



Inspiring Excellence

Internship Report
On

The Impact of Enterprise Resource Planning (ERP) System on
Organizational Performance in DDC

Submitted to:

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“The Impact of Enterprise Resource Planning (ERP) System
on Organizational Performance in DDC”



Letter of Transmittal

23rd April, 2019

Zaheed Husein Mohammad Al-din

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BRAC Business School

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Subject: Submission of Internship Report.

Dear Sir,

With due Respect, I am hereby submitting my internship report on “The impact of Enterprise Resource Planning System on Organizational Performance in DDC”. It is a great pleasure for me to submit this report before you. I have got the opportunity to work at Development Design Consultants LTD in Human Resource Department and particularly I have learnt the activities and importance of Enterprise Resource Planning system in DDC under the supervision of Mr. Imroze Ahmed who is the general manager of (HR, Admin & ERP).

I tried to put all the effort for preparing this report. The most relevant information has been accumulated in the preparation of this report. To make this report I have conducted survey and secondary researches. I tried my best to go into the depth of the topic which can help me to make the report more meaningful and accurate.

Therefore, I hope you will appreciate my hardship and it would be an immense pleasure for me if you find this report useful and informative. I would like to thank you for your guidance and cooperation.

Sincerely yours,

Fariya Hossain Khan

Student ID: 15104190

BRAC Business School

BRAC University

Letter of Endorsement

April 30, 2019

To Whom It May Concern,

The Internship Report entitled “The Impact of Enterprise Resource Planning (ERP) System on Organizational Performance in DDC” has been submitted to the BRAC Business School department, it is required to fulfill the requirements for the degree of Bachelor of Business Administration, on April 30, 2019 by **Ms. Fariya Hossain Khan, ID- 15104190**. The report has been accepted and may be presented to the Internship Defense Committee for evaluation.

Zaheed Husein Mohammad Al-Din

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First of all, I would like to express my immeasurable gratefulness to Almighty Allah whose supreme mercy helped me to complete this report successfully. Without his blessings I will not be able to submit this report within the specific time duration. In addition I am very much grateful to my parents as without their encouragement and support I will not be able to come so far.

Then I would like to show my respect and a deep sense of gratitude to my academic supervisor Zaheed Husein Mohammad Al-Din, Senior Lecturer of BRAC Business School For helping me by providing directions and suggestions in every stage of my progress.

My heartiest thanks and gratefulness towards Jehra Zerin who is Director of (Human Resource, Admin & Accounts) in DDC for giving me the opportunity to complete my internship from your Organization. Moreover, I want to express my gratefulness to the supervisor Mr. Imroze Ahmed, the general manager of HR, Admin, & ERP who consistently helps me understand the activities of the organization and provide me relevant information to complete my internship report successfully.

Last but not the least my special thanks to the employees who have filled the survey form and give their valuable time. Without their participation it would be impossible for me to finish this report.

Executive Summary

This research paper has been made based on my experience and my learning during three months internship period at Development Design Consultants LTD where I have been assigned as a management trainee in Human Resource department. Firstly, the report gives an overview of DDC Ltd and discussed about its practices and activities. In the next chapter this report mentioned the objective, Scope and limitation of the study. Additionally, it also disclosed the reason behind doing this research. After that, in the 'Literature Review' section includes an overview of Enterprise Resource Planning system, its evolution and its impact on different functions of an organization according to the perspectives of experts. Next, the report provides an overview of ERP system in DDC LTD and how this system works in this organization. Furthermore, I have conducted a paper based on survey among employees and also developed five hypotheses. Later, Through Statistical package for the social science (SPSS) software the whole analysis part has been done which included Rotated Component Matrix, Reliability, and Validity and Regression analysis. In addition, the Analysis and interpretation part also disclose which hypothesis are supported and which are not on the basis of the data. Next, in the findings part based on the results of the analysis section the reason behind not supporting three hypotheses and obstacles of implementing ERP system successfully in the organization has been discussed. Lastly, the report suggested few ways to utilize the advantages of ERP system more effectively to improve their overall organizational performance.

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Chapter-1

Organizational Overview

1.1 Development design consultant LTD:

Last year in 2018 Bangladesh recognized as a developing country which is one of the biggest achievement of our country. In the last few years Bangladesh has developed in almost all of the sectors such as, technology, Engineering, construction etc. the number of middle and small engineering consultancy companies have also grown up in the last few years but among all of them Development Design consultant LTD is the largest and oldest company in the engineering consultancy Industry. DDC has started its journey in 1972 with few numbers of employees now they are one of the largest companies in Bangladesh with more than 1500 employees including multi-disciplinary professionals and technical staffs. Employees can be categorized into four types which are given following:

- Regular basis
- Project basis
- Contractual basis
- Temporary basis

The clients of this organization include Government/Public Agencies, Private Investors, Financial /Educational Institutions, Global Corporations, International Donor and Funding Agencies. DDC is the pioneer company and it holds steadily the lead position in the consultancy engineering industry of the nation in all respect. This organization holds on the belief that there are no alternatives to perfection in service. They always try to provide best quality services through their experienced and skilled professionals. The unique and greatest service advantage that DDC provides to its clients is the technical skills and continuity of their technical staff. DDC is enriched with largest number of engineers, Architects and professionals such as Transport and Physical Planners, Environmentalists, Sociologists, Resettlement and IT Specialists with proven and authentic working experience both within and outside Bangladesh. These professional technical staffs ensure to provide best quality services to the clients and help the organization to keep their lead position in the consultancy engineering industry. In addition, it has been internationally recognized for its quality and growth. According to the review accomplished by the Swedish Federation of Architect & Consulting Engineers, DDC was ranked as the 88th position among the top 200 engineering consultants in the world. Moreover, Development

Design Consultants Limited is an **ISO 9001: 2015 certified** company. It has been certified for “Quality Management Systems”.

1.2 Vision of DDC:

To be the outstanding provider of dedicated specialists and integrated services in the built and natural environment within Bangladesh and beyond.

1.3 Mission of DDC:

DDC is committed to fulfilling the needs of its clients and employees through quality service, innovation, and leadership. To facilitate this commitment, the firm is committed to fostering customer knowledge, technical innovation and focused expertise. DDC is proud that the fulfillment of its mission is often recognized by the public, clients and the consultancy industry.

1.4 Strategy of DDC:

The strategy of DDC is to continue to grow the consultancy business within Bangladesh and globally beyond whilst improving all aspects of operation and performance.

1.5 SWOT Analysis of DDC:

Strengths:

Leadership is one of the major strengths of DDC. The managing director of DDC A.K.M. Rafiquddin is a great leader in the engineering consultant industry in Bangladesh. His experiences, guidance and dedication help this company to reach in the leading position and they hold this position in the market for a long period of time. This company is the pioneer company in the engineering consultancy industry so it is already becoming a very trustworthy company in the worldwide. Moreover, this company is an ISO certified company and adaptation of ERP is another biggest strength of this company.

Weaknesses:

As the number of employees and size of the company is increasing it is becoming difficult to manage excessive amount of data and the data base also becoming insecure day by day. Due to lack of communication manpower planning is also becoming affected.

Opportunities:

Many upcoming projects are coming and also new projects planning are arising. They have high chances now to expand their business globally as they already have association with foreign investors and clients. The numbers of competitors are less in the local market.

Threats:

Hacking internal software or database is a major threat for this company. Another major threat they have faced that is CV replacement. For example, they win a project by providing CV of an experienced technical staff and after winning the project the same person might not be available at that time this type of situation is really challenging for them. Some obligations from foreign companies are also a threat for them.

1.6 As a multi-disciplinary consulting firm DDC provides:

- Project Identification
- Techno-Economic Feasibility Studies
- Fields Survey/Investigations
- Economic and Financial Analysis
- Environmental Impact & Social impact Assessment
- Planning, Detailed Engineering Design and Development, technical specifications and Tender Document
- Procurement Assistance
- Project Management Services, Monitoring and Scheduling
- Contrition/Implementation Supervision
- Quality Control/ Assurance
- Inspection And Commissioning
- Operation And Maintenance
- Institutional And Organizational Strengthening

1.7 Divisions of DDC:

- DDC Head Office
- Business Administration Division
- Building And Planning Division
- DDC Services Division
- Energy And Power Division
- Information And Communication Technology
- Port & Railway Division
- Road & Bridge Division
- Rural Development Division
- Water Resources & Environment Division

1.8 Field Of Activities of DDC:

- Roads, Highways And Bridges
- Railway And Railway Bridges
- Commercial, Industrial, Public And Private Facilities
- Electrical And Mechanical Services
- Forestry And Environmental Studies
- GIS And Mapping, Engineering & Bathymetric Survey
- Healthcare Facilities
- High Rise Building And Housing Complex
- Information Technology (It)
- Management And Training
- Municipal Services
- Ports, Harbors And Airports
- Real Estate Development
- Agricultural And Rural Development
- Socio-Economic Studies
- Telecommunication
- Tourism Development
- Urban Development
- Water Resource Development
- Transportation, Engineering & Traffic Management

1.9 Glorious Projects done by DDC:

- Jamuna Bridge Access Roads Project (ADB). The project involves reconstruction/improvement of Dhaka-savar, Nabinagar-Chandra, Dhaka-Daukandi and Feni-Chittagong (port) roads, which are very important national highways of Bangladesh.
- Second Sitalakhya Bridge at Demra. This Bridge will connect Dhaka with Sylhet road and ease out traffic towards Kanchpurbridge on Dhaka Chittagong road.
- Consultancy to Bangladesh power development Board for 210MW Chittagong Raazon thermal power station.
- Consultancy services to Bangladesh Telegraph & Telephone board (BTTB).
- Consultancy to private international oil company for gas reserve estimation.
- Greater Dhaka metropolitan area integrated transport study.
- Personnel Information Management system, Bangladesh Army pilot testing & implementing EMIS development for DSHE, MOE, GOB.
- DDC was worked for mapping data of 10 bio-diversity sites from secondary sources and preparation of base maps of the project sites using satellite images. These maps showed political boundaries and other features.
- Chittagong Airport development project.

Chapter 2

Introduction

2.1 Rationale of the Study

In this era the whole process of business has been changed due to the drastic changes of technology. For surviving in this business world full of new technologies companies need to update their strategies and processes according to the demands of the market. For gaining competitive advantage over other companies in the market, adoption of new technology is essential. For the prosperity and growth of a nation's economy implementation of new technology is crucial. However, with the increasing competition it has become necessary for companies to adopt new technologies such as Enterprise resource planning. The underlying reason behind this study is to identify the importance of ERP system in a large organization like DDC. Additionally, to determine the sustainability of ERP system in the company and how much beneficial they are due to the adoption of ERP.

