Techniques and Strategies towards Project Management Success

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Abstract

The problem of finding adequate methodology that help to evade failing of delivering the majority of projects in Saudi Arabia on time, budget the specific requirements are some of the constraints in project planning. Various issues cause this problem such as lack of defined risk management practice, increasing number of changes and long time to market (time to deliver the work). This research aims to solve this problem by exploring a new mthodology that cover the gaps of the currant traditional methoedologies used by the project managers who manage the projects in Saudi Arabia.

Keywords: IPMM, pmbok, planning, prince 2, project management

1. Introduction

The Integrated Project Management Methodology aims to transform the current industry practice of project management, which focuses on individual project delivery (outputs), to a value driven approach based on projects which can deliver benefits to all stakeholders (users, business, management, suppliers, partners *etc.*).

Using this methodology will make managing projects easier and improve the chances of delivering the outputs, outcomes and benefits of a project on time and within budget.

The IPMM integrates and unifies some different generic international best practice standards and methodologies based on project management such as PRINCE2, PMBOK, and practical experience in the field of project management. These different best practices, standards, and practical experience have been combined to create a methodology that uses the best elements of each. The IPMM uses all PMBOK processes and knowledge areas. It also uses all of the PRINCE2 processes and themes. Where there is overlap between processes within PRINCE2 and PMBOK, they have been combined.

Managing business change through the delivery of projects is never a simple task. The problems that often occur when delivering projects are too much focus on the output of projects and not enough focus on the benefits realized for all stakeholders leading to the wrong solution being implemented, poor understanding of value realization from projects (value is different depending on stakeholder views), very low success rate in terms of cost, time and scope for project delivery, poor knowledge sharing between stakeholders and a lack of collaboration between project stakeholders leading to poor communication and decision-making, project stakeholders do not have a win-win mentality to project delivery, lack of appropriate technology, lack of defined and followed project management processes, poor quality, lack of project leadership from various stakeholders, lack of control in projects, lack of project governance.

The IPMM has been specially developed to overcome these problems through the adoption of best practices and methodologies to maximize effectiveness and efficiency while using the best available technologies [1]. Adoption of the IPMM will ensure that projects are managed in the best way possible – increasing their chance of success, there is a shared understanding of project delivery across the organization, different projects can learn lessons from each other, project management expertise can be developed and used across the organization, change, risks, and issues are minimized by defining project

properly before they begin, customer's requirements are met through assurance of quality deliverables, suppliers are managed more effectively with comprehensive supplier contracts and staff performance is improved by clarifying roles, responsibilities, and delivery expectations. The IPMM uses straightforward language and where ever possible uses the minimum processes. The approach can be used on very small projects as well as large-scale, high-risk, high-cost projects [2]. All the elements needed for successful delivery of the project are included in this approach. The approach is concentrating on strategic goals and incremental delivery of real business benefits while keeping control of time, cost, risk, and quality.

The IPMM provides a new paradigm for project management so project success can be achieved through a collaborative, value-based process delivering high-outcome results and benefits to stakeholders. Project success is enabled through the encouragement of self-directed, empowered teams working together in a supportive and collaborative manner. The right business solution is delivered because significant stakeholders and the project team remain focused on the business outcome and benefits as well the decisions aren't made solely on a first-cost basis, people involved with the project work collaboratively to deliver the optimum solution, business need is the priority and the ability of users to accommodate changes, key project stakeholders are all involved at the start of the project, communications must be throughout the process are clear, concise, open, transparent, and trusting, project decision makers fully understand the ramifications of their decisions at the time the decisions are made, risk and reward are appropriately balanced among all key stakeholders over the life of a project, resulting in a win-win environment and IPMM projects never compromise on quality [3].

The Saudi project managers evade failing of delivering the majority of projects in Saudi Arabia on time, budget the specific requirements by evading concentration on one of the stages while applying the projects [4]. Most of the project managers in Saudi Arabia concentrate on the execution stages and delivery on time without following the other stages such as strategy, design, procurement, execution, maintenance, and operation. To success managing the projects and delivering it on time, budget and the specific requirements, we need to explore a new methodology which guide the stakeholders practically to achieve the projects successfully. This research explores a new methodology which is Integrated Project Management Methodology (IPMM). It covers the whole stages that needed to success the projects and cover the gaps that witnessed in the methodologies used by the managers of the projects. Moreover, it provides the stakeholders of the (IPMM) methodology with the procedures and processes that needed to be realized while applying it on the projects from the centre stage till completing it.

The disability of delivering the projects on time, budget the specific requirements in Saudi Arabia is related to find an adequate methodologies which is not available for the managers who apply their projects in Saudi Arabia, also the managers of the projects are not fulfill with the whole stages needed to achieve the projects professionally. They just take care taking care about delivering the project on time. This problem is solved in this research once following the new explored methodology because it provides the stages and the processes that have to be followed in each stage to complete the projects accurately. So, using the IPMM helps the managers to apply the stages and monitoring applying it in the projects which ensure the presence of the documents that needed to give the evidence for the manager who achieve the whole stages.

