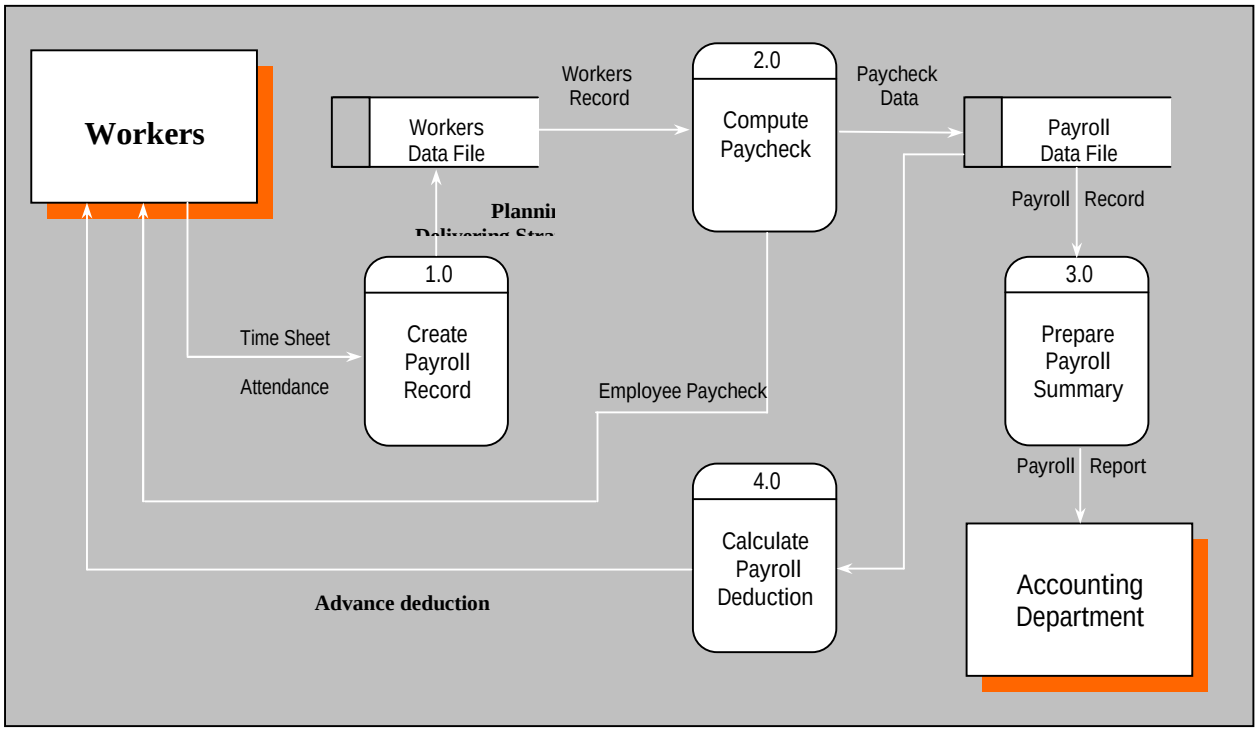
Accounting department prepares the payroll and payroll report to all employees, worker as per the timesheet, register of employee in the existing system.

4.4.2 Work flow diagram of existing Payroll System of construction workers.

The below diagram shows the process of payment to the workers of construction sites. As per the time sheet – hour worked the accountant prepares payroll record verifies the worker data file and compute paycheck by excel sheet. The paycheck is verified in case of any advances and after the verification and necessary deduction is done and payroll report is prepared and payment is made.

Figure 4.5

Work flow diagram of existing Payroll System 1



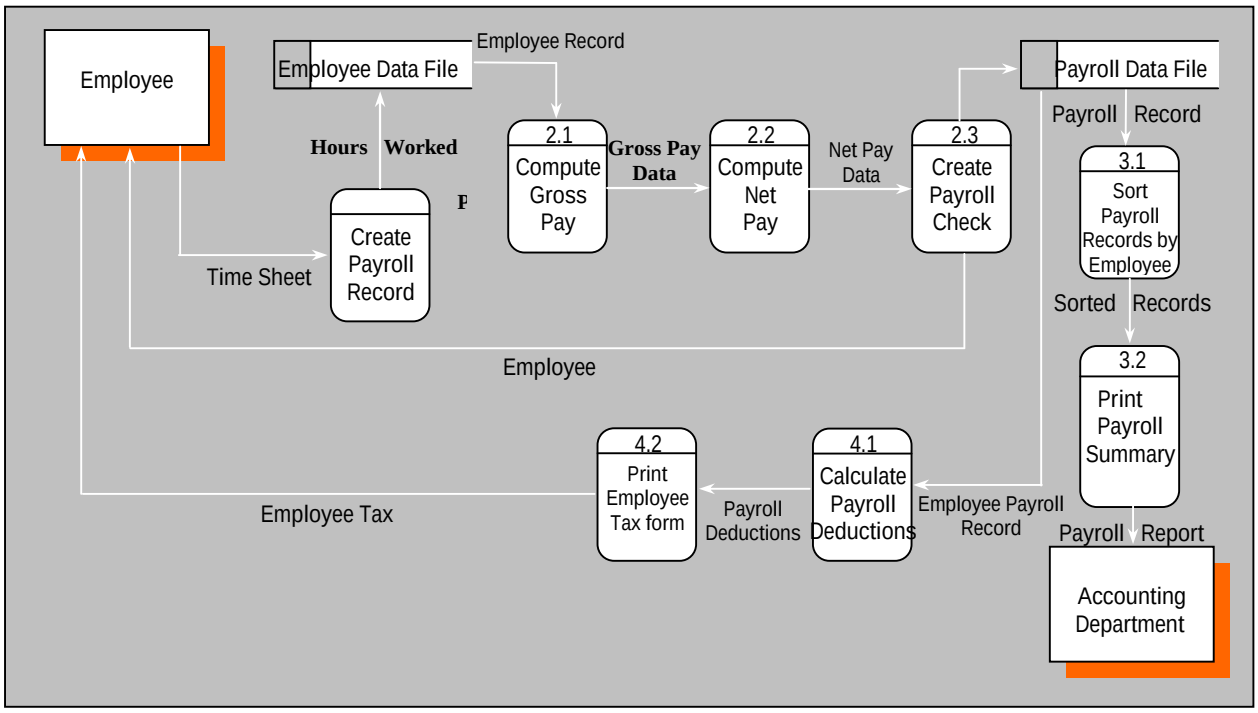
4.4.3 Work flow diagram of existing Payroll System of employees

Below diagram shows the work flow of existing Payroll System of employees. Accounting department keeps all records of employee. As per the register, time sheet or hours worked the department create payroll record and compute gross pay and net pay and create payroll check. Each payroll is sorted according to the records of employee advance deduction, tax deduction is deducted and finally accounting

department pays the employee.

