Information systems project management

Table of Contents

Executive summary

Analytical tool is still new thing to internal audit and risk management sector in Sri Lanka. Risk and Control department of Hemas Holdings try use data analytic tool called "Forestpin" strengthen the internal controls of the group. In this report, it is critically evaluated implementation of the forestpin project. Secondary data sources such as company publication, industry related books, journal articles have been used to conduct this study. Time, quality and cost aspects of the project have been extensively evaluated in this project by using different project management tools and techniques such as work breakdown structure, critical path diagram, grant chart etc. further it will be discussed different information system development methodologies and which will be the most suitable method to conduct the project. Further Software requirement specification of Forestpin are listed down in this report. By implementing this project, Hemas management expect that this project will be supported to improve the preventive and detective internal control process of the selected SBUs.

1.0 Introduction

Project can be defined as a unique set of connected activities which has clear start and finish, conducted by an individual, team or an organization to achieve definite objectives within specific time schedule, performance and cost parameters. Project management is an application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project (PMI, 2013). In this assignment, it will be analyzed about implementing information system in Hemas Holdings. In this report, it will discuss about the Decision support system. Decision support system (ESS) is software that help decision makers use communication technologies, data, document, knowledge and models to complete decision process tasks (Marin, 2016). Risk and control department of Hemas Holdings plan to use data analytic tool for audit purpose. Hemas Holdings has more than 30 SBUs under three main sector such as wellness, leisure and mobility. Therefore huge amount of transactions are processed per day throughout the group. Hemas Risk and Control select "Forestpin" as an analytical tool to conduct this project.

Project team plan to implement this system to find the irregularities in the transactions. Hemas use SAP Hana to process the transaction. Therefore at the part of the project, project team need to transfer data from SAP to Forestpin to analysis the data. In this project, data sets such as invoices,

payments, receipts, GRNs, POs are taken to analysis. Correlation, time series analysis, duplication analysis and Benfort Law are the analysis that basically use in this system.

There are two parts in forestpin system as analytics and risk alerts. Users can run different tests, find out trends, sort the data and find irregularities in the data sets. Further in risk alerts, users are received risk alerts through emails daily including all the information of out of trend payments, invoices, POs, GRNs and receipts which has proceed previous day within their SBUs. They can check it and mark it whether this transaction is genuine one, or some process improvement is needed or is there any manipulation. Risk and control team members and finance team members of different SBUs will use this system. Further employee can comment on it. Simultaneously finance managers are received the details of alerts including responsible persons' responses. End of the month finance director and general manager or CEO are received the summary of the alerts. Furthermore responsible employee and finaical managers mark each alert whether it is useful or not. Software has machine learning system and it is getting better and send quality alerts based on the feedbacks.

Member of Risk and control department work as project manager and handle the project under guidance of General Manager of Hemas Risk and control. Further whole project is funded by risk and control department budget. Further team from forestpin, IT team, finance team members of each SBUs are included to project team. As a pilot project, this system will implement in Hospitals, FMCG and Pharma.

2.0 Nature of the project and requirements of the business

Internal controls are key factors in any business. Risk and control department has the main responsibility to improve the internal controls throughout the group. However every departments and employees also has responsibility to improve and maintain the internal controls. When it comes to financial internal controls, especially finance departments have huge responsibility to improve and maintain the internal controls. Hemas has central Risk and Control department and some of their members are located in SBUs such as hospitals and pharma. Hemas Risk and control team has around 15 team members. Therefore it is very difficult to perform routine audits throughout the group due to huge amount of transaction. Since there are a requirement for this kind