The key solutions that have to be achieved to evade failing to deliver the majority of projects in Saudi Arabia on time, budget, and the specific requirements is by following the new methodology IPMM. Following this new methodology needs from the mangers to assures that they follow all stages mentioned in the IPMM. They have not to omit one of them while applying it in the projects. Furthermore, following the stage's order is important to get successful projects. The managers have not to jump from stage one to stage three without be sure that they achieve stage two. Following the order of the stages

as mentioned in the IPMM is a vital and evading following it can make a lot of problem in delivering and completing the projects adequately.

2. Successful Project Criteria

Successful projects are uniquely distinguished by highly effective collaboration among the business, the supplier(s) and the end users early on in the project (initiation and planning phases) and continuing through to project handover [6].

Successful projects provide positive value propositions for the three major stakeholder groups:

2.1. Business

Early and open sharing of project knowledge is built on effective project communication and allows owners to decide effectively on project options to meet their business goals

This in turn allows other project stakeholders to have a better understanding of the owner's desired outcomes, thus improving the ability to control costs and manage the budget, all of which increase the likelihood that project goals, including schedule, life-cycle costs, scope and quality will be achieved.

2.2. Suppliers

Successful project management allows suppliers to contribute their expertise in early in the planning of the project resulting in improved project quality and financial performance during the execution phases. The suppliers' participation in the planning provides the opportunity improving cost control and budget management

2.3. User

The user of the project output has the responsibility to specify the needs of those who will use the project's products, user liaison with the project management team and for monitoring that the solution to meet these needs within the constraints of the business case in terms of quality, functionality and ease of use.

3. IPMM base on Best Practice

The IPMM is a complementing and unifying methodology based on project management best-practices. The two primary project management that the IPMM is based on are PRINCE2 (2009) and PMBOK v5 [4, 7].

The underlying difference between the PMBOK and PRINCE2 is that the PMBOK is knowledge based project management standard covering proven practices and areas while PRINCE2 provides a more prescriptive or process-oriented approach for the project manager or team manager to apply to the projects. In general, PMBOK is more comprehensive while PRINCE2 is more pragmatic in nature. PRINCE2 addresses the "Why" and "What" in project management while PMBOK tells the "How" in project management [8].

Both PRINCE2 and PMBOK take very different approaches to the presentation of their material. PMBOK is taking the best approach to teaching the subject content of each knowledge area, but not effective when coming to guiding running a particular project. Of course the opposite also true. In the life-cycle-based presentation like PRINCE2, it 's hard to do justice to each knowledge area.

The advantage of PMBOK is that it has very concise project management knowledge areas and easy to understand the concepts behind the theory. The ten

knowledge areas covered are full of useful processes, tools and techniques in project management[8,9]. The five project management process groups symbolize a typical phase or a life cycle in a project.

However, PMBOK does not tell you how to apply to the project as it only states what is required. For example, it tells you that a Project Charter is expected, but the recommended template is not covered. The PRINCE2 approach has the advantage that it is very prescriptive and provides the necessary techniques and templates for a project manager to apply. There is also project management Health Check listed in PRINCE2 manual that can be used at various points in the project to assess the health of the project.

However, some may find that the very detailed process-oriented project management approach may be bureaucratic and hinder the creativity of the project manager. A good Project Manager must learn how to streamline the processes according to the complexity and environment of the project. PRINCE2 recognized this issue and created a new principle "Tailoring PRINCE2 to the project environment". PRINCE2 is not a "one size fits all" approach but flexible to be tailored to the complexity of the project.

To combine both project management approaches provides them with the strengths of both sides. For instance, PRINCE2 is strong in process and documentation but lack the focus on Communications, Human Resource Management and Procurement Management; which PMBOK can complement them. On the other hand, the Business Case approach of PRINCE2 strengthens the business direction and strategy aspects of project management that PMBOK is weak in [9,10.

Another important concept of PRINCE2 is the Project Board (which PMBOK refer to the Project Sponsor) who is supporting the project. PRINCE2 is more accurate and has defined the role of Project Board more dynamically.

With a combination of PMBOK's Work Breakdown Structure and PRINCE2's Product Breakdown Structure or Product-Based Planning, the deliverables of the project will be clearer and more robust.

If both project management approaches get combined, they provide the best method adopting the best practices from both worlds to manage the day- to-day projects in the organization. Thus, the combined methods deliver customer focused and high-quality products or services while satisfying the business needs or a business case of the organization.

4. Principles of IPMM

The purpose of the IPMM is to provide a project management method that can be applied regardless of project scale or type. This is achieved by adopting a principles-based approach.

