Make an Intranet network to build a modern supermarkets chains in Kalar city to improve sales and performance via main controller and multi branches

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Abstract

The chain supermarket in the domestic have been grown up. Because of the proffesional staff, the quick development of enterprise, the information technology has been elevated to a new step.

But, the lack of alignment between strategy and business goals is the source of the problems. So, business areas should effectively managing those projects before the IT area. Then, an efficient IT management is necessary, so that IT projects should be show up in relation with strategic alignment view and the achievement of organization goals.

The aim of this work is to build an intranet network to connect a chain of supermarkets for the city by using the newest technology that simplify management information system. The work helps owners and managers gather information relating to their company. Meanwhile, right now in the city the supermerks manually working or at least the network is missing in the business field.

Therefore, computerized management information systems is necessary to help much more convenient for manger to control and monitor all items in the branches. So, the supermarkets later on, much faster ,easier and powerful. Finally, it can helps to save time, money, and it makes the company become more accurate.

Introduction

Business as the link between production and consumption, with information technology, various businesses not only progress themselves' competiteveness in market but also can conduct production and stimulate consumption. So, systemic integration levels are necessary for business organizations. The infromation construction has been current tend which large businesses change the way of management in order to survive. This show that its IT areas should develop a successful strategies and enough competences to face IT demand[1-4].

Recently, depend on the literature[5], the chain supermarket in the domestic have been grown up. Because of the proffesional staff, the quick development of enterprise, the information technology has been elevated to a new step.

Meanwhile, supermarket as a missed-industry, who can decrease production cost by the greatest way and cut down the cost of procurement, the distribution and the inventory management, who can entice more customers[8].

Therefore, some researchers [6,7] showed that the lack of alignment between strategy and business goals is the source of the problem. So, business areas should effectively managing those projects before IT area. Then, an efficient IT management is necessary, so that IT projects should be show up in relation with strategic alignment view and the achievement of organization goals . Finally, business leaders should know the key factor is IT demands management wholesome viewing [9].

The aim of this work is to build an intranet network to connect a chain of supermarkets for the city by using the newest technology that simplify management information system. The work helps owners and managers gather information relating to their company. Meanwhile, right now in the city the supermerks manually working or at least the network is missing in the business field.

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This article is divided into 6 sections. Section 1 presents Introduction to business. Section 2 describes the Project organization. Section 3 describes the Managerial process plans . Section 4 shows the Technical process plan. Section 5 presents the Project budget . Section 6 the Approval of the project steps. Finally, Section 7 presents Conclusion and future services .

The project organization
In this section, we begin with Deliverable, Definitions and Acronyms of the hardware and software of the project for main and its branches as listed in the table 2.1

Deliverable	Recipients	Delivery Date	Delivery Method
AA	All branches	1 Jan 2018	NT
AB	All branches	1 Feb 2018	NT
AC	All branches	1 Mar 2018	NT
AD	Main	1 Apr 2018	NT
AE	Main and All branches	9 may 2018	TE

Table 2.1 HW & SW defintion parts

AA: all hardware components that's need for each branch of this project .
AB: all software components that's need for each branch of this project .
AC: all staffs.
AD: server, sector and hub.
NT: company staff that's currently available and other necessary staffs.
TE: testing plan, testing report and testing result.

The project organization consist of the three parts, the first is: External interfaces. According to structure of this project, it's consist of different staffs like lawyer ,IT management, stakeholder, employee and other staffs, finance, products, communicating and tracking of items between the main and branches, and relationship with external companies . these are the boundaries of this project as shown in the (Char 3.1).

The second part is: internal structure, the project is continuously selling Items to their customers via the 12 branches of supermarket with helping IT managers in main and each branch and other employees and staffs, also monitoring and tracking via DB to filling items that will be finishing   time   by   time.   Roles   and Responsibilities, is the third part, the staffs as in the following listed are the major project teams have roles and their responsibility:
• **Project Manager (IT manager):** responsible for building   the stated project objectives.
• **Software Engineer:** who applies all principles that related to software system.

• **Technical Leader:** managing all technical issues.
• **Software Leader:** explaining and responsible for all software issues and monitoring the software
development team.
• **Hardware Leader:** solving all hardware issues and monitoring the network and
hardware development team.
• **Systems Engineer:** responsible of how the project should be designed and managed over the life cycle of the project..
• **Programmer:** Is responsible to implement the software system.
• **Database Designer:** Is responsible for design the structure of data for the system.
• **Hardware Engineer:** Is responsible for installing and configuring hardware components.
• **Others staffs:** which they have experience with this type of project for solving any expected or unexpected issues that during or after the project occur.