2.2 Statement of the problem

According to Abugabah & Sanzogni (2009) there is a positive correlation between adoption of ERP systems and organizational performance. One of the major reasons to Adopt ERP system by engineering consultancy firm like DDC is to ensure organizational performance. There is less number of studies in Bangladesh regarding the effect of ERP on the performance of engineering consultancy firms.

The current study has examined the impact of ERP in the performance of the oldest engineering consultancy firm in Bangladesh known a DDC. Hence, the study has analyzed the following; the impact of ERP system on operational effectiveness and operational efficiency; investigate the impact of ERP on communication process; assess the impact of the ERP system on human resource management and measure the impact on financial performance. The study further accumulated information to demonstrate the relation between ERP and organizational performance.

2.3 Scope of the Study

This report provides an analysis on each aspect and activities involve in the Enterprise resource planning system. It covers the importance of ERP in a firm and it impacts on organizational performance. To evaluate the impact of ERP system on the performance of the organization a survey has been conducted among employees.

2.4 Delimitation of the Report

I have faced few difficulties while preparing this report which can be regard as limitation of the study. The limitations of the study are mentioned below:

- **Sample Size:** since I have conducted a paper survey so I have to distribute the questionnaire and also need to collect those questionnaires back which is very time consuming. Through the paper survey I was able to collect responses from only 50 respondents. For going into the depth of the scenario it would have been better if I could collect data from more respondents.
- **Time Limitation:** Almost all the business process of firm is managed and controlled by ERP system so understanding the whole process within three months is inadequate.
- **Confidentiality:** In ERP software there are some information which is confidential and not allowed disclose to others according to the policy of the organization.

2.5 Objective of the report

The objective of this report is to evaluate the impact of Enterprise Resource Planning system on organizational performance.

This report analyzes the aspects of ERP system and how it helps a firm to improve its overall organizational performance. Last but not the least, this report identify few obstacles of implementing ERP system properly and recommend for the further improvement of the process.

2.6 Research Question

What are the impacts of ERP system on organizational performance?

Chapter 3

Literature Review

3.1 Introduction

Enterprise Resource Planning is business process management software that integrates internal and external management information over the whole organization including finance/accounting, manufacturing, sales and service, document management, customer relationship management etc. These software packages can be customized according to the specific needs of an organization. Enterprise resource planning systems are implemented to enhance the effectiveness of the organization. ERP systems help organization in various ways such as, make proper decisions, enhance control of operations and costs, making policies, and reduce costs.

3.2 Short time line of Enterprise Resource planning Evolution:

In 1990 the term ERP was first coined by Gartner however its root date to the 1960s (Spano& Bello, 2010). Earlier in 1960sthe concept of ERP applied to inventory management and for controlling manufacturing sector. After that in 1970s Material Requirement Planning (MRP) system had evolved for scheduling production processes. In the 1980s, MRP grew to encircle more manufacturing process, and MRP (Manufacturing Resource Planning) evolve into MRP-II or Manufacturing Resource planning (Abugabah&Sanzogni, 2009). When MRP-II is extended its boundaries to cover areas such as, Engineering, Finance, Human Resource and Project Management in the early 1990s the term ERP has formulated. Now, in this era ERP has expanded to business intelligence (BI) while at the same time its handling “front- office” function for example, marketing automation, ecommerce and sales force automation (SFA)(Dirisu, Iyiola&Ibidunni, 2013).

3.3 Enterprise Resource Planning System:

ERP is like an advanced Information System (IS), it has the capability to provide a comprehensive impression of the firm and handle a shared database to keep record of the firm’s transaction (Spano& Bello, 2010). Enterprise Resource Planning (ERP) system defined as

software packages which is composed of several modules, such as human resources, sales, finance and production that provides cross-organization integration of data through embedded business processes (Garcia-Sanchez & Perez-Bernal, 2007). According to Garcia-Sanchez & Perez-Bernal (2007) further explain that this software has the ability to integrate all the aspects of the firm's operation such as product and service planning, sales and manufacturing, development all in a single user interface application. Furthermore, ERP systems have been appraised for their impact on reduced risks, lower management cost and improved efficiency (Mahmoudi&Ahmadi, 2008). ERP help to replace disconnected databases within an individual system or firm and thereby help the firm to gain and sustain consistency in the accuracy of information across the entire firm including department, units and personnel (Abugabah&Sanzogni, 2009).

Organization used ERP system to manage and administrate all the departments and activities of the company. This software plays a very crucial role in the development of a company.

3.4 Role of ERP in an Organization:

- ERP helps organization to manage accounts and prepare financial reports.
- It increases the productivity and that reduces costs in the long term
- Financial reports and other operational information that a firm get through ERP System help the organization to make better decisions and act in a more effective manner.
- It helps to keep the record of the employees and manage their compensations.
- This is a very cost effective system which helps in long-term planning and management.
- Comparing to the paper records it require less time and effort to manage records.
- It helps company to predict market trends and according to that firm can make decision.

Zeng, Lu, and Skibniewski (2012) classified the benefits that can be gained from ERP system into five different dimensions:

- Organizational Benefits: ERP systems empower workers, shared and build a common vision among employees from bottom to top.
- Operational Benefits: ERP system provides benefits in operational activities such as performance, cost, cycle time and quality.

- IT Infrastructure benefits: It helps to predict future scenario of market and provides flexibility for current and future changes.
- Managerial benefits: This system helps managers to improve decision-making and planning.
- Strategic Benefits: ERP system supports innovations and further business growth.

ERP provides a lot of benefit to its users but still there are some reports show that many organizations are unable to utilize this software.

3.5 Importance of ERP System in engineering consultancy firms:

Engineering consultancy firms required a high degree of customization and characterized as being highly knowledge-intensive (Kreitl et al., 2002). Engineering consultancy firm are involved in activities such as, pre- investment services (e.g. pre-feasibility studies, feasibility studies), design services (e.g. drawings, graphical design) and services (e.g. cost and quality control) of engineering and construction projects. ERP system reduces the use of multiple software application. With the help of one single software application engineering consultancy firms can track and manage their company data. Engineering consultancy firm provide professional services ERP system helps firm to gathered detailed information during the tender process or after completion of any project that can be crucial to future project planning and execution. In a central location all the information regarding projects must be stored and all project members are permitted to access to this information and a clear understating of the scope. A project centric ERP is necessary for document management, work assignment, hours, expenses and accounting all these activities are related to the project. Furthermore, the information which is stored in ERP is accessible and can be analyzed at any time from any location while project members are working outside of the site. ERP helps project members to keep updated all the time. Engineering consultancy firm manage and control more than one project at one time so it became very difficult for them to manage rates because rates varies depending on the clients and the nature of the projects. ERP allows firm to assign rate to each individual project which came through accounting module and it helps the firm to reduce errors and the chances of loss. The reports that firm get through ERP system help to analyze various key Performance Indicators (KPI's). Moreover, ERP assists to prepare financial budget and allows for accurate and quick monitoring of project progress.

3.6 Enterprise resource planning and organizational performance:

Through Organizational performance firms can evaluate the success of the organization and whether the firm achieves its goals or not. According to (Fry et al., 2008) through both qualitative and quantitative indicators the success of an organization can be measured. Richard et al. (2009) believes that organizational performance is consists of three specific areas of firm outcomes. These three areas are product market performance (number of sales, market share, etc.); financial performance (return on assets, return on investment, profits, etc.); and shareholder return (total shareholder return, economic value added, etc.) Organizational performance is consisted of both financial and non-financial performances.

In 2000's enterprise system is the most important development in the corporate use of information technology. When enterprise resource system arrive improvement process and accuracy of information regarded as critical strategic issues. The necessity of enterprise resource planning creates due to the advancement of information technology and the emphasis on supply chain management. From the past few years, for every firm ERP has become a "must have" system to improve competitiveness. Today, more than 60% of companies have installed or have a plan to install a packaged ERP system (Hsiuju Rebecca yen, ChewnSheu, 2003). From a survey on companies who have installed ERP systems and their impact on management practice shows benefits that can be achieved through ERP. The perceived benefits of ERP involve improved quality of reports, increased flexibility in information generation, increased integration of accounts applications and improved decision based on timely and reliable accounting information. Evidence suggests that ERP system helps to improve overall organizational performance (CharalambosSpathis, et al, 2005).According to (Kamhawi 2008) the prime operational benefits that firm gets by adopting ERP such as improvements in productivity, data integration capabilities and optimizing efficiency. Further, Kamhawi (2008) finds that the main reasons behind ERP adoption are to gain decision management capabilities and strategic management on the other hand; the main barriers of adopting ERP are startup costs and availability of resources. Law and Ngai (2007) conduct a survey based on the firms in Hong Kong and they find that the satisfaction of ERP users and improvement of business processes positively influences the organizational performance.

3.7 Impact of ERP on Financial Performance:

There are two kinds of performance, financial performance and non-financial performance. Financial performance is the degree to which firm is able to gain strong return on asset and profitability (Holmberg, 2000). Financial performance may be known as measuring the results of a firm's operations and policies in monetary terms. Financial performance of the firm can be illustrated through financial reports such as, Return on assets, return on investment, value added and profits.

Many financial theories suggest that the decision of investment taken by managers should make in a way so that the firm can maximize the value of the firm. According to Springett, 2004 after successfully implementing ERP system companies can reduce the number of staff and apparently that reduces the operational cost of staff salaries. Moreover, Wayhan& Werner (2000) state that the reduction of workforce automatically improved subsequent financial performance.