Figure 4.6

Work flow diagram of existing Payroll System 2



4.5 Analysis of Existing System

The existing system that the company is working on is semi-computerized, which means that the computer is not being fully used for managing a payroll. A simple Excel based worksheet is being used to create payroll for the all the company staff, workers which is displayed in the following page.

Accounting officer keeps the attendance register and co-ordinate among various departments for the payroll of staff. It performs the following works for the payroll

i) Prepares the payrolls for each time paid workers by analyzing their in and out records.

ii) Analyze the time booked and actual time worked.

iii) Prepares the payroll sheets for each department separately.

iv) Prepares the paying slip for all workers

v) Maintain the permanent records of remuneration for individual workers.

vi) Payment of remuneration.

The main function of this department is to collect all types of information about cost and reporting to management with their analysis.

However it is found, The company uses semi- computerized Payroll System made by the Account Officer himself in excel sheet. The present system is only used for simple Payroll Calculation. Housing company being huge organization employing more than 100 staffs (including workers, plumber, masons, electricians) Since the employees are permanent, full time, part time workers therefore Attendance is the key factor for determining payroll for the employee.

Attendance is also recorded manually, and filled in the Excel worksheet everyday. In the case of workers in construction site – Construction supervisor visits different site daily takes the attendance of workers and update it daily in the worksheet.

By looking at the attendance register and the daily entry in the excel book, the monthly salary and by monthly wages of the workers is calculated.

Income Tax is deducted at the rate of 15% from Gross salary to those whose annual salary exceeds the income tax rule of Nepal.

If the employee has taken an advance money or loan, a part of it is deducted from the monthly salary (is calculated by an Accountant)

Allowance is given on the basis of the percentage of their gross pay.

The salary sheet is calculated every month (The same task is repeated by the end of every month)

Microsoft Excel (Spreadsheet) is used to calculate Payroll

All other Employees' record are kept manually (paper based)

Employees are paid in cash.

4.6 Limitation in the existing system:

As the current system uses the semi computerized system of Payroll System. It is found that Excel based worksheet is used for computing payroll. The payroll sheet of every payroll is placed in single worksheet, so it becomes a tedious job to point out the particular record among that large content.

All the records of the employee are kept in a cabinet, where nothing is organized. Some time it takes hours to search records, even worse occurs when they are misplaced.

Since the company has just started, so the Excel worksheet was also working with less records to maintain, but as the time passes it is difficult to manage the massive records within the spreadsheet.

The other major problem is that the available computer in the institution is not being used to their limit. It is only being used for documentation, spreadsheet.

The system is not time efficient, i.e. since it is not an automated system, so the accountant should be efficient enough to make everything in time.

Security can also be considered as one of the significant problem.

Frequent mixing up of salary within the employee occurs in the salary sheet. For example, Ramesh should get Rs10000, but in salary sheet, Rs10000 is written for the

next employee or 12000 is miswritten for the same employee.

4.7 Concept for Modification of the Existing System

Present system can be enhanced by creating totally independent tailored software with the help of MIS, (independent to the generalized package software such as Excel, Word etc) which is able to handle and manipulate attendance, deductions and allowance automatically for the employee to generate payroll sheet every month. Also having the facility of managing database of the employees, even make record of each employee and the employees' pay-history. That can even make the system secure by adding administrator password, to view or change the confidential data. From the structured interview, it is understood that each and every employee is not able to go to the payroll department to sign in for the attendance. Therefore attendance is kept manual.

4.8 Advantage and Disadvantages of Proposed Solutions:

Advantages: It is the best solution that the organization can have. As it will be tailored software it will be totally independent to other software. It will be totally automatic as every single aspects of the existing system will be studied thoroughly before creating new system. Though the attendance has to be done manually due to the reasons we have discussed earlier, the system will even be brand new as the database would be completely handled by the system and it will be no more tedious job to search record because it is easy to search with few clicks. Security is also maintained in the system.

Advantages:

Comparing it with the existing system, it is far better. We all love automatic things, not those which requires hours of hard work. As the existing system does not make much efficient use of the computer with the recurrent mistake while calculating, so

the new system will be able to make proper use of computer as the database is moved from the manual system into the computerized system.

Disadvantage:

The only problem in the existing system is that it will take some time for the employee (payroll department) to blend in with the new system.

