Project Management and Quality Assurance Assignment

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1.0 TASK ONE: PROJECT EVALUATION

Project evaluation involves several steps, related to the stages of the project; Discussing and defining the aims, collection of data following the objectives of the project and the subject of the evaluation, analysis and the interpretation of this data leading to informed conclusions, Amendments of the project in the light of the evidence acquired.

Economic assessment compares the expected cost of development and operation of the proposed system with expected benefits of having it in place.

Net profit = Gross Profit - Overheads - Interest Payable

Payback refers to the period of time required for the return on an investment to "repay" the sum of the initial investment.

Return of investment (ROI) the return on investment formula:

Net Present Value (NPV) discount factor = $1/(1+r)t$

Internal Rate of Return is a rate of return used in capital budgeting to measure and compare the profitability of investments.

Project Alpha – reasonable startup cost with a productive *net profit* after the 5th year. The initial investment cash was ripped during the 1st year of initiation, and showed excellent output under the economical discount rate changes. Internal rate of return of the project is 31%, it is not the best project but can initiate with careful monitoring.

Project Iota– highest amount startup investment; even though the payback period was in the 2nd year the project is already flagged as a "risk" because of the huge of amount sank at the beginning of the project. It forwarder failed to produce a reasonable *Net profit* and *Net present value*. The project also bears the lowest *internal rate of return* rate amongst the entire projects; project should only be initiated if the projected business benefits out-weight the development, maintenance and running costs therefore Project Iota is liable to fail if initiated.

Project Eta – large amount of money has been invested as the start-up investment, which can be a liability if it doesn't payback soon. At the end of the 5th year, the business produces a good net profit. *The payback* period of initial investment cost is at the 3rd year of the initiating the business. The *net present value* showed positive output even after undergoing through several discount rates.

. *Internal rate of return* of 39% ranking it the best project to initiate, hence the project with IIR greater than current interest rates will provide better returns than a bank itself.

2.0 TASK TWO: PROJECT ANALYSIS

Stages in the development of project Eta

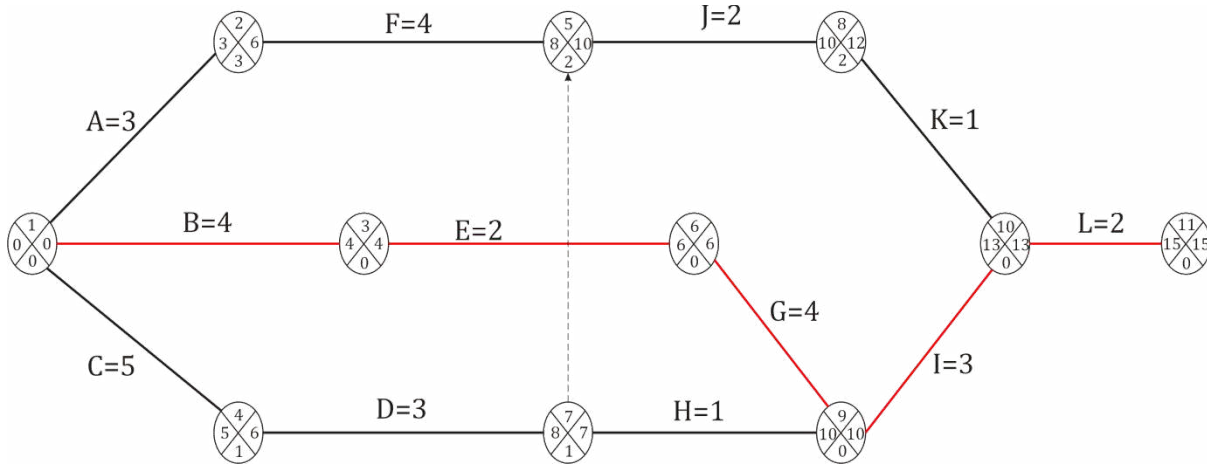| Label	Name	Pre-requisite	Duration (weeks)
A	Analysis module 1		3
B	Analysis module 2		4
C	Analysis module 3	C	4
D	Implement module 3	B	3
E	Implement module 2	A	2
F	Implement module 1	E	5
G	Test module 2	D	4
H	Test module 3	G, H	1
I	Integrate module 2 & 3	D, F	3
J	Integrate module 1 & 3	J	3
K	Document module 1	J	3
L	System test	I, K	2

Figure1.   Critical Path Model of Project Eta.