3.8 Enterprise Resource Planning and Human Resource Management:

The importance of people in organizations is recognized by many scholars. In this point of view HRM is one of the potential key components of overall enterprise System. According to Bowen &Ostroff (2004) HRM create a unique (i.e. difficult to imitate) organizational culture that recognized as organizational competencies throughout the organization. Additionally they claim HRM provides significant competitive advantage to a firm over other firms. The purpose of ERP to introduced HRM module to integrated efficient human resource system with the other functional modules of ERP. However, HRM related problem may arise due to the failure of ERP implementation. The main difference between ERP and its forerunner (e.g., MRP-II) is the linkage of HRM and financial applications through a single database software application which is both flexible and rigid. There are two of the most-cited HRM risks in an ERP system one is lack of user involvement and another one is inadequate training (Wright & Wright, 2002).From personnel management and compensation calculation the functions of HRM have developed to the area of human resource planning, recruitment management, compensation management,

training management, time management, performance management, and business trip management (Ahmad & Schroeder, 2003; Li, 2001; Stone, 2007). By integrating necessary information ERP system has the capability to analyze or forecast the human resource costs. Additionally, it guides managers to make the right decisions by simulating the performance of human resource planning and comparing data. There are three ways to support recruitment management process through ERP system For instance, it reduces the workload of the recruitment process, it offers scientific management to recruitment costs and lastly it provide essential information for the decision making on recruitment management. According to Pasmore&Mlot (1994) the implementation of ERP helps to train employees so that they can acquire technical, interpersonal, and business skills which are required to become a participating team member in the early stage of team development. By using a Telemetric Control Unit (TCU) ERP system can record the attendance rate and other relevant information. In addition, it helps manager to make corporate strategy since the recoded data in ERP system provide relevant data timely for each evaluation index. The objective of implementing ERP can be achieved by integrating the compensation management system with other system. ERP system helps to forecast compensation information needed and to adjust the structure of the compensation management system. To conclude, from application to reimbursement and ratification the whole flow of business trip can be controlled by a business trip arrangement system. Through system integration the data firm gets from business trip arrangement system further processed in other function modules of ERP.

Chapter 4

Research Methodology

4.1 Mixed method for research:

Mixed method research involves collecting, integrating and analyzing quantitative and qualitative research. For gaining depth of understanding about the topic of the research mixed method has been followed in this research.

In this paper for collecting information different techniques have been used. For example, conduct face to face interview with experts and ERP operators for gathering qualitative information by asking them open- ended questions to get their elaborated and clarified opinions. Furthermore, a survey among employees also conducted to get quantitative data. Survey helps to measure the attitudes and perspectives of employees in a large scale.

4.2 Data Sources:

Primary Data Collection

For this paper, the relevant information on DDCL has been accumulated through different documents provided by my supervisor and interviewing IT experts and ERP administrator. Moreover, to collect primary data a survey analysis has also been done among the employees. To analyze various raw data and information I have also used my experience which I have gathered during my internship period.

Secondary Data Collection

The majority of data has been collected from the primary sources and some information about the organization has been extracted from the official website of the company. Furthermore, some previous research done on ERP and its impact on engineering consultancy firms has been analyzed as a secondary source.

4.3 Measurement:

The questionnaire that given to the employees to measure the impact of ERP on organizational performance is consists of 5-point likert scales. There are 5 response categories for each scale item starting from numeral 1 with verbal statement “strongly disagree” and at the end in numeral 5 presents “strongly agree”. In addition, other items such as at the numeral 2 verbally represents “disagree” whereas at the numeral 3 indicates “neutral” and numeral 4 shows “agree” perception of the respondents. To Illustrate, respondent shows a negative judgment towards a statement by selecting strongly disagree whereas by selecting strongly agree respondents express similar judgment towards the statement what it refers to. Neutral item indicates not supporting either disagree or agree somewhat in the middle regarding the statement. Biographical data are also collected through the survey such as age, gender and educational qualification. By using every scale items independent variables are measured to evaluate the impact of ERP on overall organizational performance.

4.4 Sampling

A paper based survey has been conducted and questionnaires give to the respondents directly in their hands. The questionnaire contained 21 questions including all the dependent and independent variables and biographical factors. All the respondents were employees of DDC. The sample size of this survey was 50 and other 5 respondents opinion were collected through face to face interview. The respondents were ensured that the survey will be only used for academic purpose.

For this report paper survey has been conducted and it helps me to directly interact with the Respondents. Moreover, I get the chance to give them a brief regarding the purpose of the survey and also provide instructions on how to response to the questionnaire. Additionally, the respondents were able to discuss with me if they found any difficulty while answering the question.

4.5 Demographic Analysis

Among all the respondents 76 percent were male and 24 percent were female. 52 percent respondents were aged between 20-30 and only 8 percent respondents were above 51 age. Look into the educational qualifications of respondents we can see most of them had a bachelor's degree. Frequency analysis of the respondents in the aspect of demography has been shown in the following table 1.

	Frequency	Percentage
Gender		
Male	38	76%
Female	12	24%
Age		
20-30	26	52%
31-40	17	34%
41-50	3	6%
51 and above	4	8%
Educational qualification		
Bachelor's	28	56%
Master's	14	28%
Professional's degree	4	8%
Others	4	8%

4.6 Data Analysis Method:

For analyzing survey data and to test Hypothesis SPSS software has been used.

4.7 Model development:

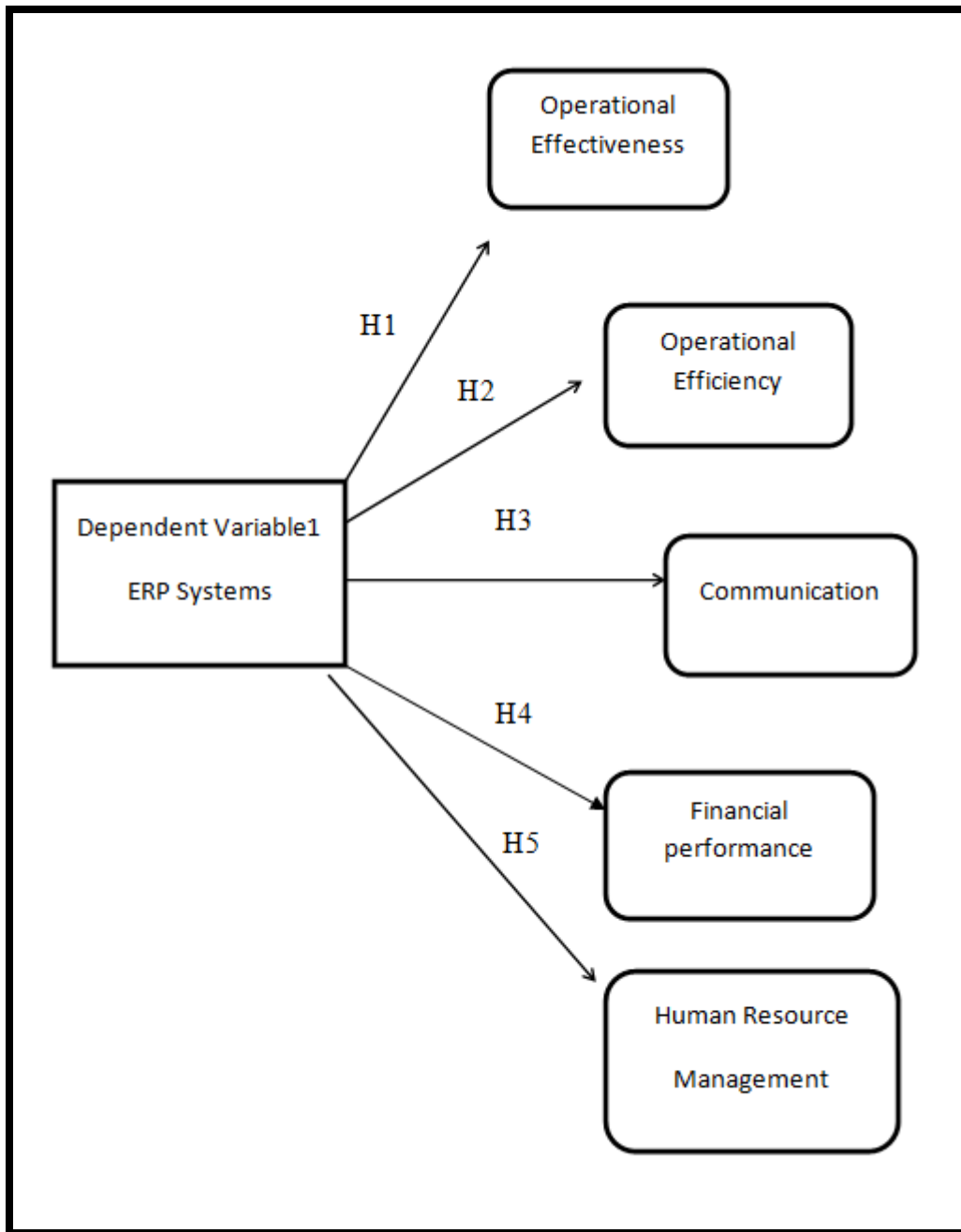


Figure 1: Model of impacts of ERP on Organizational Performance

4.8 Conceptual framework and hypothesis

Operational Effectiveness:

People often get confused between the term “effectiveness” and “efficiency”. According to (Gareth, 2013) the major difference between effectiveness and efficiency is- Effective means doing the right things on the other side, efficient means doing things right. Operational effectiveness refers to the practices that allow company to utilize its resources better (porter, 1996, p. 2). Porter claims that operational effectiveness is an essential component of strategy that helps company to reach at superior performance. Furthermore, according to Monash business school operational effectiveness means any kind of practices that makes capable an organization or business to use their inputs at best by developing products and services within a short time with less disputes than competitors.

According to (Seth Rand, February 2017) ERP is an automated process that makes your company capable enough to communicate its goals, objectives and strategies quickly across all level of one’s business by allowing spends more time on key priorities. Moreover, it offers multiple of opportunities such as increasing the efficiency of organizational operations, along with the effectiveness of workforce (Seth Rand, February 2017).

H1: ERP System Increases operational effectiveness

Operational efficiency:

James chen (2017) states that the efficiency of profit which can be earned as a function of operational costs that primarily measured by a metric which is operational efficiency. Operational efficiency refers to the practice of improving all the processes of a company such as all activities of a company that lead to final product or service (“The best contents on cost and profitability” n.d.).

According to (Aimee Claire, October, 2013) many organizations are adopting Enterprise resource planning software to increase their operational efficiency by integrating the whole organizational systems into a single program. She further states that by using ERP managers can reduce cost of inventories and cost related to administrative mistakes. ERP helps managers to

define their goals and objectives and this software provide them easy and fat information which helps them to make decision (Aimee Claire, October, 2013).

H2: ERP System increases operational Efficiency

Communication:

Organizational communication means sending and receiving messages among interrelated individuals within a specific organization for achieving personal and common goals which is highly dependent on context and culture. Organization communication highly focuses on building networks, develop relationships and interact with internal and external members or clients (“Organizational Communication”, lumen, n.d.).