And some other staffs that don't have relationship with the project team but they are linked to the company (finance manager, electrical Eng., drivers, main director, customers and auditors)

Managerial process plan
Project startup is a very short phase of the project management cycle. It is a transition step between project organization and execution. While it is a short step, important events occur. The section consist of the Start-up, Work, Risk Management, Issues resolution, Close-out plan as follow:
Start-up plans
Staffing plan
Developing a staffing plan for the project involves selecting, assembling, numbers and skill levels in each project phase and assigning work to a project team with the appropriate skill sets to meet the project deliverables identified during the project initiation stage as shown in table 3.1.

Project staff training
This section is specify the training for staff of the company that's necessary before the project finish, so that this training enable the staffs for using hardware and software components easily

that needed during the availability of them inside the company such as (windows , database , anti-virus ,barcode reader ,pc and etc.), the following table shows types of training, numbers of personnel, training method and location:-

Resource Acquisition
We specified the plan for acquiring the resources (hardware and software equipment) and assets, in addition to personnel, needed to successfully complete the project as in the table 3.1.C.

Work plan
After the project has been defined and the project team has been appointed, the work go into the work plan phase in the project plan life cycle. This phase is often the most challenging phase for the project manager, as you need to make an educated guess about the staff, resources, and equipment needed to complete your project. Also the mananger need to make plan communications and procurement activities, as well as contract any third-party suppliers.The basic processes of work plan are listed in the some sections as shown in the table 3.2 :-

Data control plan
All these primary and secondary data and information company will kept as a secondary copy for archive in the security location (hard disk drive ,blank DVD or drop-box server (this is security storage internet location) these data and information are :

-All daily tracking data.
-adding, deleting or changing information.
-privacy data.
-selling and buying daily products.

Requirement control plan
The project will have weekly and monthly reports for status for daily project actions like(advantages , company progress , people requirement ,staff proposal problem and defects). If any changes requested in the (requirements, the quality, schedule, budget, resource, and risk factors) will be affected, therefore the project manager plan, estimates, and commitments should be reviewed to accept the changes at that time the agreement proposal should be updated.

Schedule Control Plan

As we explained in the Requirement control plan according to this company we can measure the progress of our company via reports (weekly and monthly),for this the manager can know via the weekly reports can be used to compare actual schedule performance to planned performance and to implement corrective action when actual performance deviates from planned or required performance. The project team will evaluate progress weekly and as milestones occur. Progress will be measured against projected project timeline.

We use Gantt chart (Char 3.2.C) for the project schedule to see the actual and planned performance. As a sample showed blew illustrate the actual and planned performance

According to Gantt chart, if actual performance is deviated from past estimated we have two ways to solve this:

1-if we have long time period we try to solve by finding the causes.

2-else we will notice the company about the state and it's causes to do meeting and fixing this problem or the other as soon as possible to attempt to be of the least impact.

Budget Control Plan

Budget expenditures will correspond to approved budget plan. Review of expenditures will occur according to weekly report and requirements that will come from(customer ,staff ,progress, faults and updates , and cost estimates for hardware components, software components, and staff salary will be compared to the actual cost that estimated for the entire project also our budget for this company generally can show visually how to reserve for main activity to continuity going company as in table :

Risk Management Plan

Plan for identifying, analyzing, prioritizing, and controlling project risks. Via weekly and monthly reports we can identify and prioritize any defects and risks , The project will assess risks, communicate risks to participants, monitor risks, identify and implement resolutions as appropriate. Risk management is the responsible to notice project manager via typical

Communication Mechanism (phone , email ,meeting..) to allocate budget and resolve risks as soon as possible .

Issues resolution

Problems, issues, and action items that arise on the project will be documented in daily program notes. Project team will review and develop a plan for resolution. Some problem or risk is dangerous need emergency plan because of not rise any more loses of data or risk technique like burning.

Project close-out plan

To achieve an orderly closeout of the project the following will occur:

1.) archiving of project materials

All project documents will be archived on CD/DVD.

2.) recording of metrics

Project metrics data will be collected, reported and archived on CD/DVD.

3.) holding a project retrospective

Participants will be asked to complete a post project survey for feedback.

Participants will be asked to participate in a final group session for recognition and celebration.