Successful projects are built and dependent on intense collaboration, which in turn is built on trust. Effectively structured, that encourages parties to focus on project outcomes and benefits, rather than their individual goals. Without trust-based collaboration, projects will falter, and stakeholders will remain in the adverse and antagonistic relationships that plague too many projects.

The delivery of successful projects promises better outcomes, but outcomes will not change unless the people responsible for delivering those outcomes change. Therefore achieving the benefits of successful projects requires that all project stakeholders embrace the following principles.

Business Case must contain the justification [1,10]. While the project is inextricably linked to the business justification, where it drives the process of

decision-making to ensure that the project remains aligned to the business objectives and benefits being sought.

The justification may change although it should remain valid. It is important that the project and the evolving justification remain consistent. If, for any reason, the project can no longer be justified, the project should be stopped.

Project teams will learn from previous experience (lessons are sought, recorded and acted upon throughout the life of the project). Previous and similar projects should be reviewed to see if lessons learned could be applied during the starting a project previous or similar projects should be. If the project is the 'first' in importance for the people within the organization, then it is more important to learn from others, and the project should consider seeking external experience.

While project progresses, the project should continue to learn. Lessons should be presented in all reports and reviews. To find opportunities to implement improvements during the life of the project is the important goal. The project should pass on lessons when the project closes. Unless lessons provoke change, they are only lessons identified (not learned).

Any project will have identified and agreed roles and responsibilities within an organization structure that engages the business, user and supplier stakeholder interests. Projects involve people. There is no specific level of proper planning or control will be useful if the wrong people are involved, when right people do not participate, or if people involved don't know what's expected of them and/or what to expect from others. For projects to be seen successful, projects should have an explicit project management team structure which consists of roles and responsibilities which are defined and agreed for the people involved in the project and a means of effective communication between all people involved. The primary stakeholders of all projects are: 'Business' sponsors who ensure that the business investment to provide value. Users who will use the products in operation. Suppliers supply the expertise and resources to produce the deliverable. Because of these primary stakeholders it is important for them to be represented in the project organization.

A controlled project is planned, monitored and controlled on a phase-by-phase basis [2, 10]. Phases provide control points at major intervals throughout the project. During the end of each phase, the status of project's should be assessed, Business Case as well plans reviewed to ensure that the project remains viable, and a decision made as to whether to proceed. Planning could only be done at a level of detail that is manageable and foreseeable. A lot of efforts can be wasted on attempts to plan beyond a sensible planning horizon. The planning horizon issues are overcome by dividing the project into some delivery phases, having a high-level Project Plan and a detailed Delivery Plan (for the current phase) and the planning, delegating, monitoring and controlling the project is done on a phase-by-phase basis.

A controlled project has defined tolerances for each project objective to establish limits of delegated authority. It must delegate authority from one management level to the next by setting tolerances against six aspects in the respective level of the plan, the extra or less amount of time on the target completion dates, the additional cost or less amount of the planned budget. the extra or fewer Quality degrees off a quality target, scope permissible variation of the plan's products (*e.g.*, mandatory requirements plus or minus desirable requirements), risk limits on the plan's aggregated threats (*e.g.*, aggregated risks costs stays below 10% of the plan's budget), limits on any individual threat (*e.g.*, they to treat an operational service), benefit plus or minus degrees off an improvement goal (*e.g.*, 25–35% cost reduction)[10].

Management by exception is to set-up controls so that if those tolerances are forecast to be exceeded, that are immediately referred up to next management level for a decision on how to proceed.

Implementing 'management by exception' provides for the very efficient use of senior management time as it reduction of senior managers' time burden without removing their control by ensuring decisions are made at the right level in the organization.

A project should focus on the definition and delivery of products, in particular, its quality requirements.

It's more important for projects to be focused on the outputs rather than concentrate on activities. This will involve being very clear on the requirements of the product before looking into the activities to create them.

Projects will use the Product Descriptions to provide such clarity by defining each product's purpose, composition, derivation, format, quality criteria and quality method. They provide means to determine effort estimates, resource requirements, dependencies and activity schedules.

The 'product focus' supports almost every aspect of a project: the planning, responsibilities, reporting status, quality, change control, scope, configuration management, accepting products and management of risk.

Without a focusing on products, projects are open to several significant risks such as acceptance disputes, the reworks, lack of controlled changes ('scope creep'), user dissatisfaction and under-estimation of acceptance activities.

Where the project's outcomes and benefits are often only realized after the project has closed, it is, unfortunately, simple for projects to become focused solely on the creation of products (the outputs). The output is tangible or intangible products are any of the project's specialist products, the outcome is the result of the change derived from using the outputs and benefit is should demonstrate improvement arising from an outcome.

Any project management methodology should be able to be tailored to suit the project's environment, size, complexity, importance, capability, and risk.