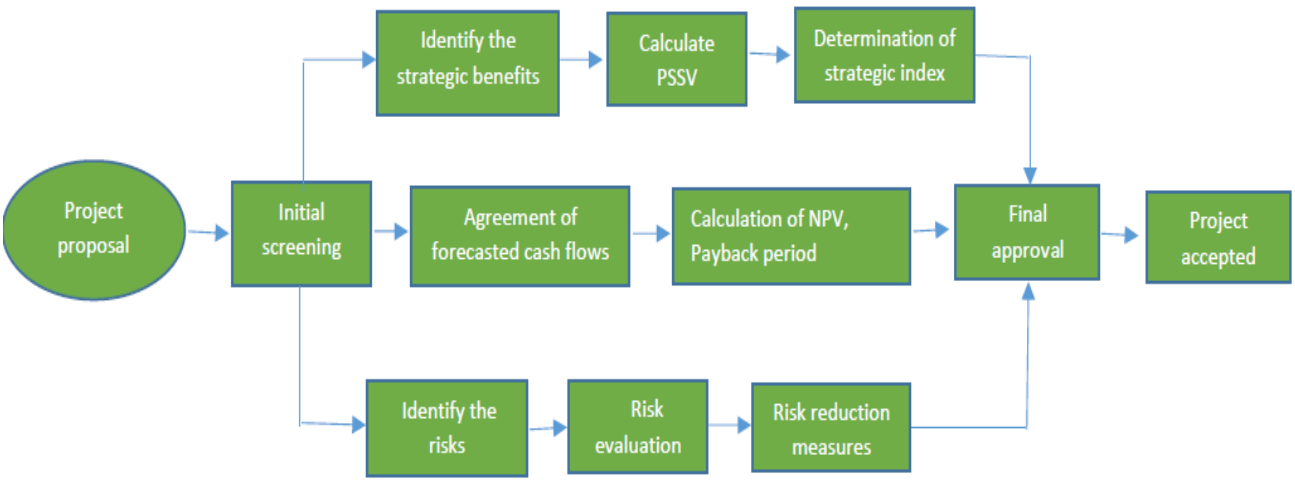
of system. Further it is noted significant transaction based frauds in the group. That is also main reason to develop this kind of system to pick the irregularities in the transactions.

Fraud evaluation tools are still new thing to Sri Lanka. However some large Sri Lankan organizations have started to use fraud evaluation tools. Hemas management and audit committee's vision on internal control is to strengthen preventive controls more than detective controls. However idea about the implement Forestpin is even though it is directly strengthen the detective control it also help to strengthen the preventive control too. Fraudulent could be discouraged to attempt by knowing this kind of detective system available.

2.1 Project selection method

Mainly Hemas consider three aspects to select the process as Net Present Value of the project, strategic index and risk profile. Budget and cost analysis of the project will be discussed latter in this report in detail. In NPV, economic value of the overall project is assessed by using adjusted discount rate to calculate NPV. In this scenario, cost saving of fraud identification and process improvement are taken as cash in inflows. However, there are many qualitative benefit in this project too. Therefore instead of qualitative aspects, quantitative aspects also need to be considered. Further as explained before, implementing this project is aligned with the strategy of the Risk and Control department. Hemas has established their risk appetite or risk tolerance point regarding any project and matrix will be developed to identify, quantify and manage the project risk. Risk level is measured based on the impact and likelihood of that risk. Further Hemas need to consider the risk assessment. This project is under the risk appetite of the Hemas Holdings when consider the overall risk profile.

Figure 01 - project selection process



2.2 Benefits of the project

Forespin analytics enable to automate many routine processes of the internal audit and risk management processes. Following potential benefits can be achieved by using forestpin data analytics.

- Increase efficiency – this can be used for periodic audits resulting in efficiency benefits by avoiding manual processes.
- This allows full population testing instead of random or judgmental sampling and continuous monitoring.
- Improve assurance - this minimize the margin of human error significantly in the analysis of various data sets.
- Greater audit coverage.
- Save the time and cost significantly in long term.
- Reduce the fraud risk.

2.3 Objectives of the project

There are mainly two objectives of this project.

- Provide cutting edge data analytics to visualize millions of transactions of the company within second and find unusual transactions and gain new insights into the business.

- Automatically analysis daily transaction data of the company and get alert regularly on unusual transactions with high risk.

3.0 IS development methodologies

There are many IS development methodologies and there are pros and cons in every method. Project manager and the team need to examine different methodologies and need to the most suitable methodology for that particular project. Below IS development methodologies are widely used in the world.

- Waterfall
- Agile
- Scrum
- Lean
- PMBOK
- PRINCE2

Waterfall methodology

This methodology is considered as traditional software development method. It is a rigid liners method that develop step by step like waterfall. In this method, there are sequential phases called requirements, design, implementation, verification and maintenance. Each phase need to be fully completed to move to next phase. Traditionally there is not a process to go back and change the direction of the project (Young, 2013).