4.) preparation of a final report to include lessons learned

A final report will be compiled. Lessons learned from the project will be discussed.

5.) analysis of project objectives achieved

Project objectives will be reviewed and analyzed for completion.

Technical Process Plans

Project technical planning is thinking of what project activity we will do before we do it. Planning mechanisms have served project managers well in planning for their projects. This phase break down into four sub sections as below explained.

Process model

The business process model, provides a quick introduction to some Unified Modeling Language (UML) concepts and how they are applied in Enterprise Architect's Business Process Model as shown in UML 4.1.

Methods, Tools, and Techniques

 we will buy PCs for all branches and special PC for main by the following properties as in table 4.2:

And also we will installing the network by the following design for company main and its branches as in char 4.2:

Each branch's network will be connected to the intranet and managed by Zanyar Company that's available in the Kalar. A server is placed at the main branch .This server is used to hold the Database System

of the company. The server operating system will be Windows Server 2008 and operating system of other PCs will be Win7 32 bit professional. and other all branches use the database system through a private IP that reserved by Zanyar Company.

The following tools and languages will be used to design the database system:

• Languages and scripts: HTML, PHP, JavaScript, CSS, AJAX
• DBMS: MySQL
• Compiler: WAMP 3.0 (includes: Apache, PHP, MySQL, phpMyAdmin).

Documentation Plan

 Whole documentations of project will deliverable as following table 4.3.

Project Dependencies and Closure Requirements

The project is managed all parts by itself except intranet managed by Zanyar Company and it is not dependent on any other projects or company . By 12 Nov 2018, when all the hardware, software and documentation deliverables have been finished, reviewed and accepted, the project will be finished.

Project budget

   Project budget is a financial and personnel disposal limits that are needed for the project implementation. Its creating helps to define the maximal of money, work costs and resources necessary for the certain project. The project budget is approved in a project order. The operations for the budget preparation are therefore not completed. The changes, which are not corresponding to the planned budget, can

occur during the project. In this phase, we have estimated the total cost of the project. Our estimate for this   work is 156935$ as detailed in the table 5.1.

Approval

The flowchart below (fig 6.1) show the process of approval that review all (phase description, objectives, deliverables, completion status, issues and actions) that prepared by project teams and then it'll review by project team review if approved then send to project manager for last review and then transmit to implement but if not accept by project manager resend to project approval team review. And before send to project manager if not accepted by approval team review it must be update and conduct review as necessary then if accept by same team send to project manager else this loop is continue till accept or change some main part or last action cancel the project .

Conclusion and future work
Conclusion

 In the work is to build an intranet network to connect a chain of supermarkets for the city by using the newest technology that simplify management information system. The work helps business owners and managers gather information relating to their company. Meanwhile, right now in the city the supermerks manually working or at least the network is missing in the business field.