In successful projects, stakeholders have the understanding of the value of collaboration and teamwork. All stakeholders or team members should benefit from the project.

In an integrated project, key members are involved at the earliest practical moment. Decision making is improved by the influx of knowledge and expertise of all key participants. Their combined knowledge and expertise are most powerful during the project's early phases where informed decisions have the greatest effect.

Innovation is stimulated if ideas are freely exchanged among all participants. This means that all ideas should be evaluated on merit and not based on who raised it.

The biggest cause of poor performance in projects is poor communication. The IPMM techniques are specially designed to improve communication effectiveness for both teams and individuals.

The IPMM emphasizes the value of human interaction through Facilitated Workshops, clearly defined roles and stakeholder involvement.

The above techniques are far more effective than the use of large, complicated documents, which are sometimes written just for the sake of writing them.

It is essential to be in control of a project at all times and to be able to prove the project is under control.

To fulfill this principle, project roles, especially the Project Manager and Team Manager, will use an appropriate level of formality, based on stakeholder needs and be able to demonstrate control at all times. The progress of plans is shared amongst all stakeholders.

Projects need to be lead, not just managed. While leadership and management may look similar, they are distinct. A manager must plan, organize and coordinate. A leader provides strategy, vision and motivation. In the IPMM leadership of a project is performed by the Project Board, while managing is performed by the Project Manager.

The structure of the IPMM is based on three domains and four layers of authority. The three domains of the IPMM relate to the Project Lifecycle. The Project Domains are the series of phases that a project passes through from its initiation to its closure. The phases are sequential and are bound by time, with a start and ending or control point. The domains provide the basic framework for managing the project, regardless of the particular work involved. The three IPMM domains of the project are planning (PL), execution (EX) and closing (CL).

In the beginning, a project is initiated from an idea or need. The trigger for the project could be almost anything. In IPMM this trigger is called a project mandate. This can be simple spoken instructions to a fully prepared project definition.

The purpose of the Initiation sub-domain is to verify if the project is worth undertaking. This sub-domain culminates in the production of a Project Charter and a Phase Plan for the project planning phase.

The Project Board reviews the Project Charter (and the Planning Phase Plan) and decides whether to formally provide the project manager the appropriate levels of authority and the resources and time to plan the project in detail the project.

Once the project initiation has been approved it is time to plan the project in greater detail. It is important to obtain the required funding and set appropriate controls and strategies. The development of a sound Business Case is also covered by the Planning sub-domain.

The Planning sub-domain culminates in the production of Project Management Documentation that the Project Board will need to approve and sign-off.

The Project Manager accepts day-to-day control of the project from the Project Board during the Execution and Delivery sub-domain. This is where the Project Manager assigns work to teams, and makes sure that quality requirements are achieved.

It is also within this sub-domain that the various delivery teams executes assigned Work Packages (that will deliver one or more products) while ensuring that the Project Manager is continually apprised of progress.

Towards the end of each management phase, the Project Manager Requests permission to proceed to the next phase by reporting how the phase performed, providing an update to the Business Case and planning the next management phase in detailed.

The Monitoring and Controlling sub-domain consists of those processes required to track, review, and monitor the progress and performance of the project; manage issue and risk; identifying changes to plans *etc*. It is imperative to measure project performance through-out this domain and take corrective action if necessary.

Since a project is a temporary undertaking, during the final phase the Project Manager must gain approval for the final deliverable. It must then be transitioned into the operational environment.

Since a project needs decision makers as well as day to day management the IPMM separates the direction of the project from its management. This is achieved through the concept of management by exception.

The IPMM has four layers, three of which represent the project management team and the fourth which sits outside of the project.

For the project it is the responsibility of the Project Board to provide direction and management. Accountability for the project does not lie with the Project Manager…it lies with the Project Board. They must approve plans, set stage tolerance and manage by exception.

The Project Manager is responsible for delegating work to the teams, managing by exception and making sure the quality of the deliverables is adequate. They must manage costs, schedules, keep on the plan, and manage issues and risks and changes.

