**DIPLOMA IN PROJECT MANAGEMENT (FINAL EXAMINATION)**

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1. **What do you mean by project management?**

Project management is, defined by the Project Management Body of Knowledge (PMBOK) as, “...the application of knowledge , skills, tools and techniques to project activities in order to meet stakeholder’s needs and expectations from a project”. In other words project management is about coordinating processes to deliver a service or product for a stakeholder.

From the PMBOK definition it is clear that Project Management is a structured way of managing projects, from the planning, monitoring and control of large amounts of data and information to enable decision making and problem solving in a project setting. General management and project management have vast differences because of the nature of a project. The PMBOK defines a project as,

“…a temporary endeavour undertaken to create a unique product or service. Temporary means that every project has a definite end. Unique means that the product or service is different in some distinguishing way from all similar products or services”. Examples of projects include, construction of a new mall, setting up a networking system for an organization or launching a new skin care product. From these examples we can see that project management cuts across different industries and sectors, and can be macro or micro in scope.

Project scopes range in size and nature and Rory Burke (2006), Project Management Planning Control and Techniques, 5th edition (Burke Publishing) 2, states that projects are distinct in that they have a start and finish, have a life cycle and a budget, are non- repetitive and have a project manager whose responsibility is to ensure the project happens. Projects also have teams with different roles that work towards delivering the product or service.

Project Management, according to the PMBOK has nine distinct knowledge areas, namely, scope, time, cost, quality, human resources management, communication, risk, procurement and integration. According to the Forbes Magazine, Project Management is said to be the fastest growing type of management.

1. **Bring out the responsibilities of project manager.**

Project managers wear several hats in a project setting. Their responsibilities range from managing program schedules to managing different personalities and expectations in a project setting. According to Harold Koontz and Cyril O'Donnell. Principles of Management; An analysis of managerial functions, (New York, McGraw-Hill (1968), a project manager’s role involves, “planning, organizing, staffing, directing and controlling”.

Planning is a managerial aspect that gives employees and stakeholders a sense of direction and purpose. It involves developing a path for the organization, determining the course to follow and resources needed to achieve organizational goals. A project manager then coordinates people and resources towards achieving these goals. The project manager ensures goals are met while optimizing resource wherever possible.

Project managers develop the vision and policies for their teams, and “it is estimated that they spend up to 55% of their time planning for the organization”. (John M. Ivancevich and Thomas N. Duening: Business Principles and Guidelines and Practices (Mason OH: Atomic Dog Publishing 2007), 183.

Project managers’ role involves ensuring cohesiveness in the team, mainly through human resource management and conflict management. A project manager must be able to, “…communicate, motivate and lead employees to complete assigned activities”. David L. Kurtz, Contemporary Business, 13th edition Update (Hoboken New Jersey: Wiley and Sons, 2011), 256. Inspired leadership is critical for creating a winning and motivated team key to any project success. A project manager must put together a “winning team”, by hiring the requisite personnel and organizing training for those that have performance deficiencies.

Project managers are responsible for communication and shaping the team culture. Communication skills are also critical and refer to oral and written communication as well as effectively getting ideas and points across and showing respect and regard for colleagues and associates and their contributions.

Project managers should be able to make the best possible decisions that can sometimes be even difficult decisions for the good of the organization, (Sandra V Abell et al, Moving up to Management, Leadership and Management Skills for new Supervisors: Inside Jobs Coaching; (2008),13. They must be able to make difficult and not popular decisions and see them through, as they are the link between business and the project. Problem solving is a critical skill for nay project manager.

Project managers should be able to have foresight and must be responsible for project scheduling and budgeting that is realistic. “Sometimes project managers commit to a schedule that is totally unrealistic. They commit to it, but when it is deliver time and key milestones slide, they are the first to put the blame on another stakeholder…shrinking responsibility and accountability”, (Kliem, R (2012) Ethics and Project Management, Florida: Taylor and Francis Group (29) While scheduling they must be able to manage resources optimally, manage non-performers and manage the client and dynamic stakeholder expectations. Budgeting skills are critical for project managers as they will help them identify opportunities and subvert threats.

1. **How budgets are framed in projects?**

Budgets are the key financial management tools for a project. Realistically a budget must be put together before a project and continually updated in real time to maintain a realistic view of the finances of the project.

Budgets are framed by means of developing project estimations and according to Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill Education, 129.” Estimating is the process of forecasting or approximating the time and cost of completing project deliverables”. Budget estimates are critical in that they help to determine the cost of the project and the resources needed for it. They also determine the project schedule and the required cash flow needed for the sustainability of the project.