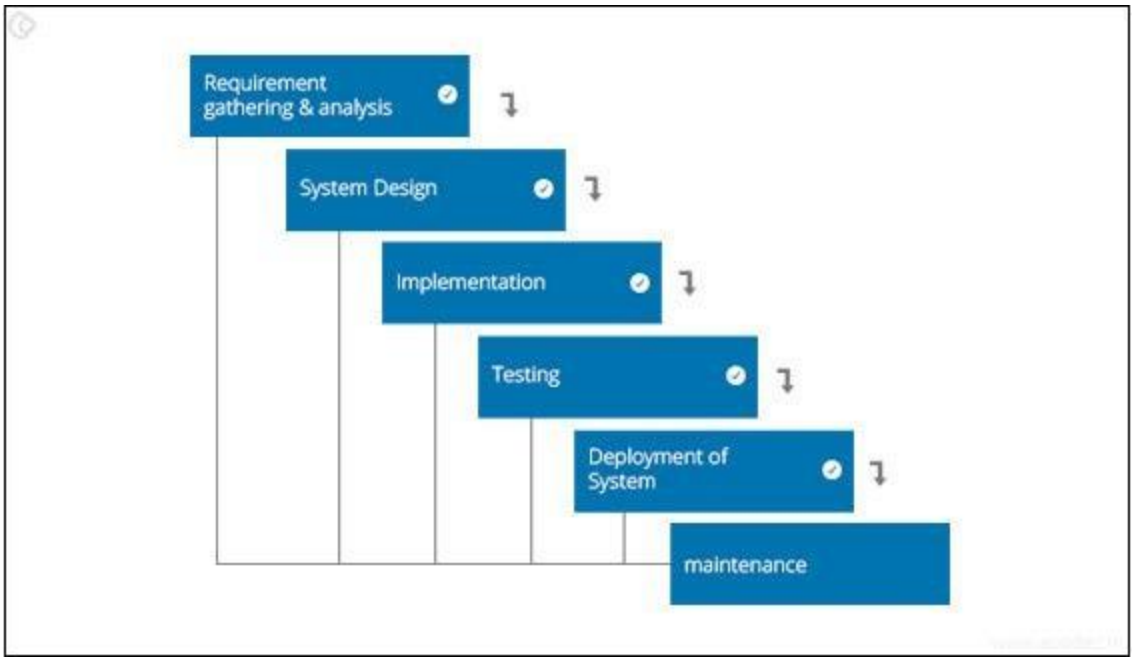
Pros

It is easy to understand and manage due to linear nature of this methodology. Projects with clear objectives and stable requirements can best use the waterfall method.

Cons

It is often slow and costly due to the rigid structure and tight controls. It’s difficult to adopt any project changes.

Figure 02 – Waterfall methodology



Agile methodology

The Agile software development methodology is used for articulating a well-organized project management procedure allowing for recurrent alterations. Developers start the planning when discuss with client about their requirements and they can get better understanding on the expectations through that. When project begins, project team follow the process of planning, execution and evaluation that could change the final deliverable. Continuous collaboration is highly important within the project team and project stakeholders in this methodology. Mostly, this method is used for short time projects which last one to four weeks (Young, 2013).

Pros

This as adaptive approach that responds to changes positively. Further this methodology allows for direct communication to maintain transparency. This methodology enhance the quality by finding and fixing defects quickly and identifying expectation mismatches early. Agile help to minimize the risks such as cost overrun, bugs when adding new functionally. The benefit of multiple iterations is that it improves efficiency by finding and fixing defects and expectation mismatches early on.

Cons

Budgets and timelines are not easy to define. Further project stakeholders should have desire and time to involve with daily activities of the projects. Further there are chances of getting off track since sometimes outcomes are not clear.

Scrum methodology

This is widely sued agile software development approach. Goal of this methodology is to significantly improve the productivity in project team which reduce productivity by process laden methodologies.

Scrum is characterized by:

- A living backlog of prioritized work to be done.
- Completion of a largely fixed set of backlog items in a series of short iterations or sprints.
- A brief daily meeting (called a scrum), at which progress is explained, upcoming work is described, and obstacles are raised.
- A brief planning session in which the backlog items for the sprint will be defined.
- A brief heartbeat retrospective, at which all team members reflect about the past sprint (Young, 2013).

Pros

In this methodology decision making completely come under project team. New developments can be tested quickly and mistakes can be corrected quickly. In this method, initial business requirement document is considered insignificant due to progress is discussed regularly.

Cons

Sometimes this methodology is not suitable for bigger size projects. The processing method could be suffered due to differed cost. Further highly skilled expert team need to be there to conduct this methodology. Further there need to be very close team to conduct this method and if any member leave the team, it could be impact significantly to continue the project.

Lean methodology

Main objective of this methodology is to improve the software in one third of the time with very restricted budget and fewer essential workflow. This mainly focus to identify values and then maximize those values through continuous improvement by eliminating wastage and optimizing available resources (Young, 2013).