It is the job of the teams to deliver work products at the appropriate level of quality, on time and on budget.
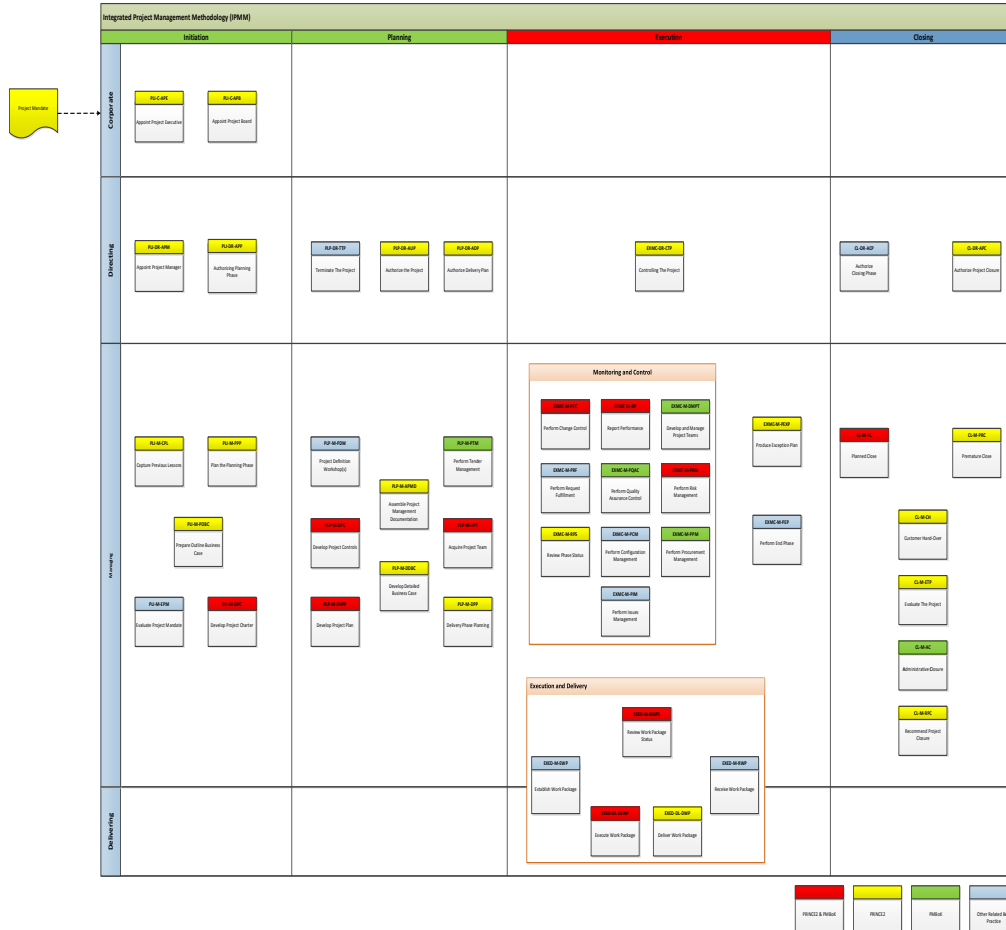
The IPMM structure shown in Figure 1.

Figure 1. IPMM Structure

4.1. Develop Project Plan

It is important in all projects to establish the timeframe and resource requirements. This information is held in the Project Plan. The project plan requires the approval and commitment of the Project Board (and in some case Corporate/Programmed).The Project Plan is the main element of a project that defines the basis of all project work. This means that the project plan that is progressively elaborated by updates, and controlled and approved by the Project Board at the end of each phase of work.

There are twelve (12) activities to develop a Project Plan: These are prepare for Project Planning, create WBS, define activities and milestones, sequence activities, estimate activity resources, estimate activity durations, develop schedule, estimate costs, determine budget, identify risk, perform qualitative and quantitative risk analysis and plan risk response

Perform Qualitative Risk Analysis is the activity to identify the key risks in a project by prioritizing risks by exploring their probability and impact. Table 1 and 2 show the quantify probability and quantify impact

Table 1. Quantify Probability

Title	Score	Description
Very Low	20	The risk is highly unlikely to occur, as the circumstances which will trigger the risk are also unlikely to occur.
Low	40	The risk is unlikely to occur, however it needs to be monitored throughout the project as certain circumstances could potentially trigger this risk.
Medium	60	The risk is likely to occur as it is clear that the risk may eventuate.
High	80	The risk is very likely to occur, based on the circumstances of the project.
Very High	100	The risk is highly likely to occur, as the circumstances which will cause this risk to eventuate are also very likely to occur.

Table 2. Quantify Impact

Title	Score	Description
Very Low	20	The risk will have an insignificant impact on the project, as it is not possible to measure this impact.
Low	40	The risk will have a minor impact on the project, as it will likely result in a less than 5% deviation in scope, scheduled end-date or project budget.
Medium	60	The risk will have a measurable impact on the project, as it will likely result in a 5-10% deviation in scope, scheduled end-date or project budget.
High	80	The risk will have a significant impact on the project, as it will likely result in a 10-25% deviation in scope, scheduled end-date or project budget.
Very High	100	The risk will have a major impact on the project, as it will likely result in a 25%+ deviation in scope, scheduled end-date or project budget.

The Priority score is calculated as the average of the Probability and Impact scores (*i.e.*, Priority = [Likelihood + Impact] / 2) shown in Table 3.

Perform Quantitative Risk Analysis is the activity of numerically analyzing the effect of identified risks on overall project objectives. The key benefit of this activity is that it produces quantitative risk information to support decision making in order to reduce project uncertainty.