Budgets can be drafted by management or the project team and according to Lawson and Clifford, cited above (2011) factors that determine budget estimates include the following;

The period of planning, meaning it is easier and more accurate to get good budget estimates for a project that’s one day week away compared to one seven months away. Long range projects increase uncertainty in budgets

They further state that budgets are framed according to project complexity, new technology implementations normally result in complex cost estimations and scheduling. The number of people needed to complete project also determines the framing of budget. Accurate project estimates hinge on having a knowledgeable team perform the estimates for the tasks ahead, so as to avoid any oversights. Project structure and project priority also plays a part in determining budget estimates , the better coordinated a team is, the more efficiently the job will be done, cost savings are possible.

For good budget framing it is important to ensure budget estimates are done by people with experience and in-depth knowledge of the tasks at hand. This will ensure that the estimates are realistic and from early on agreed upon by the implementing team. Budget estimates should be broken down into time units, for example, by weeks, days and hours to see how resources are utilized at the macro and micro level. It is standard procedure for organizations to set aside funds for contingencies to cushion against unforeseen events

1. **Write a note on Break Down structure.**

The work breakdown structure (WBS) is defined as, “a hierarchical method that successively subdivides the work of the project into smaller detail”. Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill Education, 639. The authors cited above state that the work breakdown structure helps project managers, “define the elements of the project in a hierarchal framework”. This helps identify the time, cost and technical requirements at each stage of the hierarchy, which is critical in developing a budget.

The work breakdown structure also assists in project coordination as it shows assigned responsibilities and deliverables at each stage in a hierarchical manner. This is further substantiated by Tom Mochal and Jeff Mochal, Lessons in Project Management, 2nd edition (Apress; 2011), who state that successful team are organized teams, with clear reporting and communication structures, for example weekly planning and reporting meetings, and a contact person for grievances. They state that successful teams have a well- planned and detailed Work Breakdown Structure (WBS); to guide and help the team identify the work to be done, the key milestones and sub deliveries along the project life cycle. This aerial view puts into perspective what is expected of the teams and the responsibility that lies ahead.

A typical WBS subdivides work scope into manageable packages that can be presented either as text indents or graphically in boxes, according to Rory Burke (2006),Project Management Planning Control and Techniques, 5th edition (Burke Publishing). A work breakdown structure is usually formulated and then used as a template that can be adapted for different contexts for future projects to ensure consistency.

1. **Explain the methods of scheduling projects**

Project scheduling refers to organizing a project according to its milestones, deliverables and associated activities.

In order to optimize resource use and create clarity and consensus, the following tools are often used during project implementation namely The Gantt Chart and Network based scheduling tools such as the Critical Path Method (CPM).

The Gantt chart, (also referred to as a bar chart) was developed by Henry L. Gantt and it shows the project schedule. It has a vertical axis and a horizontal axis, one showing time either in months or weeks and the other axis showing key milestone activities to be carried out over that time. The Gantt chart is user friendly and its simplicity makes it a firm favourite of many projects that are not complex in nature. However, it does not give a “live” status update and it can be difficult to tell which deliverables are lagging behind at a glance, or which ones are interdependent.

Network Based scheduling methods include the Critical Path Method (CPM). CPM focuses on saving time and costs and highlighting areas of concern. The Critical Path Method was developed in 1957 by Morgan R. Walker of Du Point and James E. Kelly of Ramington Rand. The Critical Path Method is, “...the name given to the sequence of activities from start to finish that must be started and completed on time for the entire project to complete on time”; Mochal, T et al (2011) Lessons in Project Management, 2nd Edition, New York: Apress; (107).

This methodology is ideal for projects with multiple activities and one of its advantages is that it helps projects avoid over-running activities and it helps pinpoint areas of concern. Unlike the Gantt chart, the CPM also shows interdependencies of activities. Activities and their sequence are written down and the path with the longest duration is called the Critical Path. The Critical Path must be closely monitored and it is not uncommon for it to have several activities on it. Any project delays calls for urgent attention to critical path activities to save time and contain costs. Most projects use software for this kind of network scheduling to make it easier to update the system and make it accessible for project team members.

1. **What is expediting in project management?**

Expediting refers to, “…the follow up function to confirm that; orders have been received by the subcontractors, internal planning issued, materials have been procured, skilled labour available, work has started as planned and the scheduled completion dates will be achieved”. Rory Burke (2006), Project Management Planning Control and Techniques, 5th edition (Burke Publishing) 100.

A designated person is normally appointed for this follow up role and collects the information to pass on to the project manager if any red flags are raised. Expediting ensures that suppliers meet their contractual obligations and that the quality of products or services required is achieved to meet project goals. All variances in timelines with regards service delivery are noted and communicated to the project manager timeously.