   Therefore, Computerized management information systems is necessary to help much more convenient for manger to control and monitor all items in the branches. So, the supermarkets later on, much faster ,easier and powerful. Finally, it can helps to save time, money, and it makes the company become more accurate.
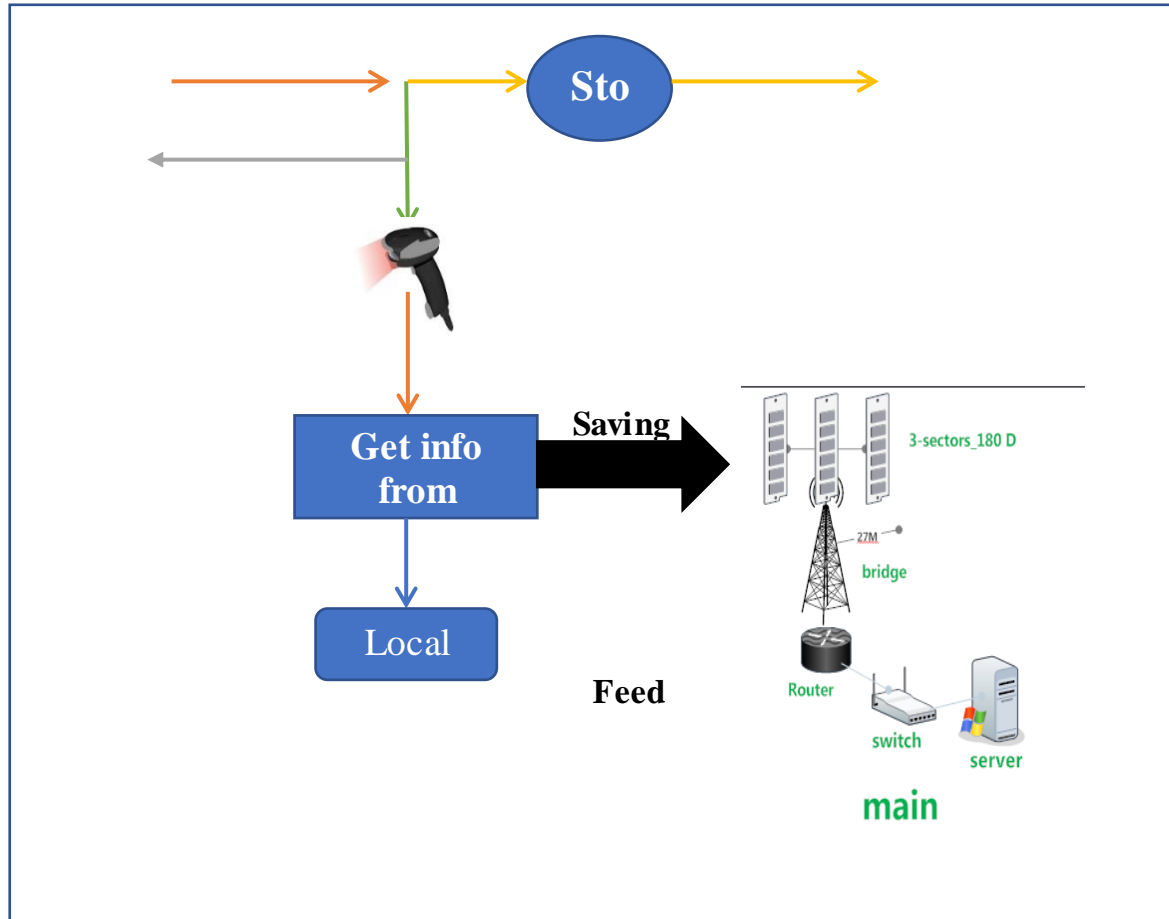
Future work

1-   increase the scale of the branches in all of the Kurdistan cities
2-   growing the availability of more items like as, vehicle parts, electrician tools and etc.
3-   Make a website for the project which offers the services of ordering online and then picking up your groceries or any products in

store and then during 30 minutes they are reach their homes.

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Sto

Get info from

Saving

3-sectors_180 D

27M

bridge

Router

switch

server

main

Feed

Local

Char 3.1 Communicating and tracking between the main and its branches

Table 3.1 Staffing plan

Staff required Skill	Staff needed	Sources	Start and End date	Hourses
Project Manager	1	I	1 Jan to 9 may 018	Full time
Software engineer	3	E	1 Jan to 9 may 018	Full time
Technical leader	6	I(2) + E(4)	1 Jan to 9 may 018	Full time
Hardware leader	3	I(1) + E(2)	1 Jan to 15 Feb 018	270
System engineer	2	E	1 Jan to 9 may 018	When need
Programmer	1	I	1 Jan to 1 match 018	When need
DB designer	1	E	1 Match to 9 May	420
Hardware engineer	1	I	1 Jan to 1 match 018	90
Other staff	3	E	1 Jan to 9 may 018	When need

Table 3.1.B Staff training

Methods	No. of Staffes	Locations
All IT components	12	All branches
Win 7	12	All branches
Anti-virus	12	All branches
Some IT daily problem	12	All branches
Basic computer	12	All branches
Advance with DB	2	Main

Table 3.1.C Necessary equipment of the project

Resources	Equipment type	Quantity	Location
Server	Hardware	1	Main
Sector	Hardware	3	Main
Barcode reader	Hardware	12	All branches
Hub-3com	Hardware	1	Main
Label-reader	Hardware	12	All branches
PC	Hardware	12	All branches
Cable full STP	Hardware	2 cartoon	All branches + main
Bridge	Hardware	50 M	All branches + main
Router	Hardware	13	All branches + main
Rj-45	Hardware	1000 items	All branches + main
Anti-virus AVG 2013	Software	12	All branches
MS-windows 7	Software	12	All branches
Windows server	Software	1	Main
E-hard drive	Hardware	1	Main
Database	Software	1	Main