Pros

This methodology enables to deliver the product early and finish the project within in the lower budget.

Cons

Excessive flexibility of this methodology could lead to developers loss focus.

Among all these methodologies, project team need to find the most suitable methodology to conduct this project. Project methodology need to be selected based on the requirements of the company. This system will be used by different kind of users such as finance employees of different SBUs. The employees Risk and Control departments have comprehensive idea about their requirements. However finance employees' requirements could be change time to time. Further requirements of different SBUs can be changed. Some SBUs use different systems to handle different processes except for SAP. As an example, hospital sector use Wipro system for billing process. Therefore these data also need to transfer to Forestpin analytics. So traditional project development methodologies such as Waterfall is not suitable for this project. According to project requirement and projects stakeholders, Scrum methodology will be ideal for this project. Scrum methodology is cyclical and project team meet regularly. Team members work with project owners to refine and clarify requirements to ensure proper implementation. Scrum methodology maximize responsiveness to changing clients' needs.

4.0 Software requirement specification (SRS)

A Software Requirements Specification (SRS) is a document that describes the nature of a project, software or application and it describe intended purpose and requirements of the software (Brookes, 2016).

Purpose

The purpose of SRS is to gather and analysis the insight of the Forespin analytics.

System interface

- Microsoft Windows 10 (supports SQL 2012 Express and above)

Hardware interface

- 1 GHz 32-bit (x86) or 64-bit (x64) processor
- Minimum 512 MB of system memory; 1,024 MB or more is recommended for improved performance
- Program requires 15 MB hard drive space
- SVGA monitor capable of 256 colors and 800 x 600 resolution is required. A monitor with 1280 x 1024 resolution or higher is recommended

Communication interface

- Ability to use in any web browser.

Data visualization

Data need to be visualized the way that data easily configured and interrupt.

- Tables
- Charts and graphs
- Filtering options
- Sort options

Analytics

- Correlation analysis
- Time series analysis
- Benfort Law
- Duplication analysis
- Calendar view
- Gap detection
- Summarization
- Sampling

Document management

- Export to Microsoft excel.
- Export to PDF.

Other requirements

- Real time data transferring to ERP to Forestpin.
- Ability to apply multiple sort options.
- Ability to comment on any alert.
- Assign someone to check the alert.
- Configure the amount of alerts that are received per day.
- Mark the alerts as genuine, need a process improvement or manipulation.

5.0 Project charter

Background

Hemas Risk and control try to implement analytical tool throughout the group to strengthen the detective controls. This system has two parts as Forestpin analytics and risk alerts. The purpose of this system is to find irregularities in data sets.

Goals

- Check the 75% of high risk transaction through forestpin per year.
- Detect Rs 5 million worth of of fraud from forestpin analytical tool per year.

Scope

Project team plan to implement this system to find the irregularities in the transactions. In this project, data sets such as invoices, payments, receipts, GRNs, POs are taken to analysis. Correlation, time series analysis, duplication analysis and Benfort Law are the analysis that basically use in this system.

Key stakeholders

Client – Hemas Holdings

Sponsor – General Manger – Risk and control department

Project Manager – Manager – Risk and Control department

Project team – General Manager – Risk and Control, Manager – Risk and Control, General Manager – Forestpin, developers of forestpin, finance team members of SBUs, Assistant Manager – HR, General Manager – IT, Assistant Manager –SAP, Assistant Manager – IT, Assistant Manager – IT security

Project budget

Total project budget is expected as Rs 5.56 Mn.

Project milestone

Table 01 – Key milestones of the project

Activity	Description	Duration (Days)	Start date	End Date
A	Procure new server	14	14.12.18	04.01.19
B	Configure VPN access to forestpin developers	8	14.12.18	26.12.18
C	Configure new server	5	04.01.19	12.01.19
D	Configure new analytics to the system	12	26.12.18	12.01.19
E	Installation LP replication server	6	12.01.19	22.01.19
F	Configure DB connection to the source system and DB connection to SAP HANA	7	22.01.19	31.01.19
G	Transfer data set to system	14	31.01.19	20.02.19
H	Introduce project and the plan to different finance teams	10	14.12.19	28.12.19
I	Select responsible employees	2	28.12.19	02.01.19
J	Register selected employees to system	2	02.01.19	04.01.19
K	Recruit new system operators	20	14.12.18	12.01.19
L	Training employees	15	12.01.19	02.02.19
M	Run the analysis and test	7	20.02.19	01.03.19
N	Mirror test server	2	01.03.19	03.03.19
O	Go live	5	03.03.19	10.03.19

Constrains

Time is the main constrain since project is expected to deliver very short time period.