Due to ERP information are located centrally that allows a flexible environment and increase greater accountability (Seth Rand, February 2017). Tiffany Leung (April, 2019) mentioned in an article that ERP is a great technological solution through which employees can be touch with organizational goals and be updated with any information wherever they are. The writer further explained through ERP employees can communicate about their successes or share and update information effortlessly which motivated employees that they are part of a united organization.

H3: There is a positive impact of ERP on the communication process of the organization

Financial performance:

Financial performance is an essential aspect of finance risk management which refers to the degree to which financial objectives has been achieved and It is a process that calculate the results of a company’s operations and policies in monetary terms (Eshna, 2018).

According to (Yaroslava Dubenska, 2019) ERP system help to get the ability of having a better visible financial management that increased the accountability of assets eliminate hidden cost, reduce risk of loss because this system provides financial reports on time and improve efficiency. She further elaborated Firms more control on assets and greater accountability assists them to not spend money unnecessarily or not increase their expenses by mistakenly.

H4: There is a positive impact of ERP on Financial Performance

Human Resource Management:

According to Edwin Flippo Human resource management defines as “planning, directing, organizing, procurement controlling, development, compensation, integration, maintenance and separation of human resources to achieve social and organizational objective”. The main purpose of HRM is to ensure that the abilities and potentialities of employees are used in such way that the employer bring out the greatest possible outcomes from employees and in return employees achieve both psychological and material rewards from their work (Graham, 1978). HRM is a strategic approach that manages relationships among employees and competitive advantage can be achieved through an integrated distinctive set of employment practices, policies and programs (Bratton and Gold, 2007).

Tom Miller (2014) said all the capabilities of human resource management are included in ERP systems such as recruiting, rewarding, training and appraising employees. He further stated HR fall into the category of databases and ERP is a set of massive databases which can tracks employees credentials. The HR module of ERP increases collaboration between employees by connecting them to the system who can help each other (Tom Miller, 2014).

H5: There is a significant impact of ERP on Human Resource Management

Chapter 5

ERP System in DDC

DDC has adopted ERP in 2nd July of 2014. They have purchased this software from Arefeen software limited. According to the requirements of the company the Software can be customized. ERP has placed DDC's major activity areas under an umbrella. It is a web-based & customized software package of different modules that is Accounts, HR, Attendance, Fixed Asset Management, Document Management & Vehicle Management whereas each module is business specific. Among this six module vehicle management is not activated yet.

5.1 Reasons for DDC to Adopt ERP Software:

For each company the motivations for implementing ERP are different as well as their priority order depends from the nature of the projects. From the technical perspective, a need for a common platform and integrating several information systems is attractive as it enhances single-data entry and information consistency across the system. From an organizational perspective, ERP is attractive as it promises a cut down in operating costs, better data visibility and process improvement. From the strategic perspective, it is appealing because of cost reductions gained through more efficient systems, improvements in productivity, decision-making, overall quality and support in business growth.

Initially, ISO 9001 compliance had been a major concern for DDC as well as the wish to replace the existing and poor quality systems. However, the major reasons drove DDC to choose ERP were related to improve business performance and decision making, to reduce unutilized man-months, and errors. Other reasons were: clients/associates requirements wishing to receive faster/quality service, integration between divisions/projects, and organizational standardization across different locations and globalization of businesses.

5.2 ERP System Administration:

Through system administration the Enterprise Resource Planning can be controlled and managed. The ERP administrator in DDC has the authority to modify the functions of ERP system and he can monitor all the activities of this software. For example, he can see who is logged into the server and who has removed or updated any file. Furthermore, he can also control and give authorize to other that who can access into the server. He monitors the performance of the system and troubleshooting issues. Moreover, the administrator ensures the security and efficiency of the system.

5.3Accounts Module (all accounts solutions):

Accounts module automates all the financial and accounting activities. For example, it recorded and analyzes tax reporting, cash, bank operations etc. This module operated various processes such as, revaluation of receivables from customers and payables to suppliers, debit and credit balance sheet, bank status. This module is completely integrated with the main system if anyone change or updated anything in the other module it will automatically reflected in the accounting records.

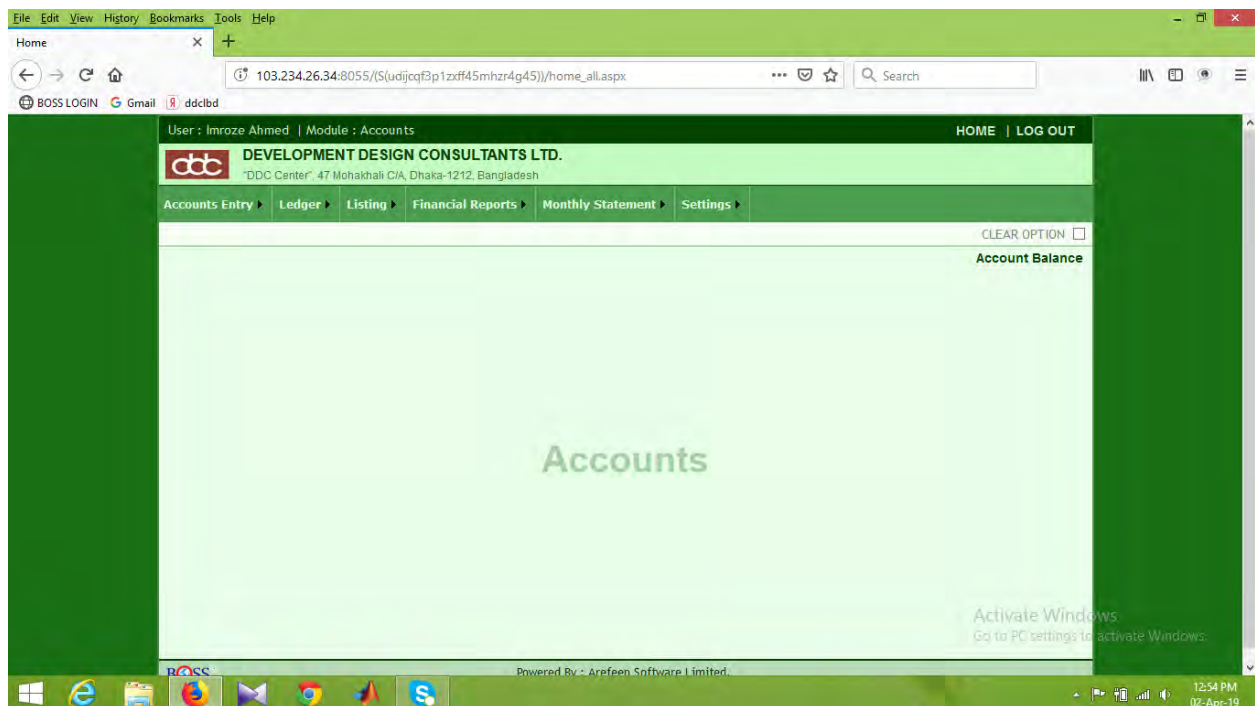


Figure 2: Accounts module

In the Accounts entry the document they have enlisted are given below:

- Voucher entry
- Chart of accounts list
- Pending and undefined voucher list
- Unposted voucher list
- Deferred voucher list
- Problem voucher
- Budget entry

Listing included customers and suppliers list. This Module generates financial Reports also which are given in the following:

- Trial Balance
- Trial balance date wise
- Sub-code trial balance by account
- Sub- code trial balance by date and account
- Schedule by account group
- Statement of financial position and comprehensive income
- Statement of comprehensive income monthly

Additionally, it recorded financial document and generate result to provide financial report on monthly basis. The reports this module automated on monthly basis mentioned below:

- Monthly cash flow direct method
- Summary of monthly cash flow direct method
- Monthly receipt and payment report
- Daily receipt and payment report
- Monthly budget variance report
- Date wise receipt and payment

5.4 Module Human Resource (payroll and HR solution):

An organization is only as good as its people due to that the workforce of a company is often one of its largest costs. But measuring the true return on that investment can be a tricky business. It is well known that effective human resources management and strategies can have a positive impact on organizational performance. There are many different HR management systems and processes aimed at maximizing the ROI in staff. It just got a lot easier for DDC Ltd. with the implementation of ERP system for human capital reporting. ERP allows the Top Management & the Project Managers to get a clear view of the actual contribution of its human capital.

With the help of ERP system Human resource Department can be connected with all other departments of the organization. This module help DDC to track employees career history, prepare employee profile, control leave management and handle payroll process. Due to this module organization is always updated about employee's personal, academic and professional information. Figure 3 will show how the HR module in the ERP software of DDC.



Figure 3: Human Resource Module

Key Functions of HR Module given below-

- **Maintain Employee portfolio:** Employee portfolio is consists of employees name, designation, academic discipline, current status, passing year, experience, joining date and other official information. Contact information include employees resident adder, phone number, e-mail id and additional information includes National ID Card, passport, passport issue and expiry date.
- **Leave and Time Management:** this module manages leave profile of employees that records each employee medical leave, casual leave , earned leave, extra ordinary leave and leave without pay. I also determine the leave status of employee which I associated with their monthly salaries.
- **Loan Management:** If any employee takes loan from the company in advance it keeps record of that o that it can be adjusted with salary. It enables automatically to deduct loan through payroll.
- **Payroll:** This module also process payroll of all the employees from various department.
- **Increment Management:** This module not only manage loan but also it manages increment and adjust it with salary. Inclement added to the salary of employee through payroll.