Table 3.2 Work plan sections of the porject

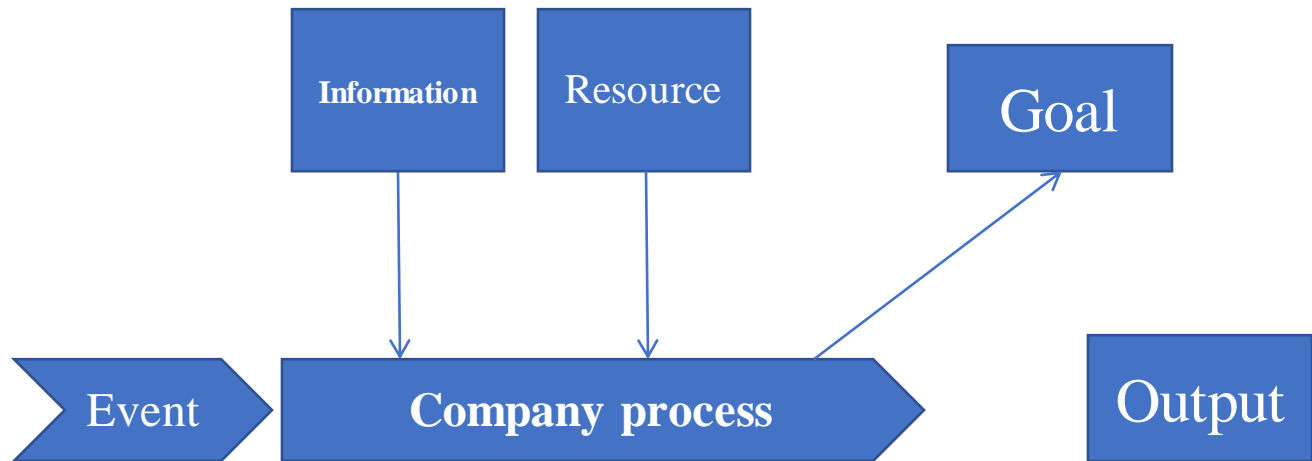| Millstones of project	Start AND End Day
Project Analysis	1 Jan to 22 Jan 018
Project Design	23 Jan to 24 Feb 018
Project Coding	25 Feb to 23 March 018
Project Installing	24 March to 9 April 018
Project Testing	10 April to 20 April 018
Project training	21 April to 10 May 018
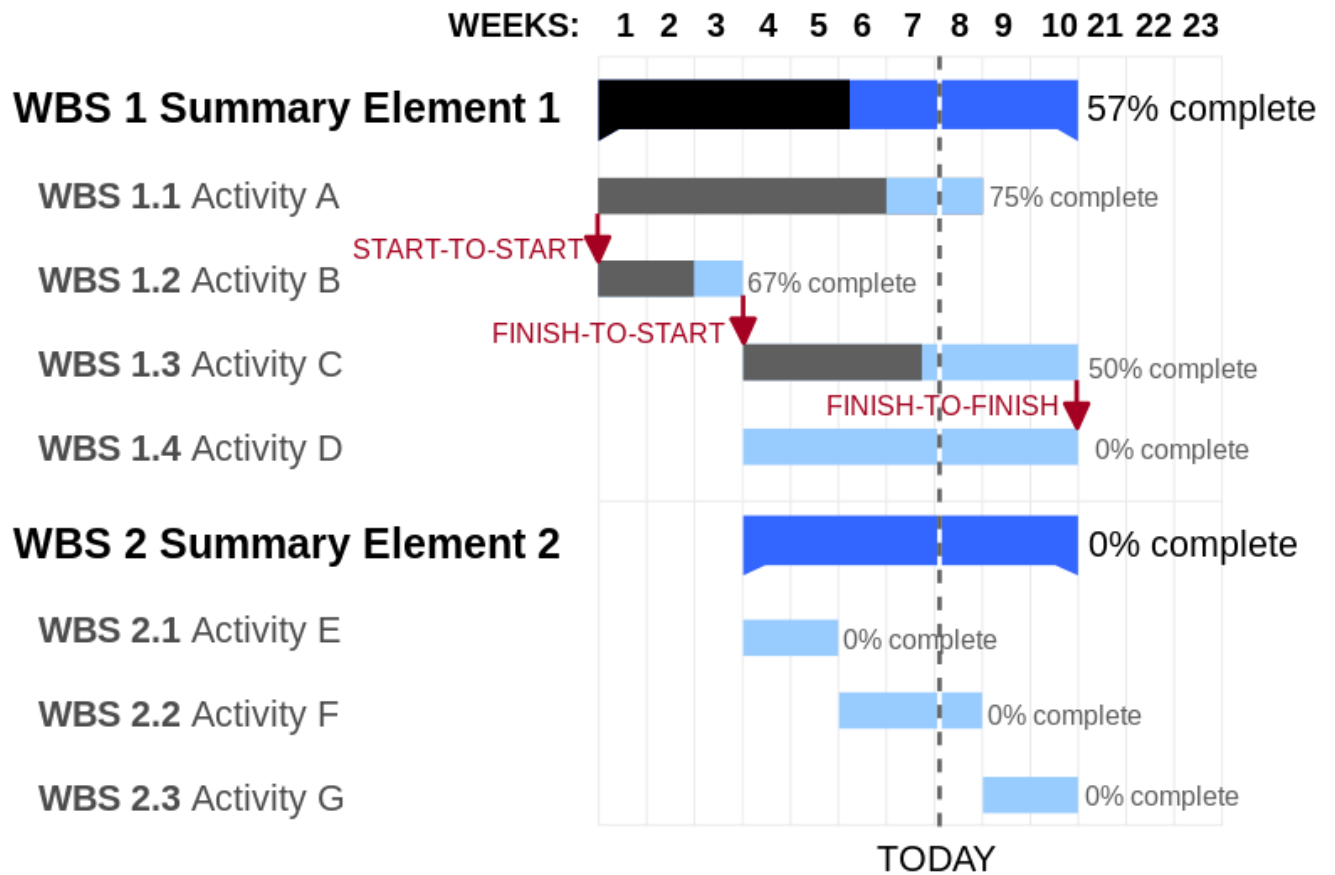
Char 3.2.C Schedule Control Plan