4.9 Comparison of Existing & Proposed Information Systems

Table 4.2

Comparison between existing and proposed Payroll System

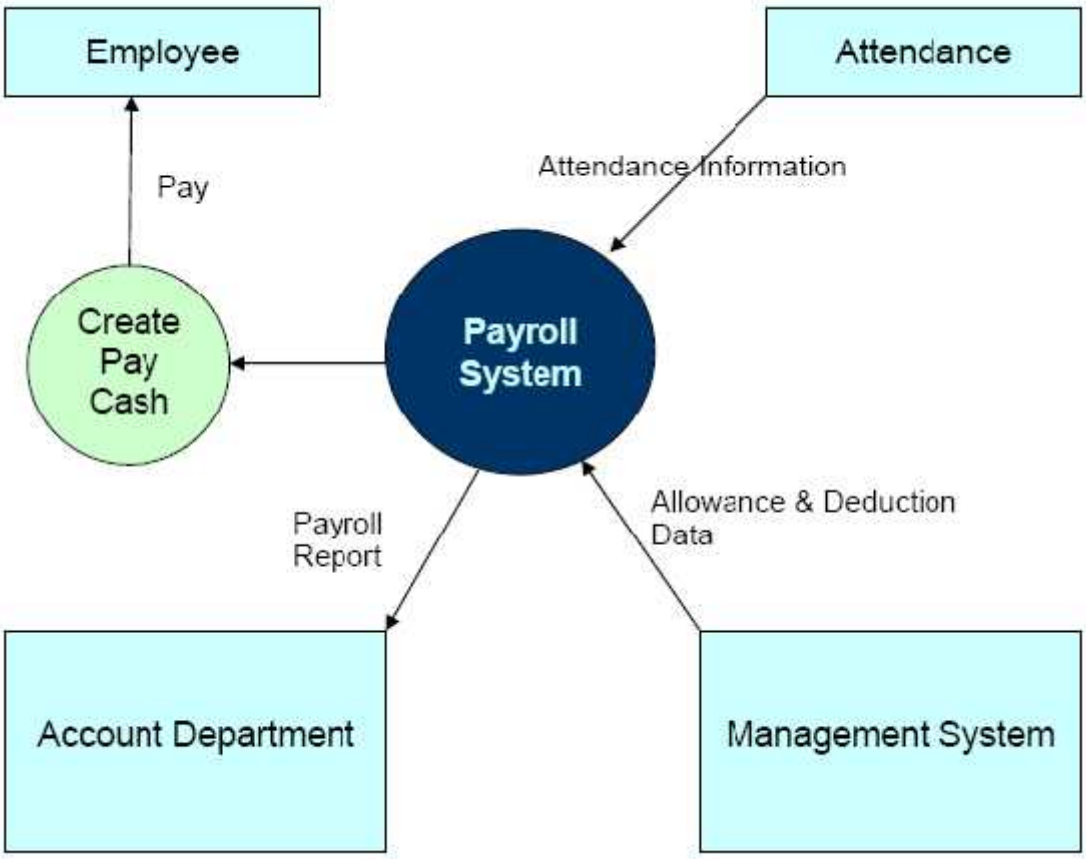
Existing System	***Proposed System***
⁾ The main deficiency of existing system is data redundancy and data integrity. ⁾ Inaccurate calculation which is creating ambiguity. ⁾ It takes lot of time, effort and searching project information is so tedious. ⁾ It looks economical but has minimal effectiveness and efficiency.	⁾ It will reduce data redundancy and data integrity significantly. ⁾ Accuracy of data in report which will reduce ambiguity. ⁾ It saves time and makes project information search easy and fast hence timely presentation of report. ⁾ It will be costly initially but effectiveness and efficiency in work will increase significantly.

4.10 DFD (Data Flow Diagram)of the New Payroll System

Data flow diagram of various stages and process of the new proposed Payroll System are given below

Figure 4.7

Context Diagram of Proposed System

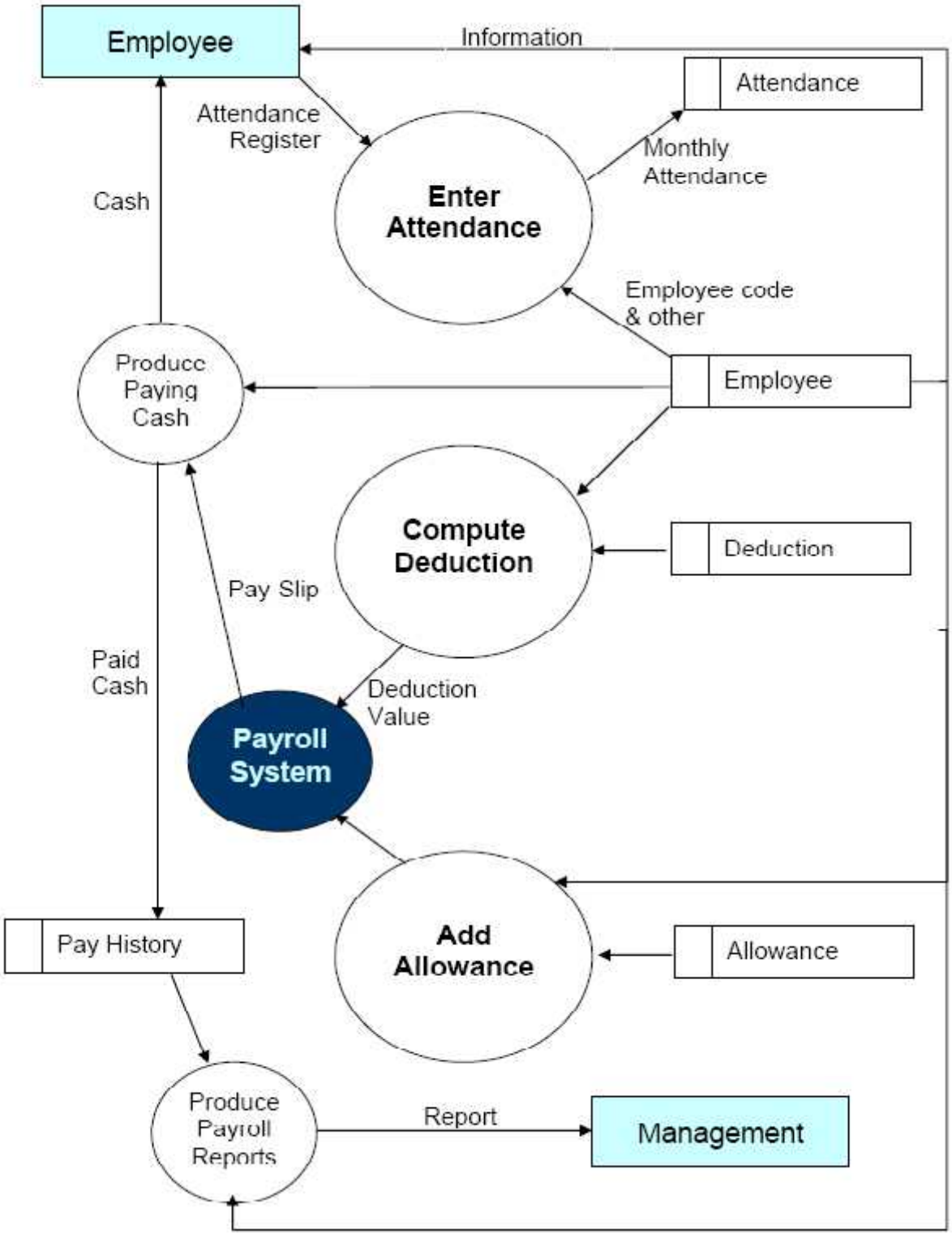


Payroll system software – after manual entry of attendance maintains the attendance information, management system provides allowance and deduction information – payroll system reports account department cash or cheque is paid to employee. Here all level staffs are consider as employee.