Payroll entry includes-

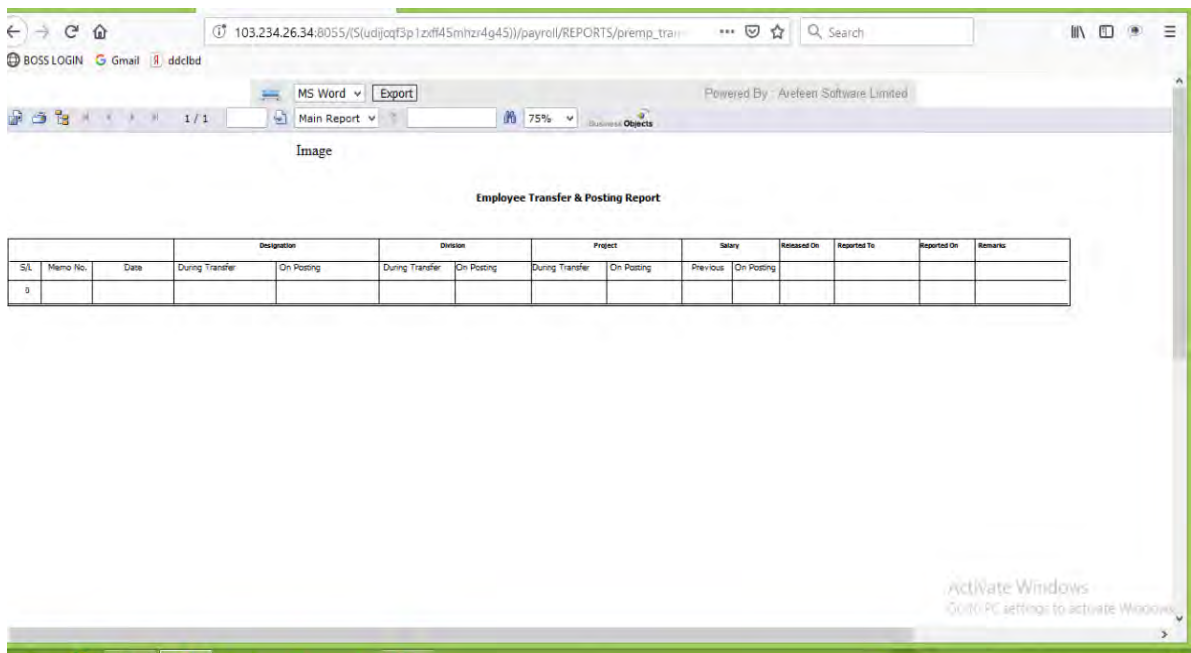
- Payment date/ transaction entry
- Employee information entry
- Loan advance entry
- Increment entry
- Send pay lip by e-mail
- Employee dashboard

Payroll process includes-

- Proceed payroll list
- Bonus process
- Processed bonus list

Basic Reports generated from Human Resource module given below-

- Employee List
- Employee Transfer
- Employee ID Card
- Employee Confirm List
- Employee Details Report
- Employee Summary Report
- Employee Profile Form



Employee Transfer & Posting Report

Sl.	Memo No.	Date	Designation		Division		Project		Salary		Released On	Reported To	Reported On	Remarks
			During Transfer	On Posting	During Transfer	On Posting	During Transfer	On Posting	Previous	On Posting				
0														

Figure 4: Employee Transfer & Posting Report (sample)

Salary Reports Includes:

- Salary Sheet And Pay Slip
- Alary Sheet
- Pay Slip
- Bank Advance Letter
- Salary Coinage Analysis

- Salary Payment Sheet
- Bank Advance Letter For Bonus
- Bonus Sheet And Slip

DEVELOPMENT DESIGN CONSULTANTS LTD.
 "DDC Center", 47 Mohakhali C/A, Dhaka-1212, Bangladesh
Pay Slip For March 2019

Employee Name :		Division Name: RBD	
EMP Code : 1-001	Joining Date: 15Mar-1988	Project Code: PROJ000075	
EMP Category : Management		Designation: Director	

Earnings		Deduction	Total	Signature
Basic :	Special Allowance :	Absent Deduction :	Gross Pay :	
House Rent :	Site Allowance :	Advance Deduction :	Deduction :	
Conveyance :	Director Allowance :	Other Deduction :	Net Payable :	
Medical :	Hill Tracts :	PF Deduction :		
Entertainment :	Floor Allowance :	TAX Deduction :		
Arrear Salary :	Mobile Allowance :			
	Hardship Allowance :			
	Disturbance Allow. :			
	Overtime Allow. :			

PASSED FOR : ONE HUNDRED THIRTY-FOUR THOUSAND TAKA ONLY

This is a system generated information,hence do not need any signature.

BOSS Powered By: Arefeen Software Ltd. Print Date: April 02, 2019 Time: 2:38 pm Page No.:Page 1 of 1

Figure 5: Pay Slip

The above figure shows a sample of Pay Slip

Other report generated through HR module given following-

- Pay Package Details
- Increment Details
- Department Wise Increment
- All Loan Payment
- Loan Payment Details
- Payment Detail List

Man month Analysis:

Professionals/Consultants often deal with multiple projects, so it is important to grasp the manpower estimates and its actual inputs. Moreover, if a professional has to work in multiple projects intermittently, which tends to create ambiguity for how much time is being spent on each project. It may not be an issue for a singular company business, but it is important for Joint Venture business that has multiple partners/associates.

The figure 7 depicts that a professional working in an ongoing project is often proposed for different positions in the EOIs & RFPs. The conflict arises when the tenure of the input of that professional in one project coincides with other upcoming or ongoing projects. The time-based projects are very much dependent on the proposed/contracted manning schedule. In this situation there is every chance that the input of that specific position remains unclaimed incurring a loss to project income. DDC Ltd. has generated several ERP reports (some of which are attached earlier) which are being utilized to come up with optimal solutions (confidential formats).

Present Practice (regarding Man-month)

The manning schedule is analyzed & reviewed to identify any potential restraints to progress as well as revenue. Where limitations occur resolution is pro-actively identified by Co-coordinating & re-sequencing activities, providing sufficient warning so that resources can be allocated/obtained, recommending other actions such as work sharing, sub-contracting etc.

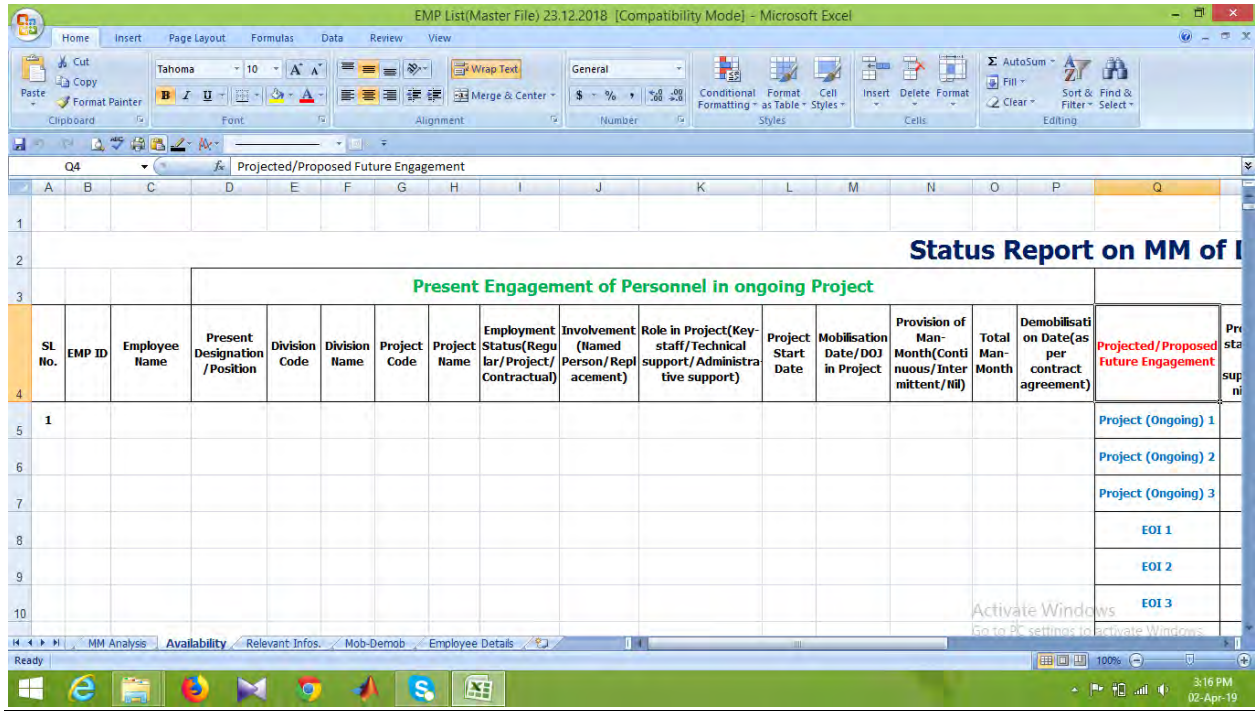


Figure 6: Present Engagement of personnel in ongoing project

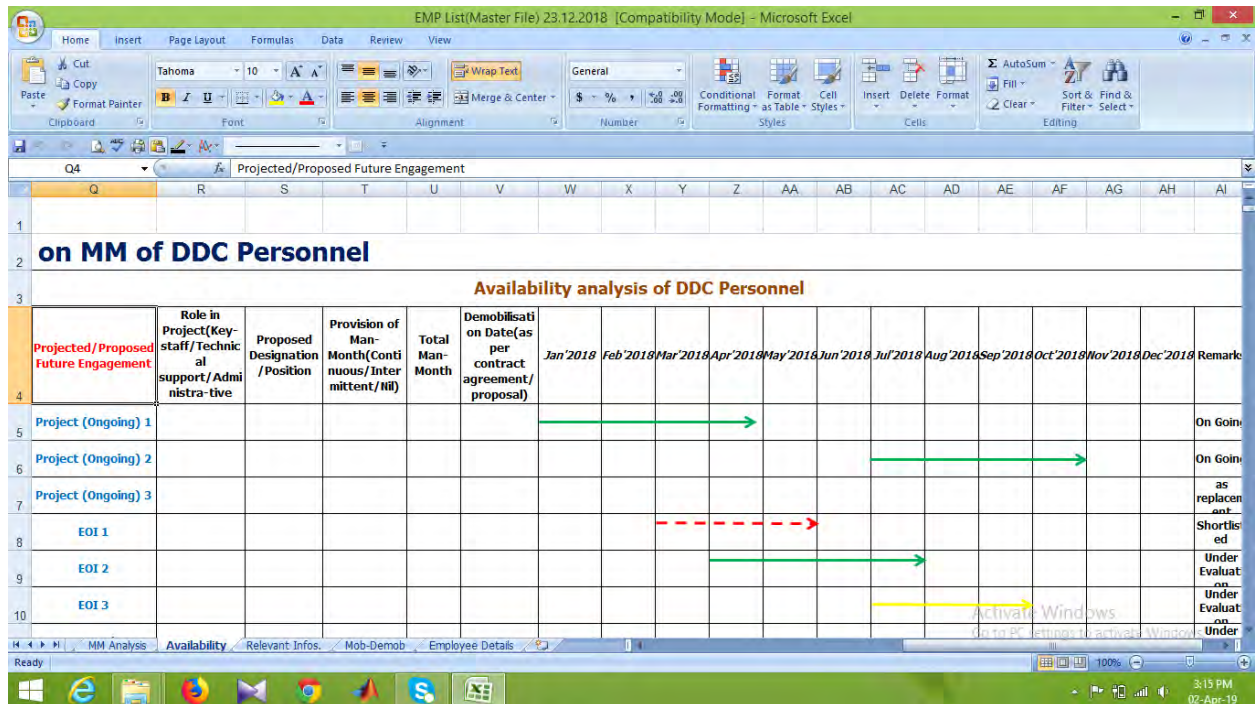


Figure 7: Man-month Analysis

Managing human resources in the ERP implementation process

The improvement of enterprise's performance relies on the success of the implemented reengineering and integration projects. Usually, these projects are complex in nature and using human resources in appropriate manner is a key for a success in such projects. Therefore, it is important to understand the different parties involved in such projects. The human activity issues and problems that companies are encountering should be looked from the different sides of the staff, internal and external experts, system professionals, management, vendors, users and other people involved in such projects. Also the skills people possess influence the outcome of the project.