Table 3.2.D. Budget Control Plan

Objectives	Description
Staffing Costs	Any costs related to hiring staff to manage the expansion of the program.
Professional/Staff Development	Costs involved in training or teaching educators that will allow them to better contribute to your program. This includes teacher training courses, manuals or software.
Substitute Teacher Time	Cost of substitute reimbursement if developing your program requires you or others working on the program to take time away from your classroom.
Equipment/Software	Cost of any lab equipment, office equipment, phone use, or computer software purchased to enhance the program.
Facilities/Transportation	Costs associated with disseminating information for or about your program. For instance, cost of any consumable office supplies, printing, photocopying, or costs incurred for the production and mailing of pamphlets, worksheets or brochures either needed for the program or to promote the program.
Incentives:	Cost associated with providing meals, snacks and other means of encouraging participants (prizes, t-shirts, etc.) during interactive portions of the program

Communication, Tracking, and Reporting Plan

Type of Communication	Communication Schedule	Typical Communication Mechanism	Who Initiates	Recipient
Testing report	First two weeks	Team meeting	Project Manager, technical leader	Rashidya Manager
Status Report	weekly	Phone	Project Manager	Team leader
Schedule and Effort Tracking Report	Weekly	e-mail	Project Manager	Project team
Project Review	Monthly	Team meeting	Project Manager	Rashidya Manager
Risk Mitigation Status	As mitigation actions are completed	As mitigation actions are completed	As mitigation actions are completed	As mitigation actions are completed
Requirement Changes	As changes are approved	Team meeting	Project manager	Affected ProjectParticipants
Customer proposal review	Monthly	Phone	Project manager	Project team
Unpredictably requirement Or specific fault	As needed	Team meeting	Depend on that situation	Project team