1. **Explain the methods of data collection.**

Organizations routinely collect data, and for that data to be useful it must be informative it should feed into the decision making or problem solving equation of the company, otherwise it will not be beneficial. It must be clear what data is to be collected, why (purpose) and how to prevent information overload.

According to Herman Steyn et al (2002), Project Management: A Multi-Disciplinary Approach, (FPM Publishing, Pretoria, South Africa), 291, typical data collection methods include, numeric values for example hours worked and quantity of resources used. Numeric ratings and frequency counts such as rejections are also utilized to collect data. Indicators (usually qualitative), such as communication quality and team meetings are also data collection methodologies.

1. **What is auditing?**

Auditing refers to “, an investigation, inspection or survey of a system or product where the actual or measured condition is compared with the planned condition”. Rory Burke (2006), Project Management Planning Control and Techniques, 5th edition (Burke Publishing), 247. Although they are often viewed with suspicion, audits are critical to any organization to ensure that the team does its job better and corrective action is implemented where deviations are noted.

Auditing does not necessarily imply looking at an organization’s financial statements, but extends to other facets in a project. An audit is normally conducted by an independent person who is not involved in the daily tasks and activities of the project, in order to remove bias. It can either be an internal or external audit. According to Rory Burke (2006), cited above, an audit should follow steps and procedures. The steps include setting up a pre-audit meeting to discuss scope of audit, followed by interviews or questionnaires to feed into the audit. This information is then collated and analyzed, a report is then prepared and a meeting is held to discuss findings and recommendations.

According to Herman Steyn et al (2002), Project Management: A Multi-Disciplinary Approach, (FPM Publishing, Pretoria, South Africa), 196, there are three main reasons why audits are carried out. The first is to assist the project team to measure if their systems and plans are meeting the requirements of the client. The second reason is to safeguard the client’s investment into the project and the third reason is to meet contractual or statutory obligations embedded in the contract particularly if this is a large scale project of national and public interest and investment, for example audits carried out on State Owned Enterprises.

1. **List out the types of organization structure in project management.**

Project organisation refers to how project teams will implement their projects. This is structured according to the size of the organisation, their scope of work as well as their function. Project organisation is based on size and strategic requirements of the organization, as well as budget and time constraints. Lawson Erik and Gray F Clifford (2011), ), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill Education,67, state that projects can be organized as follows, functional organisation, dedicated project teams and matrix structure.

Functional organisation is the traditional method of organisation, according to functional specifications. This system is common especially in small organizations. For example, an organizations’ existing functional structure based on departmental activities for example sales, marketing and accounts, is used during a project. This means staff structure is not radically altered and in house expertise can be utilized.

Projects can also be set up as dedicated teams, with recruitment happening even outside the organisation, in order to get the requisite skilled personnel dedicated to the project. This team may or may not interact with the non-project staff at the organisation. These teams usually bring across skills from different areas for one purpose, achieving the goal of the project. Lawson Erik and Gray F Clifford (2011), state that the advantage of these dedicated teams is that they get the job done faster because they work independently. However they are costly to set up as some may require recruitment of external consultants.

Matrix system is another way of organizing projects. Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill, 75, state, “The matrix system is designed to optimally utilize resources by having individuals work on multiple projects as well as being capable of performing normal functional duties”. Organizations with complex projects prefer the matrix style for organizing projects. This creates a strong focus on projects and enables resource sharing across the organisation. It takes a long time for organizations to develop mature matrix structures that are effective.

1. **Explain conflict management.**

For any project to be successful, it is critical for the team to work harmoniously in order to achieve project goals. Project management hinges strongly on human resources management. As a result it is imperative that conflicts be resolved as soon as they are identified so that focus remains on the end goal that is project delivery.

“Accept that conflict is normal and suppressing it won’t make you move forward, the disagreements will simply remain simmering beneath the surface” Williams, Merri, (2008) The Principles of Project Management, Victoria: Australia, SitePoint Pty Ltd., 103. This statement is true to project managers and team leads that should have a conflict resolution strategy in place as conflict is normal and inevitable. According to William Merri (2008), cited above, some of the sources of conflict in a team arise from having a team that has unhealthy competition and clashes over personalities. This can be resolved by having an initial kick off meeting where the team meets informally and they get to appreciate and understand each other outside the project environment. This also helps the team develop a bond and in some cases friendship or at least harmony and cohesion.