The Integrated Project Management Methodology (IPMM) transforms the current industry practice in project management, which focuses on individual project delivery (outputs), to a value driven approach based on projects which can deliver benefits to all stakeholders (users, business, management, suppliers, partners *etc.*).

Using this methodology will make managing projects easier and improve the chances of delivering the outputs, outcomes and benefits of a project on time and within budget.

The IPMM provides a new paradigm for project management so project success can be achieved through a collaborative, value-based process delivering high-outcome results and benefits to stakeholders. Project success is enabled through the encouragement of self-directed, empowered teams working together in a supportive and collaborative manner.

Table 3. Quantitative Risk Analysis

Risk ID	Likelihood Score	Impact Score	Priority Score	Priority Rating
1.1	20	80	50	Medium
1.2	80	60	70	High
1.3	100	40	70	High
2.1	40	20	30	Low
2.2	90	100	95	Very High
2.3	20	80	50	Medium

5. Practical Application of IPMM

Aiming to validate the practical application of the IPMM, the researcher have conducted Project Maturity Assessment (Health Check assessment). The Health Check consists of 429 questions derived from IPMM and its scope is to assess the degree of compliance of a given project with the IPMM. The questions are categorized in Domains and Processes and for each question there are 3 possible answers, using the RAG (Red. Amber. Green) system: (Red color): the project doesn't meet the criteria of the question. No compliance with the specific question. This answer results to 0 points, 2(Amber color): the project partially meet the criteria of the question. Partial compliance with the specific question. This answer results to 4 points and (Green color): the project fully meet the criteria of the question. Full compliance with the specific question. This answer results to 9 points. Two (2) projects have been selected for the Health Checks such as the university Hospital and College of Science for females.

As part of the Quality Assurance (QA) of the implementation, the first Health Check conducted in June the 20th 2014 for the University Hospital project and July the 4th of 2014 for the College of Science for Female project. The results of the 1st Health Check have been used as the baseline measurement. After application of the IPMM, a second Health Checks conducted in July the 13th 2015 for the University Hospital project, and July the 22nd 2015 for the College of Science for Female project. The purpose of the 2nd Health Check was the measurement of the Project Maturity 19 months after the application of the first processes of IPMM to the selected projects.

As shown in tables 4 to 8, the analysis of the Project A: University Hospital before applying the IPMM achieved score 0.0476 (June 2014), after applying the IPPM achieved score 0.7274 (July 2015) and improvement achieved in 19 months period: 1,428%. Project B for College of Science – Females: before applying the

IPMM achieved score 0.0442 (July 2014), after applying the IPPM achieved score 0.6868 (July 2015) and improvement achieved in 19 months period: 1,453%. Project Maturity Assessment – Health Check.

First Project: University Hospital – Before applying IPMM, score before applying the IPPM: 0.0476
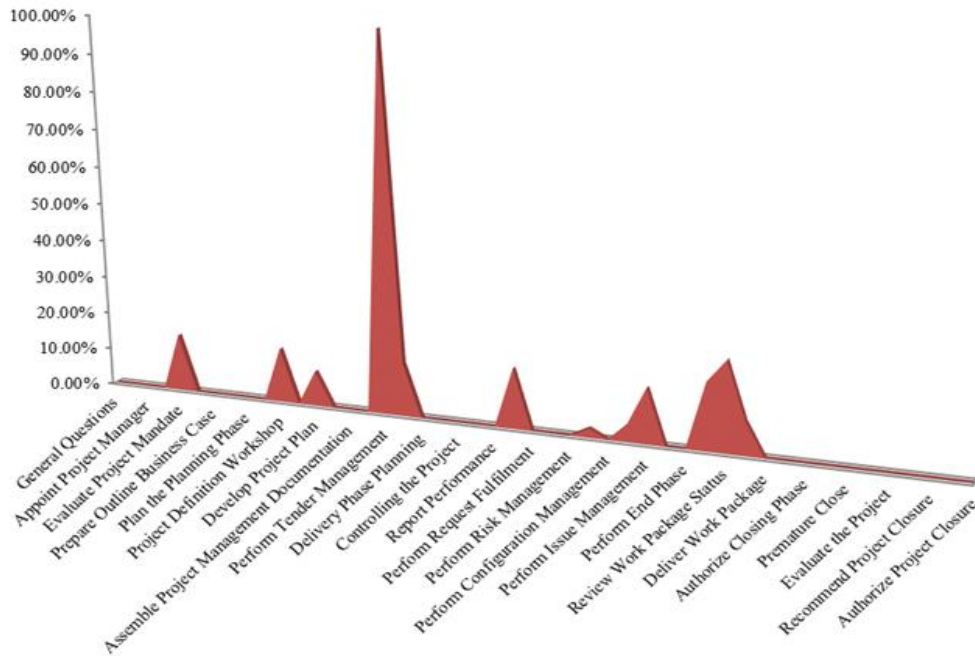