Top Level DFD (Data Flow Diagram)

Figure 4.8

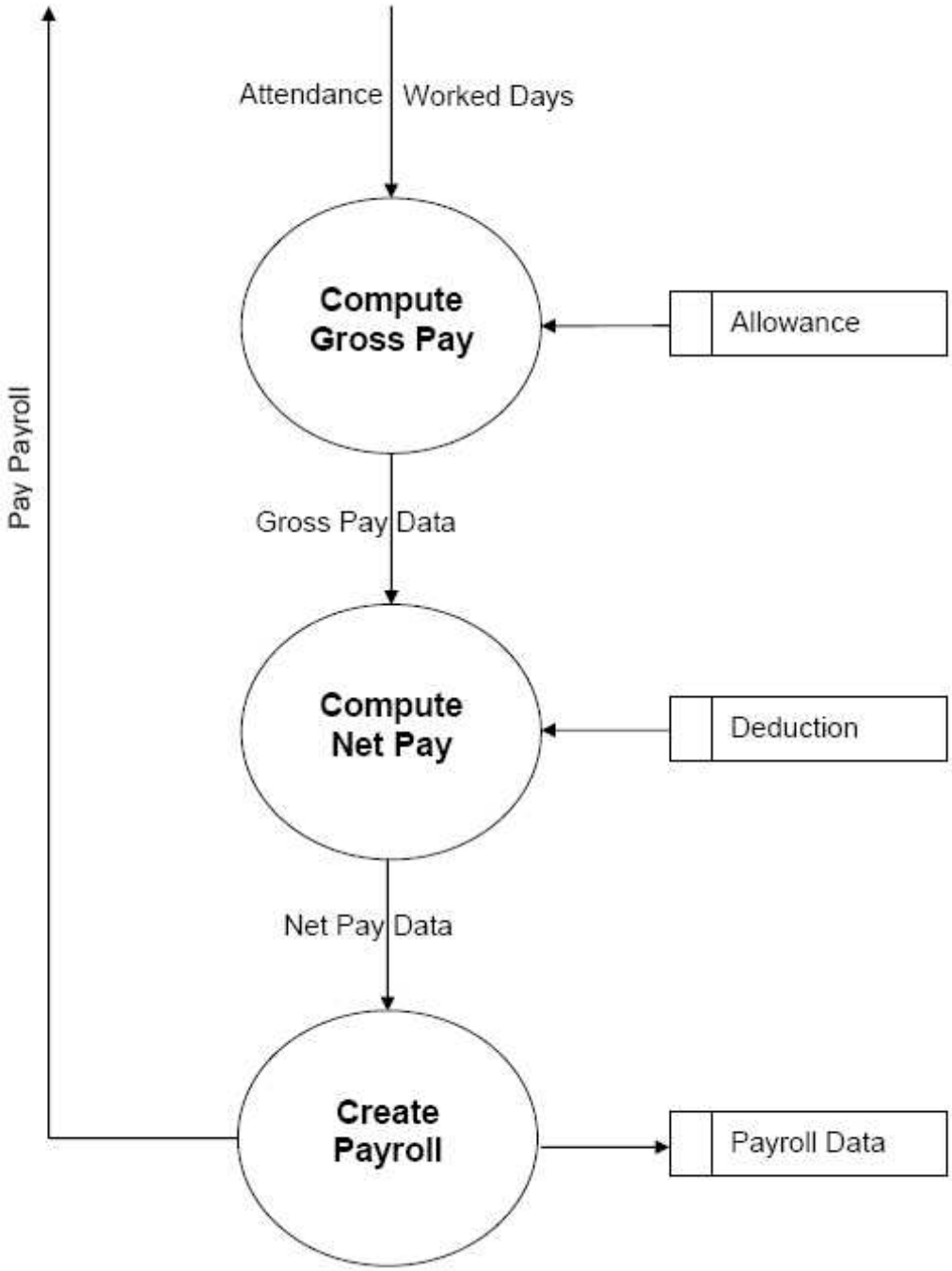
Top Level DFD



Level 1 DFD

Figure 4.9

Level 1 DFD

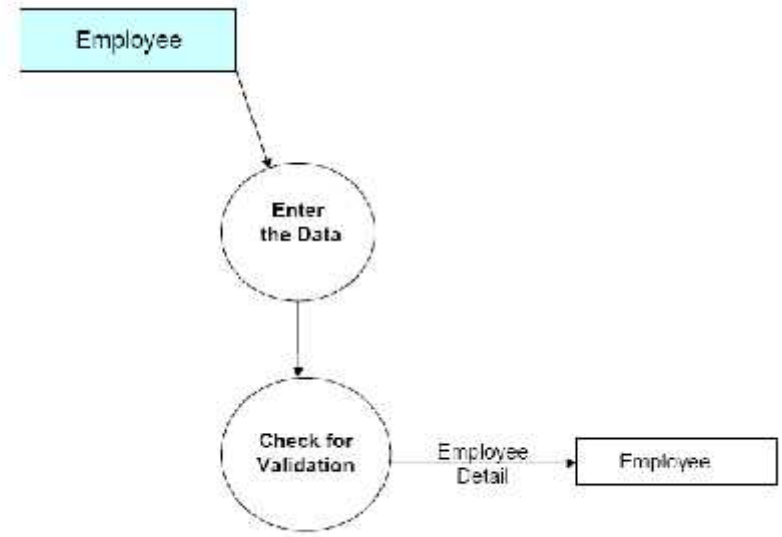


Payroll System calculate according to the attendance, hour worked compute gross pay by adding allowance, after deduction net pay data is created than payroll data and payroll sheet is prepared.