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┌──────────────┐  ┌──────────────┐              ┌──────────────┐
│ Information   │  │ Resource     │              │    Goal      │
└──────┬───────┘  └──────┬───────┘              └──────────────┘
       │                 │                         ↗
       ▼                 ▼                        /
┌─────────┐  ┌────────────────────────────┐   ┌──────────────┐
│  Event  │  │     Company process        │   │   Output     │
└─────────┘  └────────────────────────────┘   └──────────────┘
```

4.1 UML Process model

- information :may include customer requirement ,staff proposal or any requirement change

-Resource : all items and products that selling and buying between main and its branches

-Event: any risk or event under estimation or unpredictably occur .

-Goal : provide service and customer satisfy and give an environment to get staffs happy .

-output: solve and answer (information and event fields of this diagram).

Table 4.2 The Main and branches PC specifications

| PC	CPU	RAM	Hard	OS	Model	Location
Desktop	core i3	4 GB	1 TB	Win7 32 bit professional	HP 2130	For each branches
Desktop	Core i7	8 GB	1TB	Windows Server2008	Dell 4015	Main
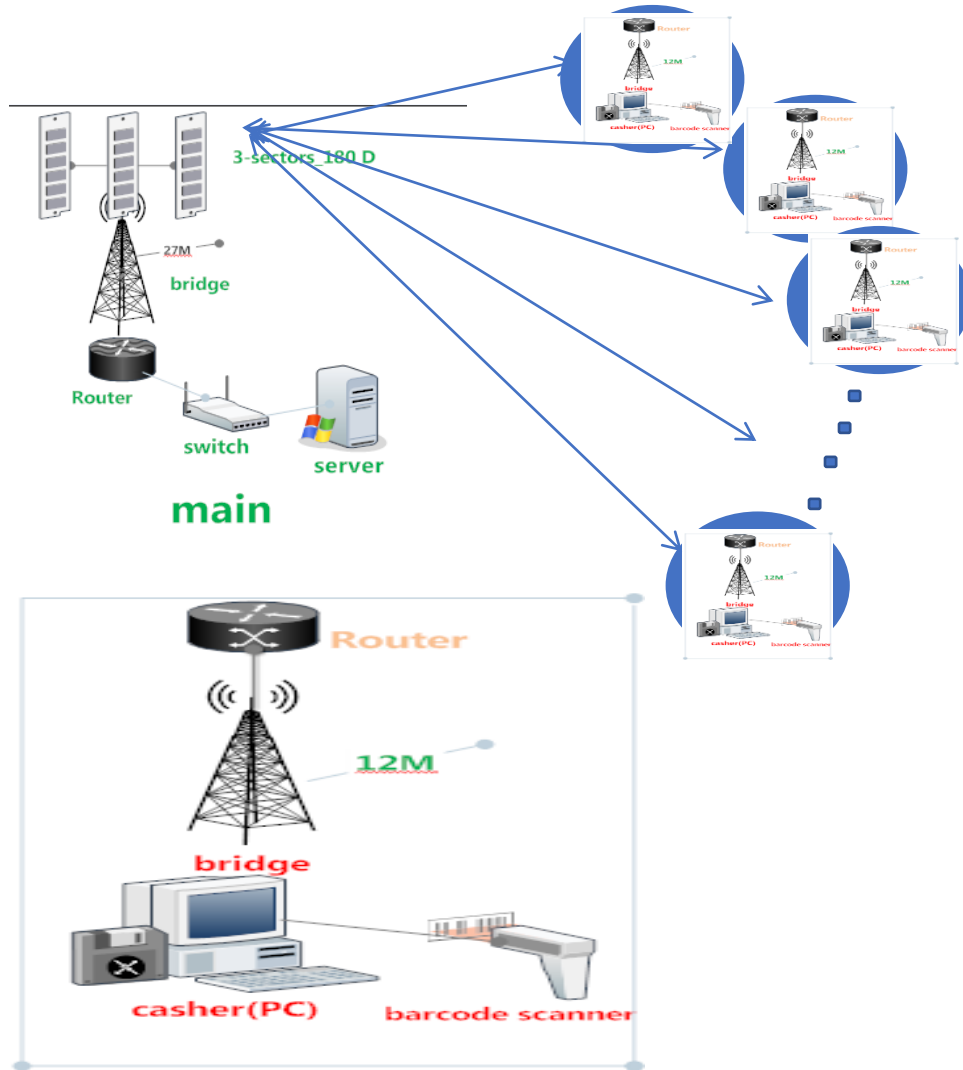
Char 4.2 Main Network   diagram