According to the critical path diagram for project Eta, the critical path lies along tasks B, E, G, I and L.
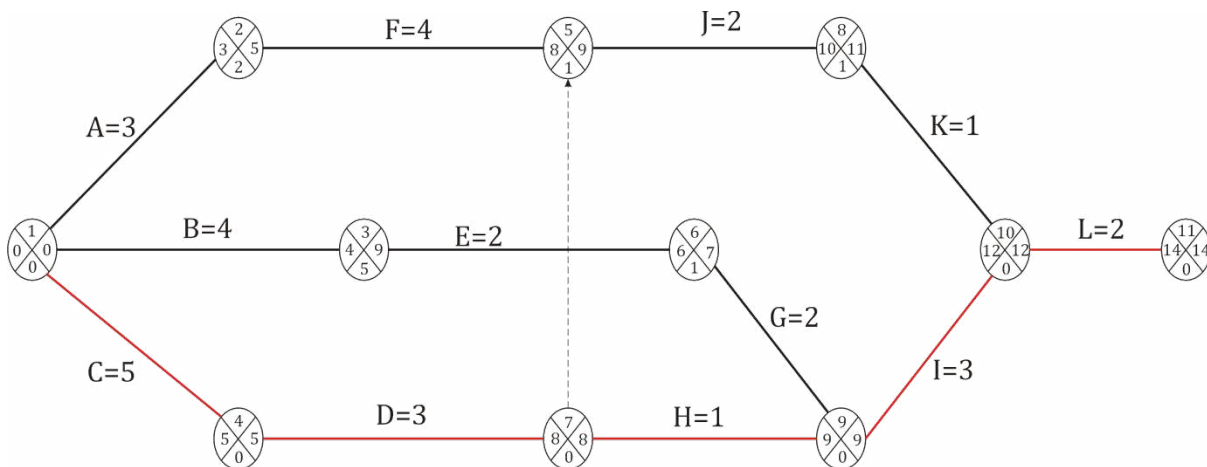
Effects of Re-Scheduling On Project Eta

Figure2.   Critical Path Model after rescheduling Task G of Project Eta.

After rescheduling task G, critical path changed activities along C, D, H, I, and L path.

Project Crashing Considerations

Project crashing is a method for shortening the project duration by reducing the time of one or more of the critical project activities to less than its normal activity time. The object crashing is to reduce project duration while minimizing the cost of crashing.

The following should be considered before crashing a project;

- To reduce project duration while minimizing the cost of crashing, the project team should estimate require time, require the cost, crash time, crash cost for each activities. And then the team can estimate total crash time, total crash cost, the crash cost per week to reduce project duration at minimum cost.
- More resources are needed to speed-up a part of a project, even if resources may be withdrawn from one facet of the project and used to speed-up the section that is lagging behind.
- Crashing usually depend on what slack is available in a non-critical activity, thus resources can be reassigned to critical project activity. Hence, utmost care should be taken to make sure that appropriate activities are being crashed and that diverted resources are not causing needless risk and project scope integrity.
- Another solution may be fast-tracking, which involves over-lapping tasks which were initially scheduled sequentially. Or optimization of schedule in other areas. For example, splitting long tasks into smaller chunks to squeeze more work into a shorter period of time, reducing lag times between tasks or reducing the scope to eliminate less important tasks.

It is therefore advisable to first crash activities early in the project as to have a leeway to crash other activities in the later stages of the project. Nonetheless, it is imperative that all project guidelines, resources and costs are diligently being tracked and are aligned to the aspirations of the client and senior managers.