She further states that team conflict could be as a result of the project scope that keeps changing and unrealistic timelines. This problem can be resolved by joint planning and involving all stakeholders so that communication lines and business requirements are understood and agreed upon. Conflicts can be resolved through confrontation, counselling or establishing a compromise between conflicting parties. Lack of resources and poor planning can further create conflict in teams, as competition for resources arises and frustration due to lack of resources affects deliverables. In my previous work place, we resolved this conflict by having each department draw up their budget and resource requirements for all their activities and then having the appropriate resources allocated as per demand and departmental need.

Some multi-cultural organizations can face conflicts as well due to stereotypes, racism, prejudice and just ignorance. In such cases it is important to learn about other cultures and what is offensive to others. This can be done though a cultural awareness workshop as is done in my current workplace at Baza. According to Williams, Merri, (2008), The Principles of Project Management Victoria: Australia, SitePoint Pty Ltd., 101. “The main things to emphasize are tolerance and patience, help people to respect each other’s’ opinions and to realize that the conflict won’t continue forever!”

Setting up mediation and arbitration channels can be another means of managing conflict, introduction of a third party to help resolve conflict can broker peace. Compromise can also be used to make parties reach a peaceful agreement by giving up something for the common good. At times, conflict management takes a tougher stance through coercion, which is forcing conflicting parties to broker peace through the use of threats or arm twisting.

**Section B**

1. **What do you mean by budget uncertainty? How risk is managed in projects**

Budget uncertainty refers to costs of a project possibly deviating from the planned budget due to several reasons, for example the change in exchange rates, shipment delays or cost over runs. Different kinds of project risks pose a threat to the budget hence the term “budget uncertainty”.

Risk management, “…includes planning for how an organisation will conduct risk management, this includes analysing, prioritising and responding to risks”. Phillips, Jack J. et al (2012). Project Management ROI; A step by step guide for measuring the impact and ROI for Projects. New Jersey: John Wiley and Sons Inc., 4. Risk management is important for any organization because it helps in identifying elements that could impede the project and planning appropriately for them. It is a preventative measure that should be done collectively by all stakeholders to ensure all project processes are assessed for risk.

Phillips, Jack J. et al (2012) cited above, state that risk management involves identifying qualitative and quantitative potential risks to the project and then rating or prioritizing risks by their level of seriousness and potential to occur. This is followed up by planning for the risks (mitigation strategy), and making plans to manage the risk, for example by assigning the risk to an individual so that it is monitored throughout the life cycle of the project.

Risk management helps organizations to cope better in ever dynamic environments and risk management can also help the organization identify positive risks, such as introduction of technology that will speed up data collection for example. Negative risks such as a shipment delay should be planned for and if there is a chance of turning around the negative into positive this should be identified in the risk management plan. Another advantage of having a risk management plan means that experiences are documented for learning purposes and institutional memory. Managing risk also means the project schedule, budget and output is also managed, as risks can be costly.

Projects are cushioned from risk by developing risk management plans. These plans are the collective effort of project stakeholders. They state the action to be taken to mitigate risks and the personnel to manage the risk.

The risk management plans can either be electronic or manual and shared with the project team to ensure everyone is well prepared and aware. This is similar to an early warning system. Planning for risk is always the best way to cushion your project from risk. Phillips, Jack J. et al (2012). Project Management ROI; A step by step guide for measuring the impact and ROI for Projects. New Jersey: John Wiley and Sons Inc., 4, state that poor project planning results in poor risk management

1. **Explain the concept of Goldratt’s critical chain in project scheduling.**

Eliyahu Goldratt developed the term “critical chain”, which means, “…that the project network may be constrained by both resource and technical dependencies. Each type of constraint can create task dependencies, and in the case of resource constraints, new task dependencies can be created”. Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill, 294.

The critical chain is the longest chain of dependencies on a project. Goldratt’s theory was developed to improve project scheduling compared to the traditional scheduling methods. It is an attempt at reducing slack. According to Lawson Erik et al cited above, Goldratt noticed that project personnel added time buffers to their project time by up to 50%, although this happened, most projects still fell behind time schedules. Some reasons behind this were that project managers wanted to add extra time to prepare for any uncertainties in the project. Another reason project members padded time estimates was to “self-protect”, to avoid management setting realistic time estimates for project completion. Procrastination was also cited as another time padding reason, and it is a cause for concern as hurried project execution may lead to oversights and short cuts.

Goldratt proposed that the Critical Chain Project management could be used for effective scheduling by developing a project standard that cut off excessive time padding and procrastination. This was through the introduction of three buffers, namely a Project time buffer that is added to the expected project duration, by using roughly 50% of the aggregate safety. Another buffer he proposed is a feeder buffer where non critical chain paths merge with the critical chain to avoid delays on the critical path. Resource buffers are added also where scarce resources are required for a particular activity, his theory states that before the project commences resources are secured to ensure they are available for the duration of the project.