5.5 Module Attendance Management:

This company uses a card punch machine to keep the attendance of the employees in an automated way. They have set up a card punching machine in the entry gate so whenever employees come in and go out from the office punch their ID card into the machine. Through the card punching system, this company can track employee's attendance from their HR profiles. In the ERP attendance management module, it's easier to keep record of limitless number of shifts for employees. This module also helps employees to check their own attendance status; for instance, they can see at what time they check in and check out from the office. This visual evidence helps to build an honest relationship between managers and employees. The following figure will show the attendance module that DDC is currently using-

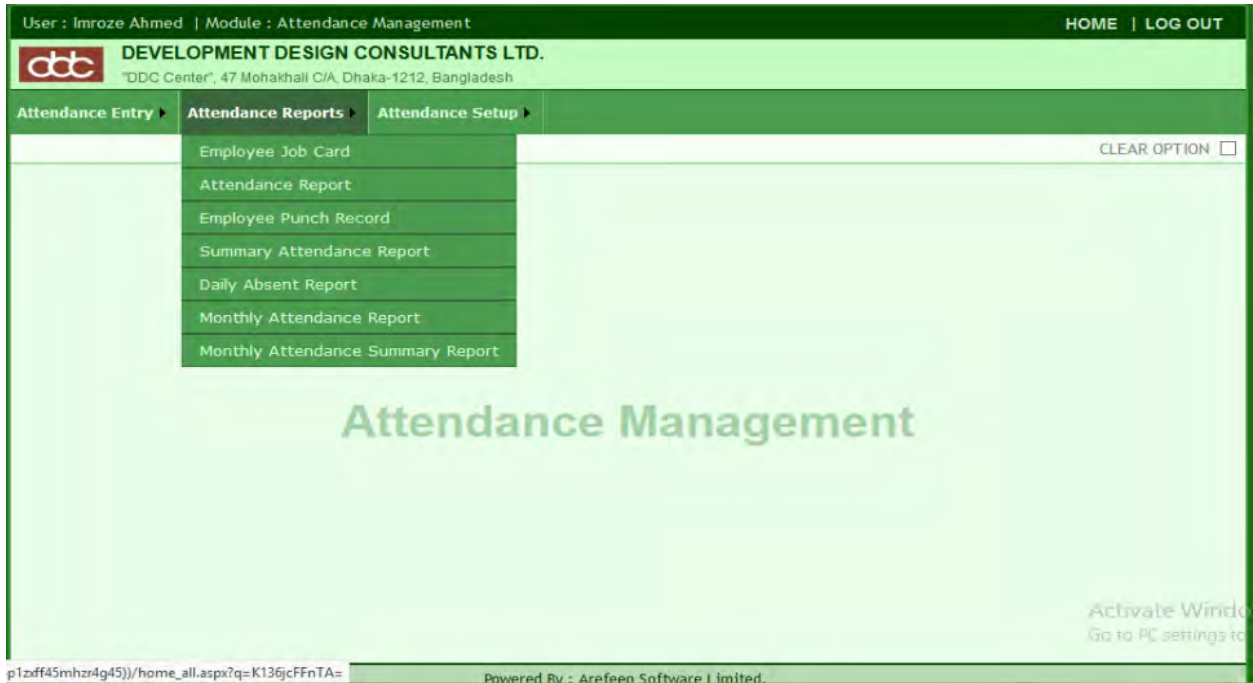


Figure 8: Attendance management module

Attendance entry keeps record of supervisor attendance entry, attendance process and also calculates absent from attendance. The module attendance management prepare some reports regarding employees attendance which are given below-

- Employee Job Card
- Attendance Report
- Employee Punch Record
- Summary Attendance Report
- Daily Absent Report
- Monthly Attendance Report
- Monthly Attendance Summary Report

5.6 Module Fixed Asset Management:

The module fixed asset management in ERP software control asset categories, disposal and depreciation of assets. It helps to save cost instead of buying new equipment it suggest replacement by projecting replacement cost. It provides a schedule of asset depreciation and the retirement of company's assets. In this module the company also keeps record if they transfer any asset from one place to another. They use codes which are physically attached with the asset so that they keep track of the assets. Additionally it revaluates assets and keeps records of every detail about asset such as values, descriptions, locations, repair/service scheduling and insurance. Figure 9 will demonstrate the entry menu of fixed asset management.



Figure 9: Fixed asset Management entry menu

Reports generates through fixed asset module are given in the following-

- Fixed Asset Schedule Monthly
- Fixed Asset Schedule Monthly Period Range
- Category And Date Wise Purchase And Addition Detail
- Fixed Asset Mater Report

- Fixed Asset Addition Report
- Date And Category Wise Purchase Details
- Transaction List By Asset Code
- Transaction List By Type
- Asset Transfer List

5.7 Module Document management:

Document management module is a customized module which keeps records of all projects and all the detailed documents which are related with projects. From Document management module the company can get detailed information about firm those are associated with them in various project. This module shows for which project the company shows their expression of interest and for which project they already requested for proposal. If one project released then specific project allowance deducted from employees salary automatically since all the module are integrated in one single server. They give projects codes for every individual project according to which they have enlisted all the projects in this module. The module document management shown below-

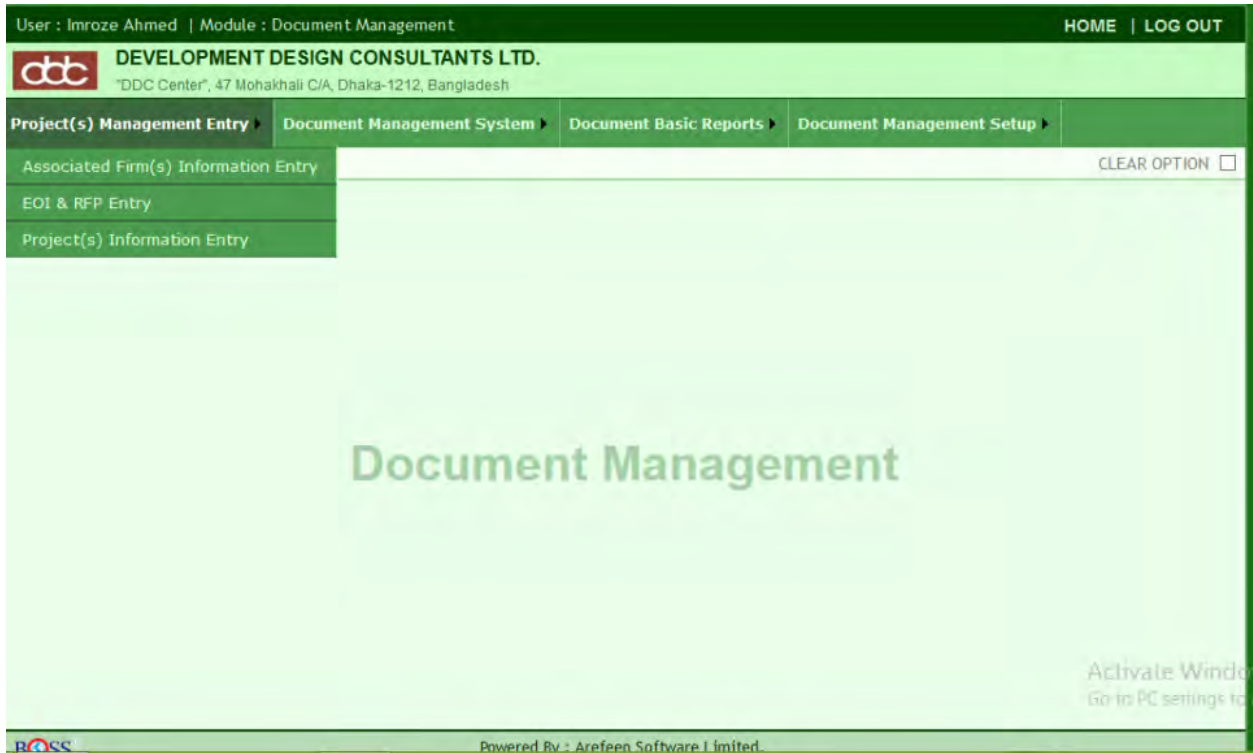


Figure 10: Document Management Module

In the document management system all the documents are uploaded so one can search their required document by giving project codes or also can search basis on dates

Basic report that the company get from this module are given below-

- Expression Of Interested List
- Request For Proposal List
- Projects List
- Documents Upload Report

Documents upload report includes categories of document such as Expression of Interest document, Request for Proposal document, Reference document.

CLEAR OPTION

Add / Upload
Delete
Clear
Back

Project Code

Project Name

Document (SL) No.

Document Category

Document Type

Category Level One

Preparation Date

Revision Nos.(if any)

Revision Date

Receiving Date

Select File

File Name

Uploaded On

Submitted To

Submission Date

Remarks

Search By File Name, Version Name.....

Action	View File	File	Ext	Entry Date	Version Name
<input type="button" value="Select"/>	4-PROJ000068-Inception Report(SASEC)	4-PROJ000068-Inception Report(SASEC)	.doc	08/05/2016	

Figure 11: Document Details

If they want to know details information about a project or their clients want to know about a project elaborately then they can search the project and click view file. After that they can see detailed information about the specific project such as, preparation date, revision and submission date of the project which is displayed in figure 11.