Figure 2. Graphic Representation of the Score per Process

Table 4. Initiating a Project

	Process	Process Score	Alignment	Target Total score (576)	Active Questions	Max. score from active questions (576)	Process Weight	Weighted Score
	Domain: Initiating a Project			Domain Weight 14.92%		Domain performance (weighted) 71.88%		
1	General Questions	9	100.00%	9	1	9	0.02	0.02
2	Appoint Project Executive	27	100.00%	27	3	27	0.05	0.05
3	Appoint Project Manager	27	100.00%	27	3	27	0.05	0.05
4	Capture Previous Lessons	22	81.48%	27	3	27	0.05	0.04
5	Evaluate Project Mandate	92	63.89%	144	16	144	0.25	0.16
6	Appoint Project Board	40	63.49%	63	7	63	0.11	0.07
7	Prepare Outline Business Case	75	75.76%	99	11	99	0.17	0.13
8	Develop Project Charter	62	86.11%	72	8	72	0.13	0.11
9	Plan the Planning Phase	35	77.78%	45	5	45	0.08	0.06
10	Authorizing Planning Phase	25	39.68%	63	7	63	0.11	0.04

Table 5. Planning a Project

Domain: Planning a Project	Process Score	Alignment	Target total score (1035)	Active Questions	Max. score from active questions (1035)	Process Weight	Weighted Score
Domain Weight 26.81%					Domain Performance (weighted) 87.63%		
1 Project Definition Workshop	89	76%	117	13	117	0.11	0.09
2 Develop Project Controls	94	80%	117	13	117	0.11	0.09
3 Develop Project Plan	234	100%	234	26	234	0.23	0.23
4 Develop detailed Business Case	79	68%	117	13	117	0.11	0.08
5 Assemble Project Management Documentation	153	100%	153	17	153	0.15	0.15
6 Authorize the Project	98	91%	108	12	108	0.10	0.09
7 Perform Tender Management	18	100%	18	2	18	0.02	0.02
8 Acquire Project team	53	84%	63	7	63	0.06	0.05
9 Delivery Phase Planning	18	100%	18	2	18	0.02	0.02
10 Authorize Delivery Plan	71	79%	90	10	90	0.09	0.07

Table 6. Monitoring and Control a Project

Domain: Monitoring & Control a Project	Process Score	Alignment	Target total score (1215)	Active Questions	Max. score from active questions (1422)	Process Weight	Weighted Score
Domain Weight 36.83%					Domain Performance (weighted) 63.36%		
1 Controlling the Project	62	77%	81	9	81	0.06	0.04
2 Perform Change Control	95	48%	198	22	198	0.14	0.07
3 Report Performance	22	81%	27	3	27	0.02	0.02
4 Develop and manager project management teams	49	60%	81	9	81	0.06	0.03
5 Perform Request Fulfilment	45	56%	81	9	81	0.06	0.03
6 Perform Quality Assurance and Control	71	79%	90	10	90	0.06	0.05
7 Perform Risk Management	114	63%	180	20	180	0.13	0.08
8 Review Phase Status	92	57%	162	18	162	0.11	0.06
9 Perform Configuration Management	91	63%	144	16	144	0.10	0.06
10 Perform Procurement Management	123	72%	171	19	171	0.12	0.09
11 Perform Issue Management	75	69%	108	12	108	0.08	0.05
12 Produce Exception Plan	31	57%	54	6	54	0.04	0.02
13 Perform End Phase	31	69%	45	5	45	0.03	0.02

Table 7. Execution and Delivery a Project

Domain: Execution & Delivery a Project	Process Score	Alignment	Target total score (252)	Active Questions	Max. score from active questions (774)	Process Weight	Weighted Score
Domain Weight 6.53%					Domain Performance (weighted) 68.25%		
1 Establish Work Package	20	28%	72	8	72	0.29	0.08
2 Review Work Package Status	45	83%	54	6	54	0.21	0.18
3 Execute Work Package	40	89%	45	5	45	0.18	0.16
4 Deliver Work Package	36	100%	36	4	36	0.14	0.14
5 Receive Work Package	31	69%	45	5	45	0.18	0.12