Adding Employee

Figure 4.10

DFD Adding Employee

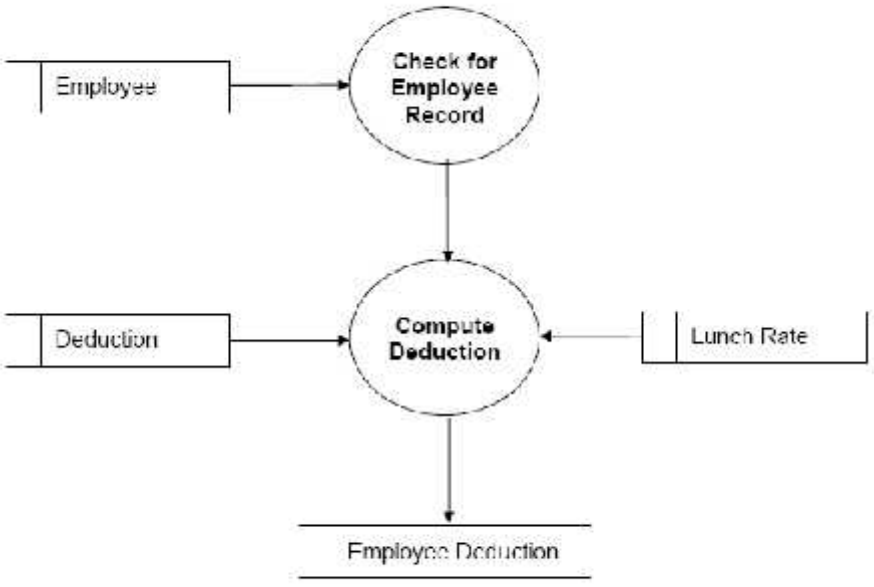


New Payroll System facilitates recording information of all employees, workers. The above figure shows the DFD of adding employee.

Deduction

Figure 4.11

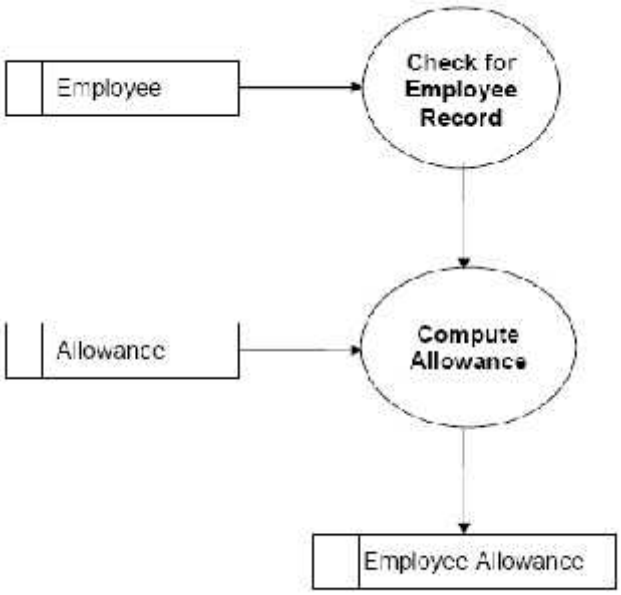
DFD Deduction



Allowance

Figure 4.12

Allowance DFD

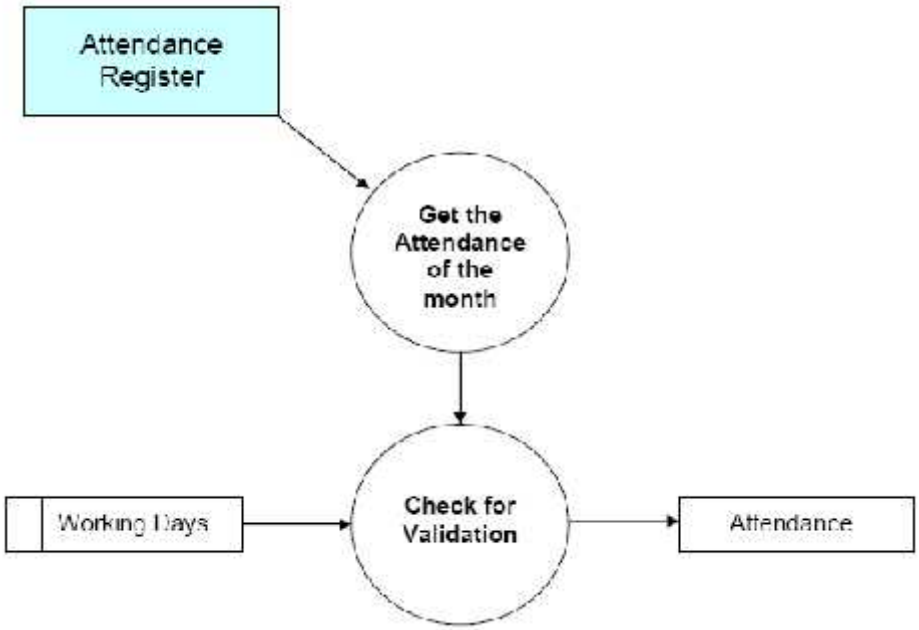


Payroll System checks employee record and compute the allowance while preparing payroll.

Attendance

Figure 4.13

Attendance DFD

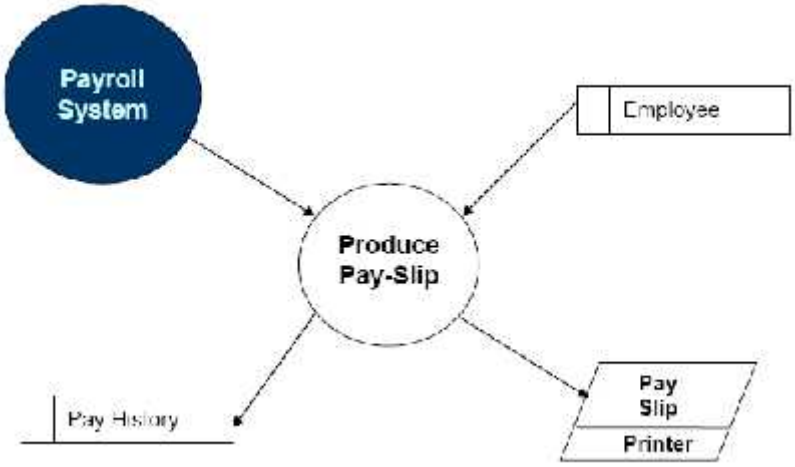


Attendance register has to be maintained and validation has to be checked and has to be manually enter in the Payroll System.