Table 4.3 Documentations of project

Document	Document Template or standard	Created By	Reviewed By	Target date	Distribution
Project management plan	Template	Project manager	Leaders	12 Nov 2018	Rashidya Company
Software Requirements Specification	Template	Software Leader	Project management	12 Nov 2018	Rashidya Company
Software Design Specification	Template	Software Leader	Project management	12 Nov 2018	Rashidya Company
Network Installation	Standard	Hardware leader	Project management	12 Nov 2018	Rashidya Company
Testing Documentation	Standard	Test leader	Project management	12 Nov 2018	Rashidya Company
Staff training	Standard	Staff leader	Project management	12 Nov 2018	Rashidya Company
Final report	Standard	Project manager	Project management	12 Nov 2018	Rashidya Company

Table 5.1 project budget detail

Item	Quantity	Price	
Server	1	12000$	
Sector	3	450$	1350
Barcode reader	12	500$	6000
Hub-3com	1	100$	
Label-reader	12	45$	540$
PC	12	700$	8400$
Cable full STP	2 cartoon	200$	400$
Bridge	50 M	50$	2500$
Router	13	150$	1950$
Rj-45	1000 items	100$	
Anti-virus AVG 2013	12	30$	360$
MS-windows 7	12	10$	120$
Windows server	1	15$	
E-hard drive	1	100$	
Database	1	120000$	
Training	3	1000$- 3000$	
Total		156935$	

Phase Approval Process
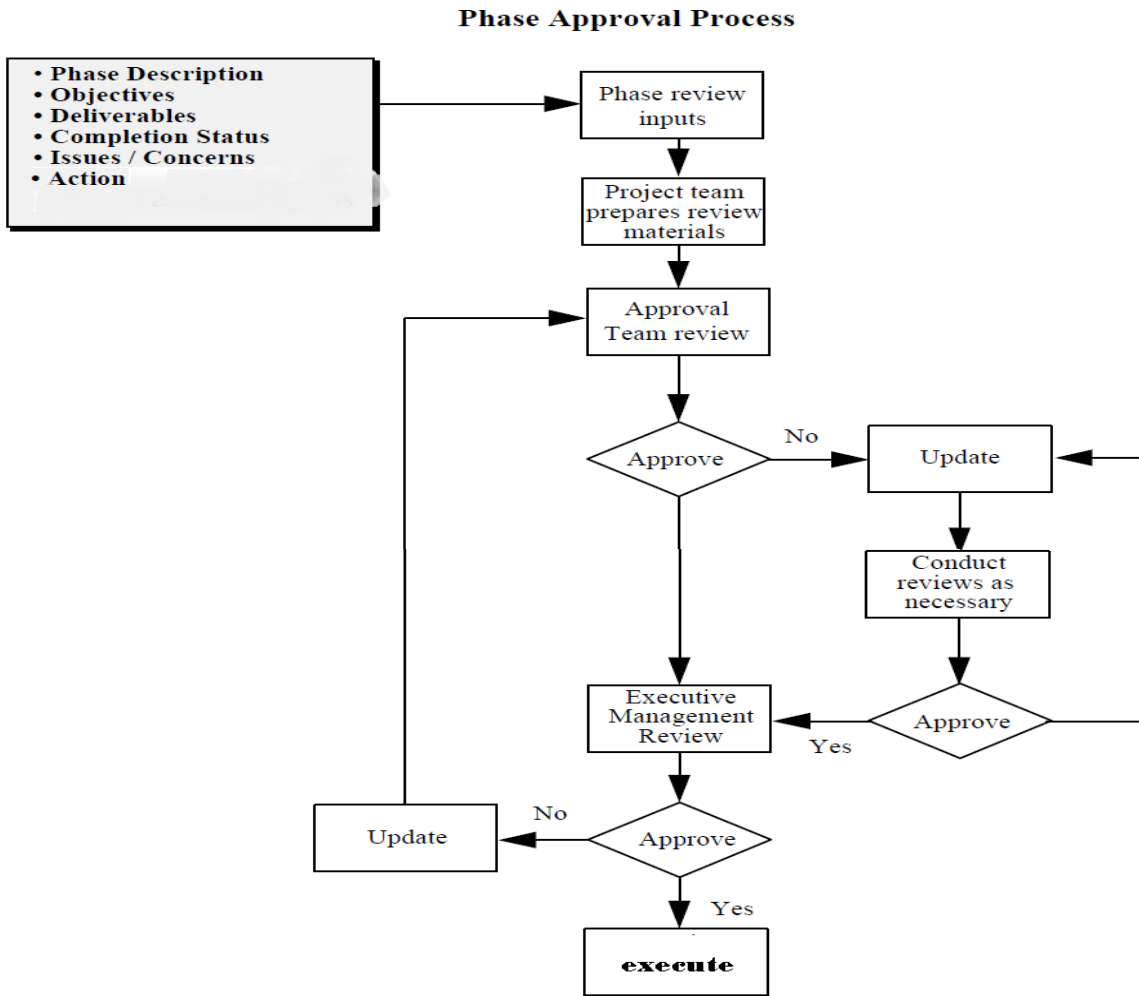
Figure 6.1 The project life cycle