3.0   TASK THREE: Testing

Black Box Testing: Black box testing is a software testing techniques in which functionality of the software under test (SUT) is tested without looking at the internal code structure, implementation details and knowledge of internal paths of the software. This type of testing is based entirely on the software requirements and specifications. This method of test can be applied to virtually every level of software testing: unit, integration, system and acceptance. It typically comprises most if not all higher level testing, but can also dominate unit testing as well.

Advantages of Black Box testing include;

- The test is unbiased because the designer and the tester are independent of each other.

- The tester does not need knowledge of any specific programming languages.

- The test is done from the point of view of the user, not the designer.

- Test cases can be designed as soon as the specifications are complete.

Disadvantages of Black Box testing include;

- The test can be redundant if the software designer has already run a test case.

- The test cases are difficult to design.

- Testing every possible input stream is unrealistic because it would take a inordinate amount of time; therefore, many program paths will go untested.

Reference File

Universities	Books	Journals	Guides	Normal customers	Students
Limkokwing	BASICS OF PROGRAMMING	Examining accounting	100% achievement guide	John Key	Fred Xi
UCSI	Relational Database for beginners	On the in-formativeness	Basic Video Walkthrough	Akpan	Theresa Wart
SEGI	System Analysis	Christian Bioethics	News Guide	Udoh	Arnold chow
St Pauls	Intro to HRM	ELT Journal	Sports Guide	Ediong	Mmaette

Variables	Equivalence Class	Id	Validity	Representative Value	Boundary
University	In file list	1	Valid	Limkokwing	
	Not in file list	2	Invalid	UNIMAS	
Books	In file List	3	Valid	Basic of Programming	
	Not in File	4	Invalid	Computer Systems	
Journals	In file List	5	Valid	Christian Bioethics	
	Not in file List	6	Invalid	Intro to mist	
Guides	In file List	7	Valid	News Guide	
	Not in File List	8	Invalid	Fitness Guide	
Normal Customers	In file List	9	Valid	John Key	
	Not in file List	10	Invalid	Umoette	
Students	In file List	11	Valid	Fred Xi	
		12	Invalid	Kenneth	

	Not in file List			
Customer Type	**Customer Name**	**Discount Type**		
University	UCSI	20% on books , 20% on journals, 0% on guides Additional 5% discount if more than 40 items in total are ordered		
University	SEGI	20% on books , 20% on journals, 0% on guides Additional 5% discount if more than 40 items in total are ordered		
University	Limkokwing	20% on books , 20% on journals, 0% on guides Additional 5% discount if more than 40 items in total are ordered		
Normal Customers	John Key	10% on books, 10% on journals, 10% on guides for order > 10 on specific purchase type. Additional 5% discount if more than 40 items in total are ordered		
Student Customers	Fred Xi	10% on books, 10% on journals, 7.5% on guides for order Additional 5% discount if more than 40 items in total are ordered		

Available Items reference table			
Purchase#	Purchase Name	Purchase Type	Purchase Price
1	Basics of Programming (Download)	Book	$500
2	Relational Database for Beginners (Download)	Book	$400
3	Examining accounting departments' rankings of the quality of accounting journals (Online)	Journal	$300
4	On the in-formativeness of persistence for evaluating mutual fund performance using partial frontiers (Online)	Journal	$300
5	100% achievement guide (Download)	Guide	$200
6	Basic Video Walkthrough (Download)	Guide	$200

Customer Type	customer Name	Purchase#	Quantity	Discount Rate	Amount before Discount	Total Price
University	Limkokwing	1	20	20%	$10,000	$8000
	Limkokwing	2	10	20%	$4,000	$3,200
Total			**30**	**0%**	**$14,000**	**$11,200**
University	UCSI	2	10	20%	$4,000	$3,200
	UCSI	4	30	20%	$9,000	$7,200
	UCSI	5	20	0%	$4,000	$4,000
Total			**60**	**5%**	**$17,000**	**$13,775**
Normal Customer	John Key	3	20	10%	$6,000	$5,400
	John Key	4	5	0%	$1,500	$1,500
Total			**25**	**0%**	**$7,500**	**$6,900**
Student	Theresa Wart	3	5	7.5%	$1,500	$1387.5
			5	**0%**	**$1,500**	**$1,387.5**
Student	Fred Xi	1	2	10%	$1,000	$900
			2	**0%**	**$1,000**	**$900**
Student	Arnold Chow	5	3	7.5%	$600	$555