Pay History

Figure 4.14

Pay History DFD

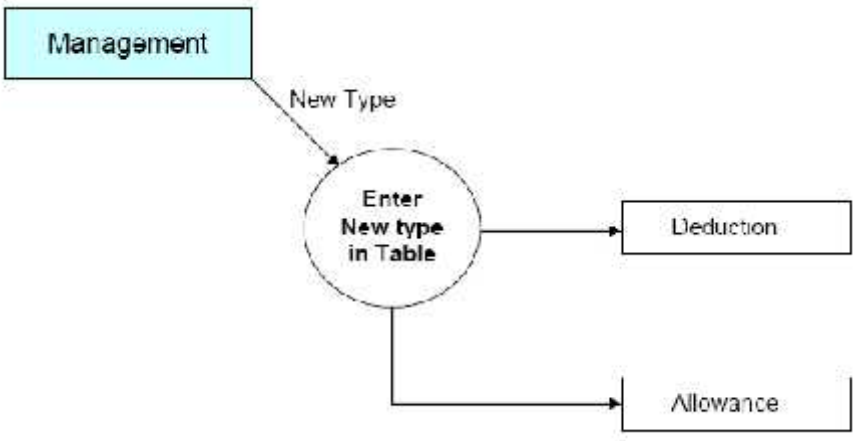


Payroll system after verifying pay history of employee prepares pay slip which can be printed.

Add New Deduction or Allowance Type

Figure 4.15

Add New Deduction or Allowance DFD

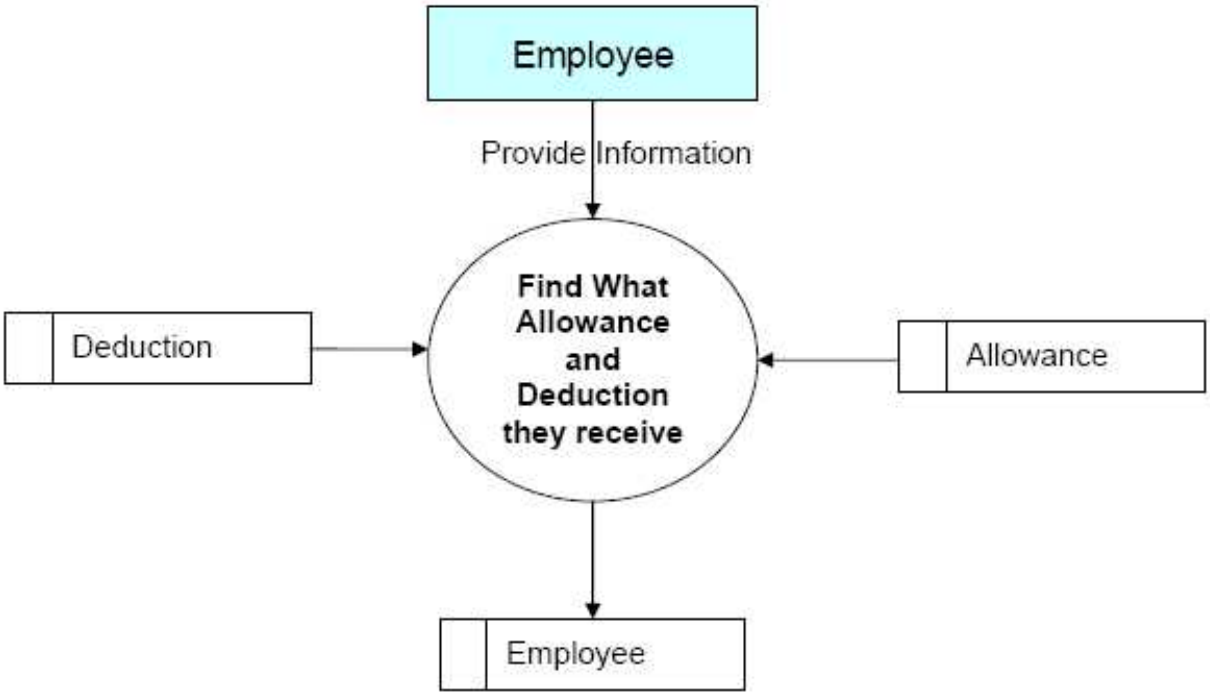


Payroll system allows the users to add new type of deduction and allowance to the program.