Risk and dependencies

Table 02 – risk assessment of the Forestpin project

Ref. no.	Risk and risk driver	Impact	Likelihood	Risk mitigating action
1	Reluctant for project from Finance directors of SBUs	Major	Moderate	Lobby through CEO and CFO. Explain the purpose and future benefits.
2	Couldn't get the required support from finance managers due to increase the work load.	Moderate	Likely	Configure the ability adjust the number of alerts that they are received per day according to their request.
3	Increase issues in the system during new configuration.	Major	Moderate	Conduct the new configuration in development site. Keep backups
4	Data security issues	Major	Unlikely	Provide developer limited VPN access only for required time period. Sign non-disclosure agreement with forestpin.
5	Delays in delivery of servers	Minor	Unlikely	Place order on time and coordinate with suppliers.
6	Maintenance issues of the forestpin systems	Minor	Unlikely	Contract with developers for maintenance and upgrades
7	Maintenance issues of server	Minor	Unlikely	Contract with suppliers for maintenance
8	Technical issues of real time data transferring	Major	Moderate	Get the technical support from SAP.
9	Delay the project due to programming issues and bugs	Moderate	Likely	Conduct test runs, feature test time to time.
10	Delays in new recruitment	Major	Likely	Start recruitment on time.
11	Finance team couldn't understand the system.	Moderate	Unlikely	Conduct proper training sessions for explain the different analytics and hands on training session to use the system.

6.0 Project resource management

Main three elements of the project resources planning are people, money and time. Bottom up estimating has been used for resource planning of this project. Bottom up estimating means breaking down the full project into simple activities and allocate resources for each peace (Barker and Cole, 2012). Work breakdown structure is useful to breakdown the full project to manageable

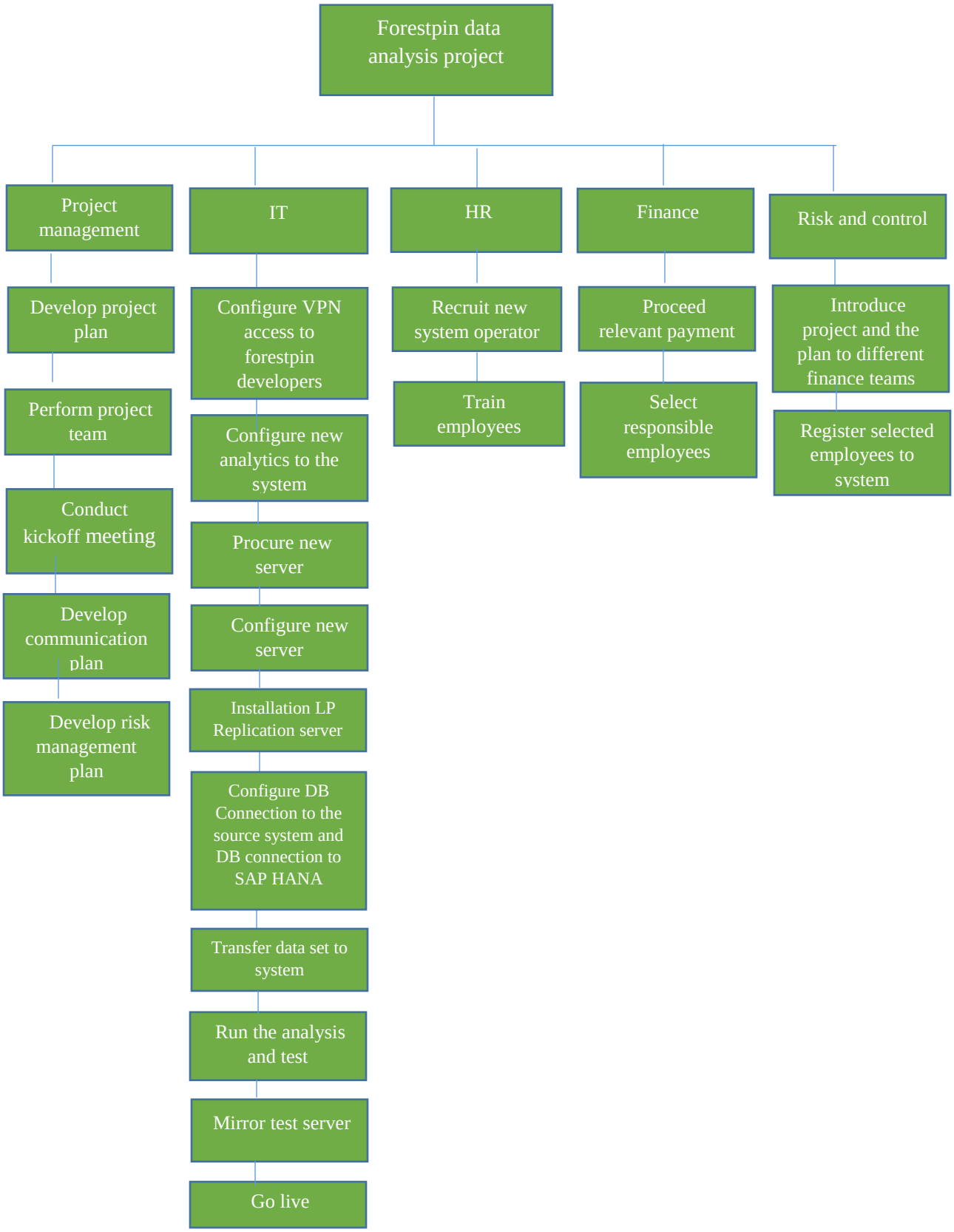
activities. Further Critical path analysis can be used to manage the time effectively. Proper cost analysis need to be conducted and financial resources need to allocate according to that.