Goldratt postulated that introducing these buffers would lead to a reduction in projects being late and ensure early completion.

1. **How the projects are planned, monitored and controlled in cycle process?**

The cycle process in project management refers to the following processes, classed by Harold Koontz and Cyril O'Donnell. Principles of Management; An analysis of managerial functions, (New York, McGraw-Hill 1968) as follows, “planning, organizing, staffing, directing and controlling”.

Planning is the first building block of the cycle process, on which other functions hinge. It can either be long term or short term, but its principle is to decide the kind of action needed to achieve organisational goals. It also sets to mitigate risks by mapping out the risks that could threaten goal achievement and finding solutions for them. Planning is a map for any organisation, charting the course to follow, determining the resources needed and coordinating people and resources towards achieving organisational goals. It is an ongoing process that seeks to maximise usage of resources, eliminating or reducing waste wherever possible. Planning gives employees and stakeholders a sense of direction and purpose.

According to Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill; project planning involves developing ways to determine how schedules, budgets, resources, risks and staffing will be implemented. Monitoring and control in the project cycle involves ensuring the project is on track and within budget and that there are no deviations. This can be done through an internal or external audit, as well as keeping status reports, forecasts and noting changes in the project charter or project management software used by the team. Project monitoring and control are closely related. Project controls give answers to critical answers with regards the cost and duration of the project as well as its overall value and impact.

The above processes of planning, monitoring and control are interwoven and interdependent, Without plans, you cannot set up parameters for control, and without monitoring and controlling people and resources it is impossible to direct and inspire people towards achieving organisational goals. Without the right “synergy” of the three achieving organisational goals would be impossible. Moreover, focus on one process more than the others will lead to an imbalance and neglect of other core functions.

1. **What are the methods used in evaluating, auditing and terminating a project?**

Terminating a project involves wrapping up the project, conducting a project audit as well as conducting an evaluation of the individual team members and the project manager.

Wrapping up the project involves using a checklist to ensure the client, vendors and the final reports are not overlooked. It also involves user acceptance through the sign off of project documents by the client to show they agree a system has been well implemented and does what it is required to do. It also involves paying off all projects related expenses such as bills and outstanding invoices from vendors. Terminating a project also entails doing a final project write up report to deliver the project to the client. Project team members may be assigned new roles or their contracts may come to an end depending on the nature of the project.

Project evaluation means according to the PMBOK refers to assessing how well the project team, team members and project team perform. Evaluation may be at an individual level through performance appraisals or at team level through a team evaluation exercise. The project manager is also evaluated to see if the project was delivered according to agreed timelines and standards.

Project audits can be internal and external and report on the overall performance of the project. They can be conducted during the project for corrective measures and in process performance checks or they can be conducted post the project for in-depth project analysis to assess if the project delivered what it said it would deliver.( Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill, 521) They should be carried out by independent people who do not carry out day to day tasks or activities on the specific projects so that they are impartial and not biased. Data and information gathered through an audit should be verified and the audit group must be given access to project documents and customers. After the data is collected and analyzed the findings are compiled in a report that is discussed with the project team and recommendations are made for corrective action.

1. **Explain in detail the functional organizational and matrix organizational structure.**

Functional organization refers to a way of organizing a project according to the existing functions of the organization. This method is also used when one functional area dominates the project, for example the marketing department would naturally be responsible for championing and taking charge of a project to launch a new marketing handbook. Functional organization is beneficial in that it does not lead to an overhaul of the existing structure but makes use of the existing structure and in house experience. However it may be difficult to integrate across the organization and can at times be viewed as additional work by the team already with their core duties.

Matrix organisational structure is set up dedicated to the project and the needs of the project. This requires a new project unit to be set up and can even recruit personnel specifically to focus on the project. The project team normally has autonomy form the traditional functional structure. This leads to a quicker turn around in terms of executing deliverables and the team benefits from being diverse and focused. However, the costs of setting up a project team can be high and transitioning to train and equip end users can be difficult and time consuming. Lawson Erik and Gray F Clifford (2011), Project Management, The Managerial Process, 7th Edition, New York: McGraw-Hill, 75, state, “The matrix system is designed to optimally utilize resources by having individuals work on multiple projects as well as being capable of performing normal functional duties”. Organisations with complex projects prefer the matrix style for organising projects. This creates a strong focus on projects and enables resource sharing across the organisation. It takes a long time for organisations to develop mature matrix structures that are effective.