Assigning Employee with their Allowance and Deduction

Figure 4.16

Assigning Employee with Allowance and Deduction DFD

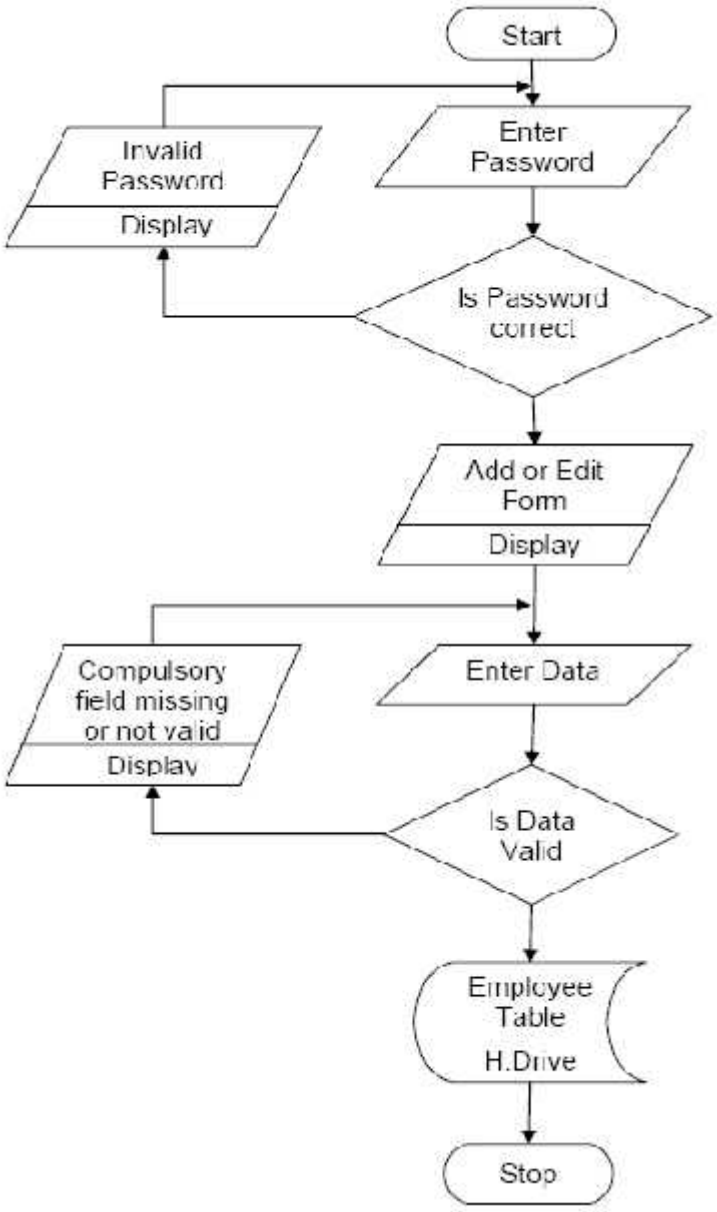


Payroll System with the help of provided information finds what allowance and deduction employees receive and assigns while the system prepares payroll.

4.11 System Flowchart of the New System

Figure 4.17

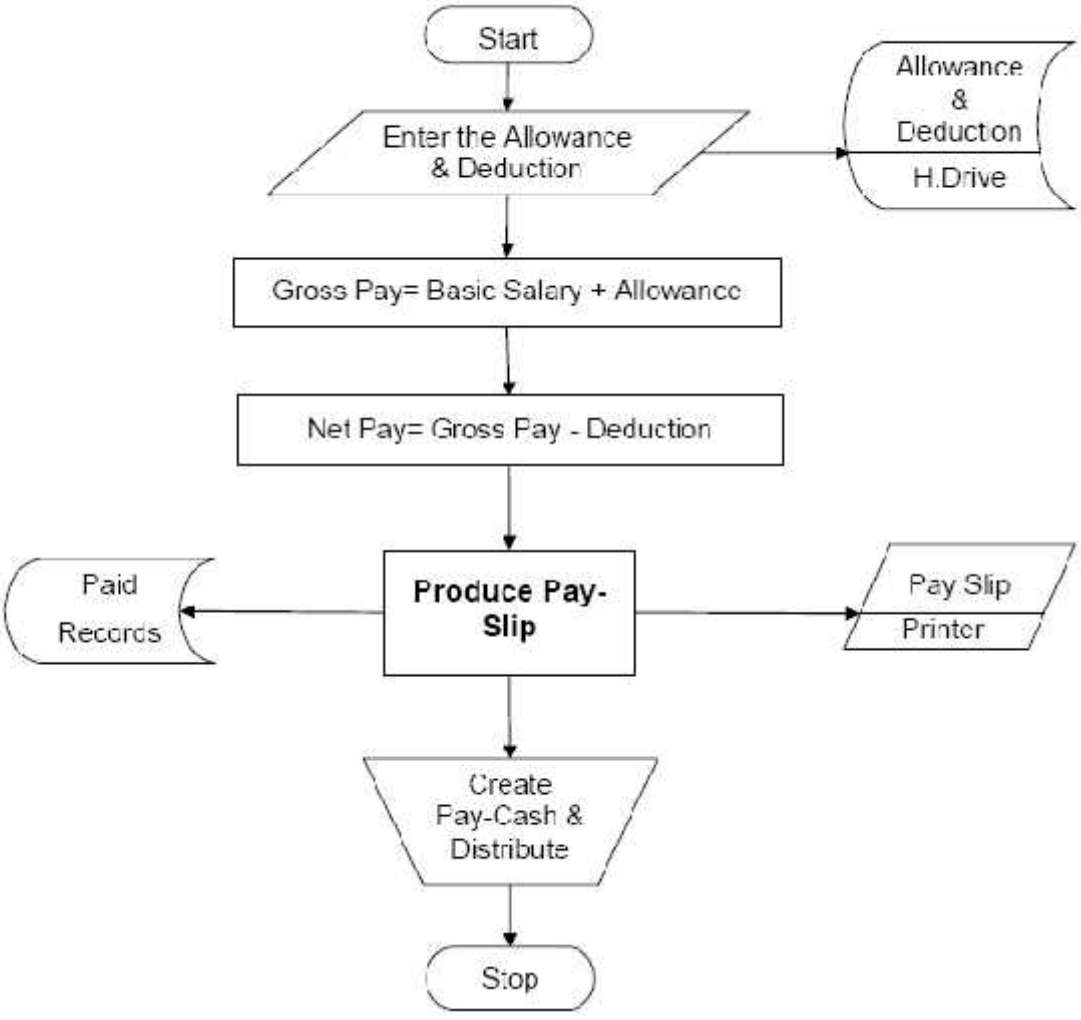
To Add or Edit New Employee Record



Payroll system is password protect, only authorized personnel has the authority to use the system. Administrator of the Payroll system has highest authority after providing correct password add edit information of the employees.

Figure 4.18

Paying Employee Flowchart



Gross payment is calculated adding allowance and basic salary. Net pay is calculated after deduction in gross pay and the system prepare pay slip – print the slip or check paid records and cash is paid the employee accordingly.

4.12 Brief overview – Processing flow and function of Proposed Payroll System

Payroll Processing Flow

The following processing outline traces payroll transaction flow from entry time, through the various processing stages, into check and report printing, and through year-end clearing procedures.