6.1 Work Breakdown Structure (WBS)

The breaking down of a big project into manageable or comprehensible areas is a basic approach of the project management (Maylor, 2008). WBS is a hierarchical dissolution of the complete project into manageable sub activities. Company can plan their cost, time and resources properly by breaking down the project to manageable activities. Further project manager can monitor the project by delegating responsibilities and can identify if there is any delay in the task.

There are many benefits by using work breakdown structure such as determine logical arrangements of activities, establish a logical basis for decision making, filtering ineffective activities and ideas, giving a framework for assess the project, useful for refinement process and etc (Khohil and Chitkara, 2008).

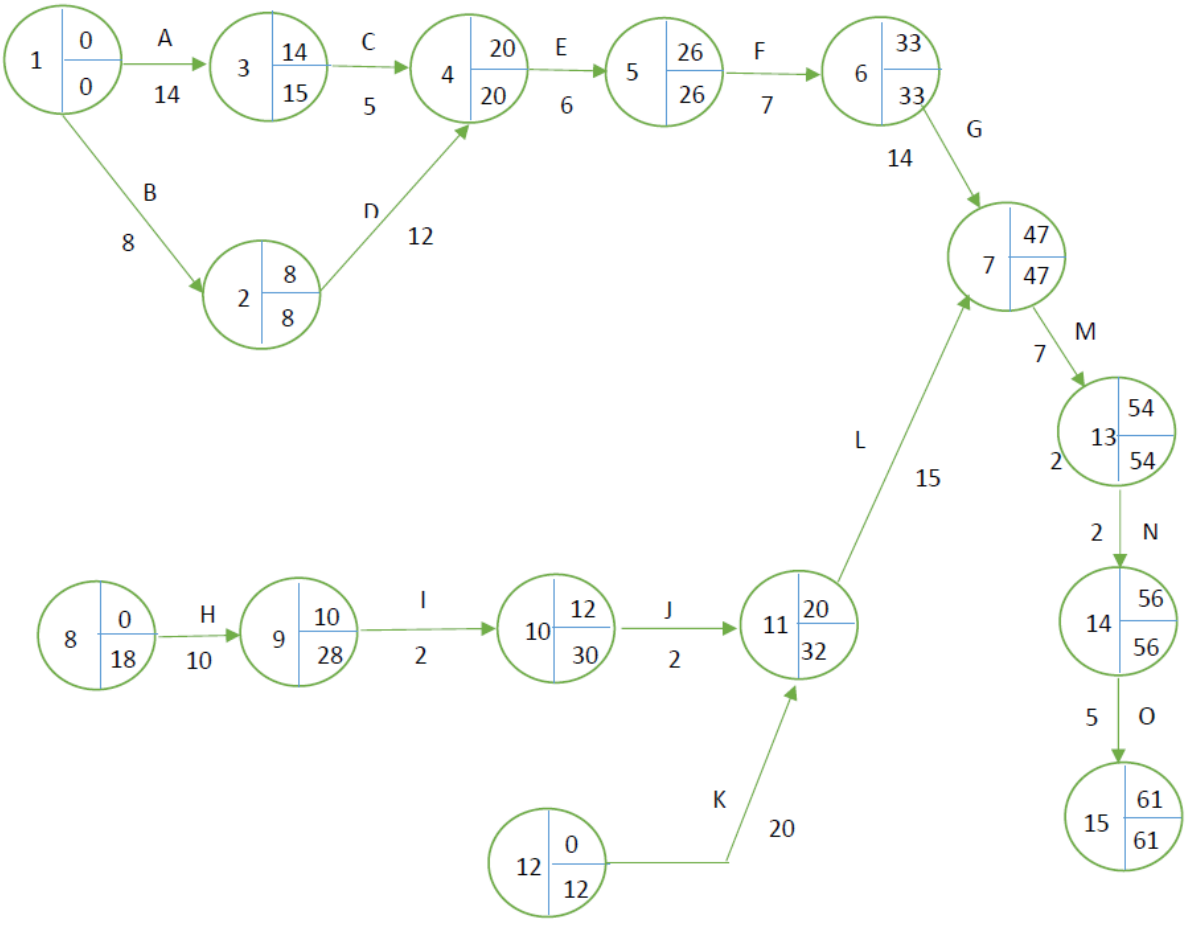
Figure – 02 work breakdown structure for the project.