Project(s) Management Entry > Document Management System > Document Basic Reports > Document Management Setup >

CLEAR OPTION

Official Information of : PROJ000024 (Cox's Bazar Airport Development Project (Phase-i))

Update Back

Client's Name	<input type="text"/>	DDC's Staff No.	<input type="text"/>
Funding Agency	<input type="text"/>	DDC's MM :	<input type="text"/>
Start Date	<input type="text"/>	Associated Firm (s)	<input type="text"/>
Completion Date	<input type="text"/>	Associates Staff No.	<input type="text"/>
Project Duration	<input type="text"/> Month(s)	Associates MM	<input type="text"/>
Extension Period	<input type="text"/> Month(s)	DDC's Role (In JV Project)	--- Select ---
Actual Date of Completion	<input type="text"/>		Monthly
Cost Of Project	<input type="text"/> 0.00		
Revised Cost Of Project	<input type="text"/> 0.00	Brief Description Of Project	<input type="text"/>
Approx. Value Of Services	<input type="text"/> 0.00		
Revised Value Of Services	<input type="text"/> 0.00		
DDC's Service Value	<input type="text"/> 0.00		
Accumulated Service Value	<input type="text"/> 23673018.00		
Remaining Service Value	<input type="text"/> -23673018.00		

Activate W
Go to DC action

BOSS Powered By : Arefeen Software Limited.

Figure 12: Official information of project

From official information of a project officials can get all the in depth information's about a project from anywhere at any time by log into the server. The information they can get such as, the name of the project' client, name of the funding agency, starting and completion date of project, extension period, actual and revised cost of the project, actual and revised cost of services. See (Figure 12).

The lists and details of employees are also included in document management so that officials can track which employee is working which project. Clients and associated agencies can also see which expertise and employees are working in their projects. Figure 13 gives an overview of project employees details which is shown below

Employee ID	<input type="text"/>	Search By Employee ID, Project Designation.....				
Employee Name	<input type="text"/>	<input type="button" value="Select"/>	Employee ID	Project Designation	Joining Date	Status
Project Code	PROJ000042	<input type="button" value="Select"/>	01-004	DEPUTY TEAM LEADER	04/03/2014	Active
Project Name	Dhaka Mass Rapid Transit Development Project (Contract No. 01-10-01-001-001)	<input type="button" value="Select"/>	01-012	GEOTECHNICAL ENGINEER	27/11/2013	Active
Project Start Date	<input type="text"/>	<input type="button" value="Select"/>	01-014	Minor Structure Engr.	31/12/2999	Active
Project End Date	27/11/2022	<input type="button" value="Select"/>	01-024	ARCHITECT	04/03/2014	Active
Designation In Project	<input type="text"/>	<input type="button" value="Select"/>	01-028	Specification Engr.	31/12/2999	Active
Joining Date	<input type="text"/>	<input type="button" value="Select"/>	01-029	Building Engr.	31/12/2999	Active
Completion Date(Tent.)	<input type="text"/>	<input type="button" value="Select"/>	01-030	CIVIL ENGINEER	31/12/2999	Active
Provision of Man-Month	Continuous	<input type="button" value="Select"/>	01-044	SUB STRUCTURAL ENGINEER	04/03/2014	Active
Released On	Continuous	<input type="button" value="Select"/>	01-048	Lift & Escalator Engr.	31/12/2999	Active
Transferred To	Intermittent	<input type="button" value="Select"/>	01-051	PIS ENGINEER	09/04/2013	Active
MM Claimed	No Provision	<input type="button" value="Select"/>	01-058	Sub-Structural Engr.	31/12/2999	Active
Actual Man-Month	<input type="text"/> (MM)					
Absorbed Man-Month	<input type="text"/> (MM)					
Remaining Man-Month	<input type="text"/> (MM)					
Extension Period(if any)	<input type="text"/> Month(s)					
Project Status	Active					
Description	<input type="text"/>					
Remarks	<input type="text"/>					

Figure 13: Project Employee Details

Project employee detail provides additional information about employee. For example, the employee currently works in which project, his/ her joining date, his/her actual and remaining man month, his/ her designation in the project, project completion date. Employee detailed information also helped managers to made human resource planning and project future HR demand and supply.

Chapter 6

Analysis and Interpretation

6.1 KMO and Bartlett's Test:

The Bartlett's test of Sphericity is less than .05 which indicates that this study is statistically significant.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.675
Approx. Chi-Square		435.296
Bartlett's Test of Sphericity	df	153
	Sig.	.000

Table 1: KMO and Bartlett's Test

6.2 Analysis:

Since variables were already known so for factor analysis varimax rotation technique was applied. Additionally, for extraction Principle Axis Factoring method has been used. Six factors were found from the analysis which is demonstrated in the Table no.2. The total cumulative variance was 62 percent (see Table 2). All the values under communalities table were more than .5 which has been shown in table no. 3.

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	1	5.744	31.912	31.912	5.397	29.982	29.982	3.412	18.957
2	2.292	12.731	44.642	1.936	10.757	40.739	2.148	11.932	30.889
3	1.651	9.174	53.816	1.357	7.536	48.276	1.524	8.466	39.355
4	1.350	7.500	61.316	.964	5.356	53.631	1.515	8.416	47.771
5	1.230	6.836	68.152	.807	4.482	58.113	1.422	7.898	55.669

6	1.133	6.293	74.445	.763	4.240	62.353	1.203	6.684	62.353
7	.816	4.536	78.981						
8	.776	4.311	83.292						
9	.563	3.127	86.419						
10	.542	3.010	89.429						
11	.450	2.498	91.927						
12	.320	1.777	93.704						
13	.320	1.775	95.479						
14	.250	1.387	96.866						
15	.181	1.005	97.871						
16	.148	.820	98.691						
17	.135	.751	99.442						
18	.100	.558	100.000						

Extraction Method: Principal Axis Factoring.

Table 2: Total Variance Explained

Communalities		
	Initial	Extraction
OE1	1.000	.747
OE2	1.000	.824
OE3	1.000	.738
OEF1	1.000	.851
OEF2	1.000	.734
OEF3	1.000	.826
C1	1.000	.765
C2	1.000	.722
C3	1.000	.785
FP1	1.000	.681
FP2	1.000	.842
FP3	1.000	.582
HRM1	1.000	.656
HRM2	1.000	.753
HRM3	1.000	.685
ERP1	1.000	.758
ERP2	1.000	.715
ERP3	1.000	.739

Extraction Method: Principal Axis Factoring.

Table 3: Communalities

In the Rotated Component Matrix, one factor items are brought into a single column.

Rotated Component Matrix^a

	Component					
	1	2	3	4	5	6
OE1		.964				
OEF1			.968			
C1	.881					
C2	.884					
FP3					1.001	
HRM2						.994
ERP3				1.002		

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

Table 4: Rotated Component Matrix

6.3 Reliability:

Reliability is an assessment of the degree which shows consistency within multiple items of a variable. Cronbach's Alpha was used to test the reliability which refers to measures the internal consistency between multiple items of a variable. The reliability test has been done between C1 and C2 which reliable because according to Hair Et Al, 2010 Cronbach's Alpha minimum 0.6 or more than 0.6 is considered as reliable in an exploratory research. Here, the value of Cronbach's alpha is .731 which is more than 0.6 that indicates the following test is reliable.

**Communication
Reliability Statistics**

Cronbach's Alpha	N of Items
.731	2

Table 5: Reliability Test

6.4 Validity

Convergent Validity

To analyze the convergent validity Bivariate method was used. Convergent validity shows the correlation between items from same variable. The correlation between intra item of a variation will be higher than inter item correlation of another variable.

Correlations

	OE1	OEF1	C1	C2	FP3	HRM2	ERP3
OE1	1						
OEF1	.313*	1					
C1	.081	.404**	1				
C2	.356*	.281*	.577**	1			
FP3	.065	.275	.298*	.189	1		
HRM2	.031	.180	.266	.291*	.330*	1	
ERP3	.227	-.041	-.069	.111	.267	.266	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6: Convergent Validity Test

6.5 Regression Analysis:

Regression analysis was done to test the hypothesis between dependent variable and independent variables. Among all the six factors, there were five independent variables which were used to conduct multiple regression analysis to measure the impact of ERP system on organizational performance for the model that has been selected.

Model Summary shows the total variability of the dependent variable is explained by the independent variables. Adjusted R Square = 0.374, indicating the independent variables explained 37.4 percent variance in the dependent variable (Table no.7) The full model found to be significant since the F-statistic (Sig .000 ≤ .05) which is obtained from ANOVA (Table no.8).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662 ^a	.438	.374	1.33043

a. Predictors: (Constant), HRMM, OEEE, CCCC, FPPP, OEFFF

Table 7: Model Summary

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	60.619	5	12.124	6.849	.000 ^b
1 Residual	77.881	44	1.770		
Total	138.500	49			

a. Dependent Variable: ERPP

b. Predictors: (Constant), HRMM, OEEE, CCCC, FPPP, OEFFF

Table 8: ANOVA

Among five of the independent variables (Operational Effectiveness, Operational Efficiency, Communication, Financial Performance, Human Resource Management), two variables in which ERP system has a significant impact. These two independent variables are Financial Performance and Human Resource Management.

H4 proposed that there is a positive impact of ERP on Financial Performance and the results were significant ($\beta_4=.330$, $t=2.315$, $Sig=.025$). Since $P(Sig = .025 < .05)$ it is implied that H4 is supported by the data.

H5 proposed that ERP system has improved the activities of human Resource Management and the results were significant ($\beta_5= .344$, $t= 2.294$, $Sig= .027$). As $P(Sig = .027 < .05)$ it is implied that H5 is supported by the data.