			3	0%	~~$600~~	~~$555~~

3.1 Usability Testing

Usability testing is a black-box testing technique. The aim is to observe people using the product to discover errors and areas of improvement. Usability testing generally involves measuring how well test subjects respond in four areas: efficiency, accuracy, recall, and emotional response. The results of the first test can be treated as a baseline or control measurement; all subsequent tests can then be compared to the baseline to indicate improvement.

- Efficiency -- How much time, and how many steps, are required for people to complete basic tasks? (For example, find something to buy, create a new account, and order the item.)

- Accuracy -- How many mistakes did people make? (And were they fatal or recoverable with the right information?)

- Recall -- How much does the person remember afterwards or after periods of non-use?

- Emotional response -- How does the person feel about the tasks completed? Is the person confident, stressed? Would the user recommend this system to a friend?

  The process for a formal usability test, but it could also be used for less formal tests are as;

- Develop a test plan

- Choose a testing environment

- Find and select participants

- Prepare test materials

- Conduct the sessions

- Debrief with participants and observers

- Analyze data and observations

- Create findings and recommendations

3.2   Problems with Usability Testing (Web based Software)

Accidental Revelation: Testers often provide too much information inadvertently. For example, tasks may be worded in such a way that they contain keywords (such as 'register') that the participant simply locates on the system.

Unprofessional Demeanor: The appropriate attitude for a tester is one of professional detachment and neutrality. Using encouraging terms like 'Good' or 'well done' may give the impression that the user, rather than the system, is being evaluated.

Inadequate Planning: The logistics of all but the simplest usability test present opportunities for error.

Not Recruiting the Right Participants: One common mistake is to focus on demographics (such as age and income) and not look at those distinctions that make the users behave differently, such as their fluency in the design's content area.

Not Designing the Right Tasks: The way you design tasks could have a dramatic outcome on the results, without your even realizing it. In a testing situation, the participants really want to please you by following your directions. If the tasks direct participants to take a certain path, that's the way they'll go. If it's not what real users do in the true context of the design's use, then the results will be distorted.

3.3 Static Testing

Under Static Testing code is not executed. Rather it manually checks the code, requirement documents, and design documents to find errors. The main objective of this testing is to improve the quality of software products by finding errors in early stages of the development cycle.

3.4 Dynamic Testing

Under Dynamic Testing code is executed. It checks for functional behavior of software system, memory/CPU usage and overall performance of the system. The main objective of this testing is to confirm that the software product works in conformance with the business requirements.

Difference Between Static And Dynamic Testing

Static Testing	Dynamic Testing
Testing done without executing the program	Testing done by executing the program
This testing does verification process	Dynamic testing does validation process
Static testing is about prevention of defects	Dynamic testing is about finding and fixing the defects
Static testing gives assessment of code and documentation	Dynamic testing gives bugs/bottlenecks in the software system
Static testing involves checklist and process to be followed	Dynamic testing involves test cases for execution
This testing can be performed before compilation	Dynamic testing is performed after compilation
Static testing covers the structural and statement coverage testing	Dynamic testing covers the executable file of the code
Cost of finding defects and fixing is less	Cost of finding and fixing defects is high
More reviews comments are highly recommended for good quality	More defects are highly recommended for good quality
Requires loads of meetings	Comparatively requires lesser meetings

4.0   TASK FOUR: PM & QA

<u>Problems with Disrupting Project Life Cycle</u>

Projects that represent a lot of change in a hurry have a potentially overwhelming number of failure modes. Part of the difficulty is compressed timing. When doing a lot of work in a short time frame, even seemingly trivial problems can trigger other trouble and cause the project to quickly cascade out of control.