6.2 Critical Path Diagram (CPD)

CPA is a project planning method that help to finish the project within the shortest possible time. According to the entire total time allocated for all the activities I would spend around 109 working days to finish the project. However it can be identified that project can be finished within 61 working days when design the critical path diagram. This is due to that there are some different independent tasks which can be completed simultaneously to other tasks. Therefore total project completion time is 61 working days.

Figure 03 – Critical path diagram for forestpin project in days



6.3 Budget and cost analysis

Bottom up costing approach is used to develop budget and cost analysis for this project which estimate each task of the WBS and accumulate together in each level of the project hierarchy. Total

project is funded from Hemas Risk and control budget. Therefore first project manager need to develop the budget with GM Hemas risk and control and need to get approval from CEO and CFO of the company. Cost analysis for the project has been mentioned below and cost analysis has been developed for start the project on earliest start time.

Table 04 – cost analysis of the Forestpin project.

Activity	Time	Total cost (Rs)	Cost per day (Rs)
Additional license fee for Forestpin system		2,100,000	
Procure new server	14 days	1,100,000	78,571
Configure VPN access to Forestpin developers	8 days	-	
Configure new server	5 days	35,000	7,000
Configure new analytics to the system	12 days	580,000	48,333
Installation LP replication server	6 days	680,000	113,333
Configure DB connection to the source system and DB connection to SAP HANA	7 days	430,000	61,429
Transfer data set to system	14 days	45,000	3,214
Introduce project and the plan to different finance teams	10 days	-	
Select responsible employees	2 days	-	
Register selected employees to system	2 days	30,000	15,000
Recruit new system operators	20 days	30,000	1,500
Training employees	15 days	260,000	17,333
Run the analysis and test	7 days	35,000	5,000
Mirror test server	2 days	-	
Go live	5 days	110,000	22,000
Get feedback		25,000	
Other cost		100,000	
Total cost of the project		**5,560,000**	

According to above cost analysis, total project cost within project time is Rs 5,560,000. Instead of these, Rs 55,000 monthly salary need to be paid for system operator which newly recruit to monitor and run this process in selected SBUs. Further Rs 600,000 Annual Maintenance Cost (AMC) need to be paid to Forestpin every year after one year complete to the implementation.

It is a project manager's responsible to allocate the funds properly and monitor fund are used properly. Project manager need to set the cost control system and analysis the financial data. Further he need to review is there any kind financial misuse or waste is happening.

6.4 Human resource management

Successful of the project completely depend on the talent and the collaboration of the team members. Therefore beginning of the project, relevant roles and responsibilities need to allocate to each members.

RACI matrix is broadly used to assign the roles and responsibilities to each team members. There can be identified four types of involvement for any tasks (Sivaganathan, 2016).

Responsible – this mean the person who prime responsible to achieve the task.

Accountable – This mean the person who take decisions on the task and take action.

Consulted – this mean the person who need to be communicated to take the decision.

Informed – this mean the person who need to be informed before to take the decision.

RACI responsible matrix has been developed for Forestpin project.