Payroll Time Entry

Standard payroll transactions will automatically generated by the Build Time Entry program. An entry is created to specify the standard number of hours worked and the standard rate of pay for each employee during the pay period. The operator can use the Payroll Time Entry/Edit program to update transactions with any payroll information necessary to reflect the exact number and type of hours an employee worked during the pay period. The operator also has the option of building transactions only for salaried personnel. This method is preferred if the majority of the hourly employees do not work a standard number of hours for the pay period. In that case, transactions are added individually for hourly employees after the salaried personnel transactions are built

Payroll transactions can be edited to include any overtime, sick, vacation and special pay, as well as commissions or tips.

Verifying Payroll Transaction Accuracy

Payroll information will record on the Payroll Time Transaction File. A Payroll Edit List can be printed after all information has been recorded. This report is another in a series of system features that provide processing accuracy.

A review of the edit list verifies the accuracy of operator entries. Any errors can be corrected before posting occurs.

Payroll Calculation

The payroll calculation process calculates all mandatory deductions, earned income scheduled for the current pay period. Output from the calculation process includes the Payroll Journal and Miscellaneous Deduction Registers. These documents should also be reviewed for accuracy. Any necessary corrections can then be made. If corrections are necessary, the payroll calculation process must be run again.

Printing and Posting Payroll Checks

The Payroll System uses pay period information that was recorded on the Payroll Time Transaction File to print employee checks. Several reports can be generated during this procedure. These include the Check Register, Payroll Register, Departmental Distribution Report, and Labor Distribution Report.

Clearing Accumulators

Month-to-date, quarter-to-date, and year-to-date payroll accumulators in the Employee Master File are leared on a monthly, quarterly, and annual basis in preparation for the next accumulation period.

Function

The proposed Payroll System performs the following functions.

- Calculates hourly and salaried pay types
- Calculates multiple employee deductions and taxes
- Handles “conditional” deductions
- Handles tips, commissions, and non-taxable deductions

- Processes pre-paid, pre-calculated, and adjustment transactions
- Generates a comprehensive set of payroll reports
- Automatically interfaces with the mP-MIS General Ledger System
- Supports multiple branches and multiple states within a company
- Allows information to be entered at several terminals simultaneously

The multi-user concept is inherent to Payroll System. This allows entry and retrieval of several terminals at one time.

The various user types are administrator – account officers, manager.

Administrator - are users with highest privileges. They are responsible to create and delete in any of the categories with the privileges associated with the user type. They also have the authority to create, delete and change the status of the system.However they cannot edit attendance once entered.

Project Manager - are users who check the scenario of the system. However they cannot add or delete the information in it.

4.12.1 Scenarios for User subsystem

- Employee id, worker ids are created by the administrator.
- Administrator updates day to day attendance of the staff.
- Administrator can block a particular user.
- Administrator can delete the files..

4.13 Justification for Modified System

Mainly the following Benefits will be observed incase of implementation of Proposed or Modified system:

- Most important, the preparation of manually and Excel sheet preparation of the payroll of the staff will be completely eliminated and single report through single system will be generated. Due to which half of the work load will be cut off.
- New system will help to solve the problem related to the payroll and in the reports that is found in present reporting also. New system will give 100% accurate report.
- There will be adequate save of time, power and paper work due to which unproductive cost bearing presently by company will be decreased.
- And New System decreases uncertainty in decision making and enhance strategic planning capacity of managers.

4.14 Cost Benefit Analysis & Feasibility Analysis of Modified System

A system request or need for system modification or request for creation of newer system is feasible only if it can be successfully implemented. Any request, which cannot be implemented, is not feasible. It will be a waste of time and resources to try to develop a system, which cannot be implemented.

Hence, all system requests though worthy and valuable, should be first analyzed for its feasibility before proceeding to system development. Any proposed system request should be considered for 3 types of feasibility:

- **Economic feasibility**
- **Technical feasibility**
- **Operational feasibility**
- **Social feasibility**

- **Management feasibility**
- **Legal feasibility**

Any system request, which fails to satisfy any one of these three types of feasibility, is said to be infeasible.

Table 4.3

Feasibility Status table

S. No	Feasibility Criteria	Feasibility Status
1	Economic feasibility	The payroll system is economically feasible since the cost of the system is not so high for the company to bear.
2	Technical feasibility	- The system is technically feasible since all the tools and techniques required for the systems are available in the local market. Further the system does not use any complicated information system models − A few Giga Bytes of Hard Disk Drive is enough for the system. − A CD- Writer or pen drive can be used for Backing Up.
3	Operational feasibility	The system is not so complicated so the account staff can easily understand and use the system.
4	Social feasibility	The opinion of the public is highly encouraging in the system. Further the system have no such

		other direct impact so that it will not be rejected by the society so this system is socially feasible
5	Management feasibility	The management feasibility is also an important issue. This can be considered in two ways. Whether we will be able to manage the system or whether the management supports the system implementation or not. Here the management feasibility can be accepted.
6	Legal feasibility	There is no such direct legal problem

Table 4.2 Comparison of existing and proposed Payroll System

4.15 Major Findings

The major findings of the present study have been listed as follows:

- Though established in 2005 AD, Arte Namuna Housinging is fast growing and company. Lack of proper and timely information is one of the challenges for the organization. So, Payroll System has been proposed for the organization so as to cater its important information regarding payment of its employee.
- The beneficiaries from the proposed systme will be the company, its account departments all employee and workers who will be directly benefited by the system.
- Introduction of Payroll system will transform the existing human based information system into a systematic and scientific one. This would certainly reduce various deficiencies in the present system such as mistake in payment and mistake in printings and recording which will delay in information flow and

provide wrong informatin, ill matching of generated data, irrelevant information and under utilization and poor feedback.

- Earlier, the study and practice of Payroll system has been too few to mention. The present study will therefore be a milestone for practice and reference in future. Hence, the present study may be valuable not only for Arte Namuna Housing but also for other similar institutions as well as for any company.

- The use of computerization payroll system will certainly prove a leap for Arte Namuna Housing. The adopting and upgrading of the advanced technology has already been a necessity and challenge for the company. So, it will be a source of motivation and inspiration for all concerned to upgrade their performance, efficiency and effectiveness.