At the most basic level the triangle of compromise says a balance has to be achieved between times (time available), cost (allocated funds) and quality (expected performance). If you reduce time, you can potentially increase cost and reduce quality. Shortcutting the requirements phase can lead to incomplete or unclear objectives which make it difficult to close down projects. Going from one project phase to another before you have completed the last one, can lead to some big problems in effective management and control. Running phases in parallel can also be a disaster and lead to huge financial over-runs and having to repeat unsatisfactory completed work again. It all leads to a breakdown of planning, control and management that causes huge stresses within the project and team, that can go on and have other undesirable consequences Plans are there to be followed, so short-cutting them without good valid reasons and understanding the consequences can significantly reduce the potential for successful project delivery and make it all harder for those involved to do their jobs.

<u>Recommended New Approach</u>

Outsourcing project management can be a very good decision in any situation where the project involves work with which no one in the organization is familiar, especially if it is unlikely to be repeated in the future. Outsourcing may well be the best solution for anyone-off project that is mandatory but that has little or nothing to do with the ongoing work of the organization. Another key consideration when thinking about outsourcing project management is the amount of project independence. If the project truly has nothing to do with other current project work, outsourcing it may be a good option.

Cost and Benefits of New Approach

▪ Planning must be intense and effective. Engage core team in gaining a deep understanding of all the project requirements, and work to develop a credible, sufficiently detailed plan for meeting them.

▪ Effective tracking and communication is essential. Aggressive plans must always be tracked with high discipline. Set status cycles to beat least weekly, and increase the frequency whenever things are not proceeding as planned. During times of high stress, schedule short five to ten minute standup or teleconference status meetings each day to stay on top of evolving progress. Handle problems and variances from plans within your team when possible, but do not hesitate to escalate situations where solution is beyond your control, especially for any case that could endanger the success of the overall project. Communicate status clearly and at least weekly, and do it more often when warranted.

Project Critical Success Factors

CSFs are the essential areas of activity that must be performed well if you are to achieve the mission, objectives or goals for your business or project. By identifying Critical Success Factors, a common point of reference can be created to help direct and measure the success of a business or project. The following are some CSF's to consider for projects

Agree on the project goals: Make sure there is agreement with management, project sponsors, and other stakeholders on the purpose and goals of the project. What problem will the project solve? What is the desired end result? What need will the project fill? Goals should be specific and measurable. Clear measurable goals will help define the project scope.

Develop clearly defined plans with assigned responsibilities and accountabilities: Developing a plan is more than just entering the tasks into a software application like Microsoft project. All the deliverables need to be defined along with the necessary tasks to produce them and any associated risks. Responsibilities should be assigned to the tasks and deliverables with appropriate due dates and accountabilities. The planning process should also include risk management activities and communication requirements. Developing the project schedule is only a part of the planning process.

Manage the project scope effectively: The project scope is defined in the goal setting, and planning stages of a project. It would be nice if the scope never changed, but the real world says that scopes change. The project manager must always be on the alert for changes to the scope and effectively manage those changes. Are the changes really necessary for project success or just nice to haves? What affect will the changes have on the budget and the schedule? Has everyone agreed that the change must be done? How are the changes tracked? Managing the scope is one of the more challenging parts of managing projects.

Cultivate constant effective communications: Determine the communication channels needed to inform the relevant stakeholders of the progress of the project. Management and project sponsors may want regular status reports or only the highlights and the exceptions. Suppliers, clients and/or customers may need statements of work, contracts, and progress reviews. The project team will need task assignments and regular briefings. The frequency and types of communication for each channel should be defined and managed. Incorporate this communication plan into the project plan and then communicate, communicate, communicate! Many projects fail because of poor communications.

Make sure you have management support: This tie back to agreeing on clear project goals. Management must agree that the project is important, will add value to the business, or solve a pressing problem. If management does not see the value of the project, they will be reluctant to support it. If management support is missing, people and funding resources may not be available for the project. If an organization has a multitude of projects, management support may be limited to only those key to the business success. Lack of management support is a major reason for project failures.

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