Table 0 3 – RACI responsible matrix

Tasks	General Manger – R&C	Project manager	Developer of forestpin	General Manager - IT	Assistant manager - SAP	Assistant Manager - IT	Assistant manager - HR	Assistant Manager – IT security	Finance manager – FMCG, Hospitals, pharmaceuticals	Responsible employees – FMCG, Hospitals, pharmaceuticals
Procure new server	I	A	C	C		R				
Configure VPN access to forestpin developers	I	A	C	C				R		
Configure new server		A	R	C		R				
Configure new analytics to the system	I/C	A	R							
Installation LP replication server	I	A	R	C	R	R				
Configure DB connection to the source system and DB connection to SAP HANA	I	A	R	C	R	R				
Transfer data set to system	I	A	R			R			C	
Introduce project and the plan to different finance teams	C	R/A							I	
Select responsible employees	C	R/A							R/A	I
Register selected employees to system	I	R/A	R						C	I
Recruit new system operators	I	A	C				R			
Training employees	C	A	R				R		I	I
Run the analysis and test	C	A	R							I
Mirror test server	I	A	R	C		C				
Go live	C	A	R	C	I			I	C	I

7.0 Role of the project Manager

Manager of the Risk and Control department is the project manager of the project. The project manager's main role is to make sure that the project complete within the specific time and established budgets while achieve the project objectives. Project manager ensure that project in obtained required resources and coordinate with the stakeholders of the project. Further project manager involve to develop the project plan, assign responsibilities to each members, provide update to the higher management, develop the methodology used for the project and etc.

Especially project manager should have leadership skills such as negotiation, conflict management and delegation to successfully complete the project. Project manager need to often negotiation with team members, vendors and other project stakeholders. Negotiation is an important skill in developing support for the project and preventing frustration among all parties involved, which could delay or cause project failure (Grey, 2011). Conflict can be happened within any project team even though it can be reduced through good planning, communication and good team building. Conflicts can be happened in any project due to stress, lack of information and communication, personal differences, early stage of the project etc. project manager has main responsibility to manage the conflict. Even some conflicts can be used to positive way to improve the effectiveness of the project (Barker and Cole, 2012). On the other hand, delegating project responsibilities is a critical project management skill that project manager should have. If the project manager delegates too little authority to others to make decisions and take action, the lack of a timely decision or lack of action will cause delays on the project. Delegating too much authority to others who do not have the knowledge, skills, or information will typically cause problems that result in delay or increased cost to the project. Finding the right balance of delegation is a critical project management skill that project manager need to practice (Gardiner, 2005).

Conclusion

This project will be great initiative to internal audit and risk management sector of the Sri Lanka. This project will be completed within 61 working days and total project cost is estimated as Rs 5.56 million. In this report it has evaluated how to manage cost, time and quality aspects of the project. Once system go live, finance teams of FMCG, Pharmaceutical and three hospitals have access to forestpin system and identify their financial data through different analysis. This will also help to take financial decisions instead of find irregularities in data sets. Further assigned

employees will be received the alerts of any irregular invoice, payment, PO, GRN and receipt based on the analysis such as size factor, time series, correlation, duplication and Benfort's Law.

References

Maylor, H. (2006).*Project Management* (3rd ed.). India: Pearson Education

Robbins, S. (2001) *Organizational behavior* 9th edition. New Jersey: Prentice Hall

Project Management Institute (2013). PMBOK: A Guide to the Project Management Body of Knowledge (5th ed.). USA

Sivaganathan, A. (2016). *Lecture Notes*: *Project Management*, Colombo: Postgraduate Institute of Management

Kohil, U., & Chitkara, K.K.(2008). *Project Management Handbook* New Delhi: Tata McGraw – Hill Publishing Company Ltd

Barker, S., & Cole, R.(2012). *Brilliant Project Management: what the best project managers know, do, and say* (3rd ed.). London: Pearson Education

Gardiner, P., (2005). *Project Management: A Strategic Planning Approach.* s.l.:Palgrave Macmillan.

Gray, L., (2011). *Project Management : The Managerial Process.* 5th ed. New York: McGraw-Hill/Irwin.

Marin, G. (2016) *Decision support system* available at: ftp://ftp.repec.org/opt/ReDIF/RePEc/rau/jisomg/FA08/JISOM-FA08-A19.pdf access: 22.11.2018

Young, D. (2013) *Software development methodologies* available at: https://www.asc.edu/sites/default/files/org_sections/HPC/documents/sw_devel_methods.pdf access on: 22.11.2018

Brookes, C (2016) *Software requirement specifications* available at: http://www.biready.com.au/index_htm_files/BI%20Pathfinder%20-%20A%20structured%20approach%20to%20BI%20report%20specification%20-%20AU.pdf access on: 22.11.2018