In contrast, H1, H2 and H3 were not supported by the data since the results were not significant. The result shows operational effectiveness ($\beta = .176$, $t = 1.124$, $\text{Sig} = .267$), Operational Efficiency ($\beta = -.151$, $t = -.798$, $\text{Sig} = .429$), Communication ($\beta = .172$, $t = 1.280$, $\text{Sig} = .207$) these three mentioned results ($\text{Sig} > .05$) are more than .05 which refers that these results are not significant.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.539	1.899		.811	.422
1 OEEE	.221	.196	.179	1.124	.267
OEEFF	-.135	.170	-.151	-.798	.429
CCCC	.119	.093	.172	1.280	.207
FPPP	.324	.140	.330	2.315	.025
HRMM	.300	.131	.344	2.294	.027

a. Dependent Variable: ERPP

Table 9: Coefficients

Chapter 7

Findings

ERP is business management process software which can provide reports and results based on the input that we provide. If we put any wrong information it will provide us wrong output as well. For avoiding mistakes and make proper decision coordination among ERP users in an organization is very important. From the analysis made above in chapter 6 it is perceived that In DDC Ltd, ERP System has a positive impact on “Financial Performance” and ERP system plays an important role to improve the functions of “Human Resource Management”. On the other side, from the analysis part it is also identified that the ERP system is unable to successfully improve operational effectiveness, operational efficiency and communication in this organization. Some important finding from the study given follows-

► after the adaptation of ERP DDC have experienced a positive change in their financial performance. Through ERP System they were always updated about their financial positions. To illustrate, ERP helps to track profit and invoice for example, it assess from which source or project profit are coming. With the help of ERP system they have their own control over receivables not like other companies those manage their invoices with the help of outsourcing. Additionally, it helps to increase transparency throughout the whole organization. Moreover, it provides clearer picture of financial position which helps managers to know that what is actually happening which assists them to make a plan about financial budget and managing financial risks in advance. The changes in financial strengths are shown through a bar chart in the following-

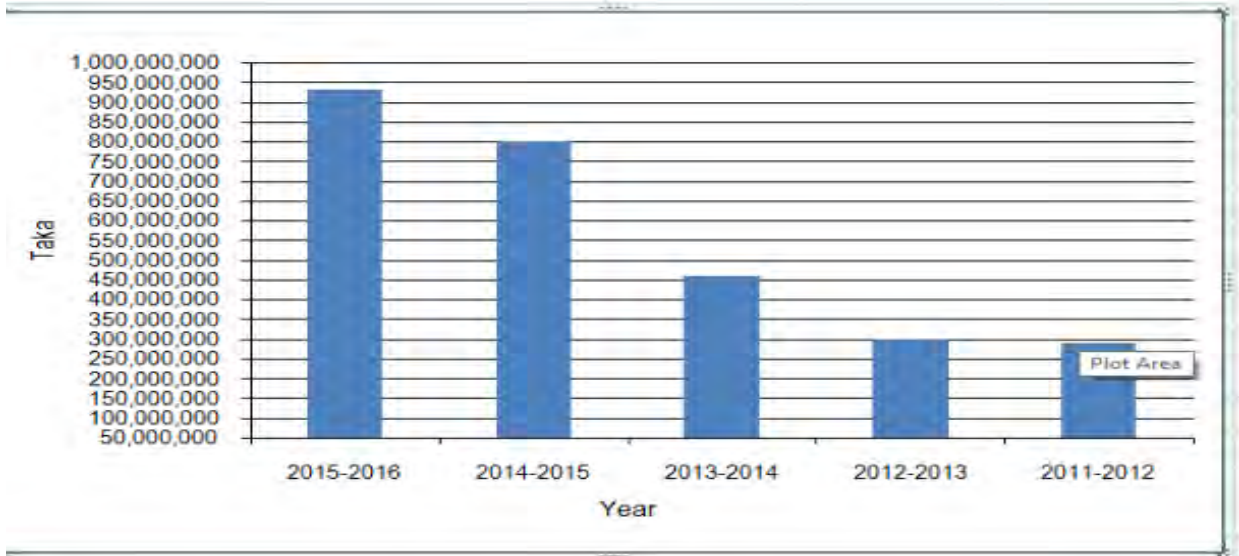


Figure 14: Financial Strength (before)

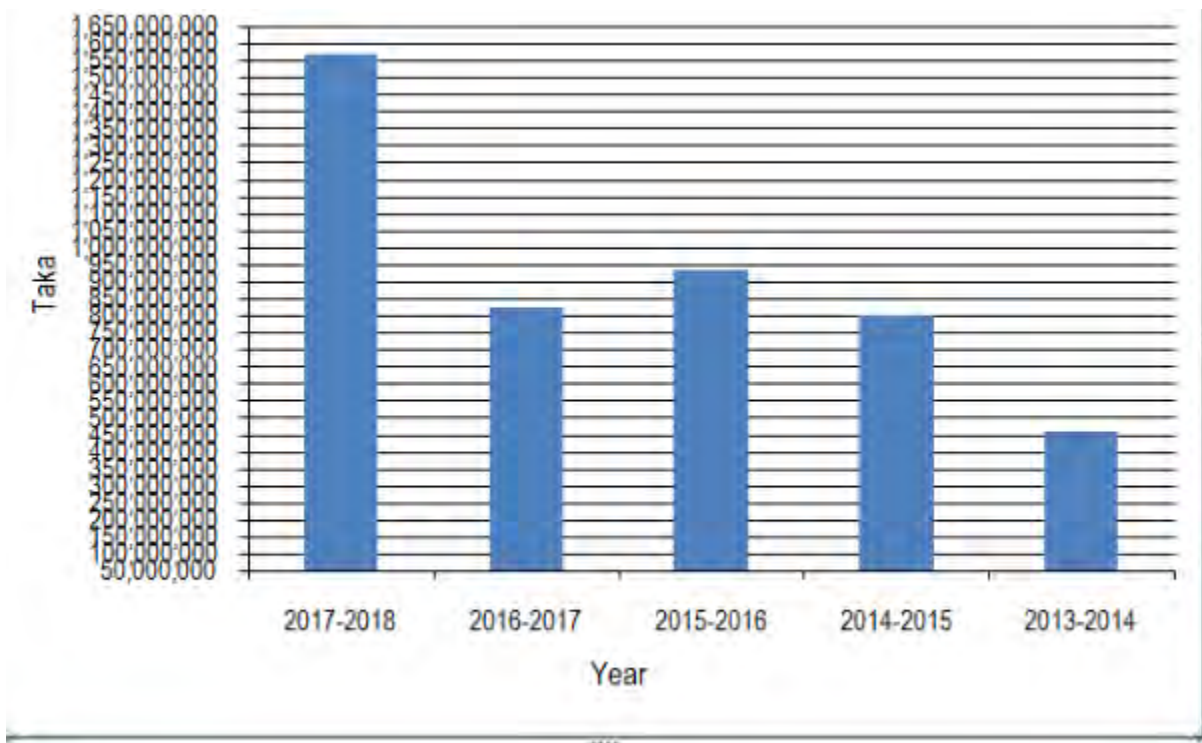


Figure 15: Financial Strength (after)

► Similarly, Through ERP this company has improved the functions of Human Resource management starting from managing Employees portfolios to manage their payroll system and benefits. It guides to make manpower planning and save costs by make right decisions on time. As all the information are recoded so employees can get information regarding their compensation at anytime from anywhere by accessing into ERP software which helps to resolve confusions and conflicts between managers and employees.

► From the analysis section it is observed that ERP system is not able to make a significant change on operational effectiveness, operational efficiency and communication process in DDC. The reasons behind it might be lack of Sufficient Management commitment because for achieving best result from ERP system a considerable amount of time and commitment is required. For instance, ERP cannot work automatically so users need to give inputs and attention on regular basis to maintain tracks of projects and to get right output from it. It is important to make sure that every individual those are associated with project they can easily access documentation and be updated about current project progress.

► Again, all the old data are not successfully transferred to the new system in DDC due to that ERP is still unable to improve operational Effectiveness and efficiency properly. Before data migration all the error in the data should be corrected because it will be remain in the new system as good as the quality of the migrated data.

Chapter 8

Recommendation and Conclusion

8.1 Recommendations:

Based on analyzing the survey and other information that I have collected from face to face conversation the following recommendation are made that can bring positive changes in the Enterprise Resource Planning system in Development Design Consultants Limited.

- Train employees is essential after implementing the ERP system to run the whole effectively and efficiently. To make employees proficient with the software a team of experts need to be hired to provide on-site ERP employee training.
- Communication plays a vital role in an organization especially in the time when a company wants to adopt completely a new system or make changes in organizational management. They can arrange meetings frequently where they can share updated information and their thought regarding Run the ERP system successfully in the organization to bring out best out of it. It needs to be ensured that core team those are implementing ERP system is continuously updated regarding the progress of the project.
- They need to emphasis more on team work. For example, there might be a project team where there will be one project manager who will lead the team members, key users and IT staff. If they work as a team number of errors will be decreased as there will more coordination within the team members.

8.2 Conclusion:

To conclude, DDC is a very well recognized company in the whole worldwide and they keep their position very successfully for a long time in the engineering consultancy industry in Bangladesh. They know very well how to adjust with changing technology and fluctuating economy. It takes time to completely implement a new technology in a large organization. With the help of their expertise and better planning they will soon reach to the goal for which they have adopted ERP. Already they have experienced the advantages of ERP and its positive impact on their organization. Now they need an efficient and trained team to operate the ERP system successfully throughout the organization. They also need to motivate their employees to increase organizational commitment. The involvement of end users of ERP system with top managers in decision making process is very important. Most importantly, the collectivistic culture needs to be developed in the organization for the prosperity of ERP system quickly.

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Appendix

Questionnaire

Biographical Information:

1. Age
 - 20-30
 - 31-40
 - 41-50
 - 51 and above
2. Gender
 - Male
 - Female
3. Educational Qualification
 - Bachelor's Degree
 - Master's Degree
 - Professional's Degree
 - Others

Operational Effectiveness:

1. Due to ERP the number of errors reduces-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. ERP system affect the routine of my work-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
3. ERP system increases my capability to produce more Services-
 - Strongly Disagree
 - Disagree
 - Neutral

- Agree
- Strongly Agree

Operational Efficiency:

1. ERP system helps me to save my task time-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. Due to ERP system I am able to deliver services to my clients on time-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
3. ERP helps me finish my work within required time-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

Communication:

1. ERP system helps me to be more integrated with other departments and teams-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. ERP system help employees to communicate easily with clients/suppliers/contractors-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

3. ERP system help employees to communicate with top management –
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

Financial Performance:

1. After implementing ERP system the overall financial performance of the organization has improved-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. ERP System helps the organization to save costs-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
3. ERP System assists the organization to predict constructive financial budget-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

Human Resource Management:

1. ERP system assists the decision making of manager and make human resource planning-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. ERP system supports recruitment management-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
3. Due to ERP compensation management system has Improved-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

Enterprise Resource Planning System:

1. Enterprise resource planning system plays an important role to improve the overall organizational performance-
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree
2. A drastic positive changes have been occurred in the organization due to the implementation of ERP
 - Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree

3. Adopting ERP software was a right decision taken by the company
- Strongly Disagree
 - Disagree
 - Neutral
 - Agree
 - Strongly Agree