Table 8. Closing a Project

Domain: Closing a Project		Domain Weight	14.92%		Domain Performance (weighted)	58.16%
Process	Process Score	Alignment	Target total score (576)	Active Questions	Max. score from active questions (1152)	Process Weight	Weighted Score
1 Authorize Closing Phase	54	100%	54	6	54	0.09	0.09
2 Planned Close	0	0%	54	6	54	0.09	0.00
3 Premature Close	49	54%	90	10	90	0.16	0.09
4 Customer Handover	35	49%	72	8	72	0.13	0.06
5 Evaluate the Project	52	64%	81	9	81	0.14	0.09
6 Administrative Closure	43	60%	72	8	72	0.13	0.07
7 Recommend Project Closure	27	75%	36	4	36	0.06	0.05
8 Terminate the Project	18	67%	27	3	27	0.05	0.03
9 Authorize Project Closure	57	63%	90	10	90	0.16	0.10
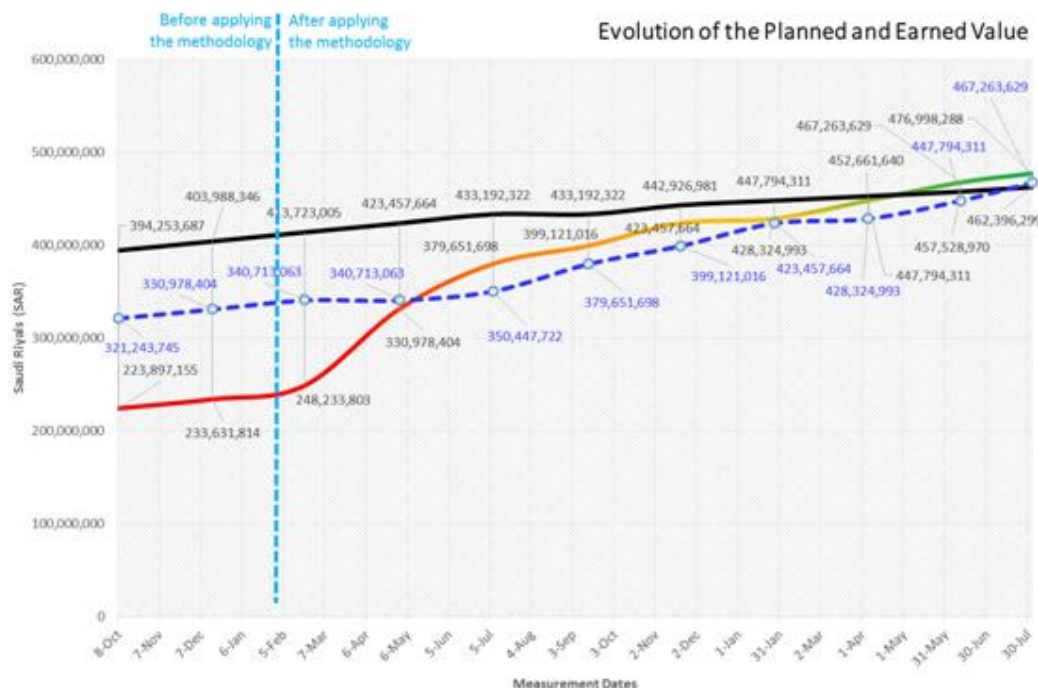
Figure 3. Project B (College of Science for Females): Analysis of the Planned Value vs. Earned Value

For Project B, Figure 3 shows that the project suffered a significant gap between the planned work (PV) and the actual work performed (EV). Also the project was hugely overspending (AC) compared with the actual work performed but also the planned work. More specifically as of 08/10/13, the approved budget was 149,984,231.00 SAR, the planned value was: 93,451,713.16 SAR (62% of the budget). The earned value was 55,194,197.01 SAR (37% of the budget) and the actual cost was 113,076,572.93 SAR (75% of the budget). Practically, the project was delivering much less of what it was planned and it was paying much more from the work was carrying out.

For the measurements held in the period after the application of the IPPM (02/02/2014 – 02/08/2015), there is a major improvement on how the project performed with the gradual increase of the earned value to a level higher the of planned value and the actual cost stabilized to level equal with the earned value. More specifically as of 02/08/15, the approved budget remained at 149,984,231.00 SAR, the planned value was 109,603,875.73 SAR (73% of the budget). The earned

value was 117,587,652.78 SAR (78% of the budget) and the actual cost was 117,587,652.78 SAR (78% of the budget). Practically, the project was delivering more of what it was planned and it was paying equally for the work was carrying out.

For Project A, Figure 4 shows that the project before applying IPMM (08/10/2013 – 01/02/2014), there is a compelling variance for both schedule and cost. As of 08/10/13, the schedule variance was -170,356,531 SAR, which means that the project was behind schedule by a value equal to that amount. Also, during that snapshot the cost variance was -97,346,589 SAR, which means was over the budget by that amount.

For the measurements held in the period after the application of the IPPM (02/02/2014 – 02/08/2015), there is a major improvement on how the project performed as can be seen in the evolution of both the schedule and cost variances. More specifically as of 02/08/15, schedule variance was 14,601,988 SAR, which means that the project was ahead the schedule by a value equal to that amount. For the same date, the cost variance was 9,734,659 SAR, which means was under the budget by that amount.
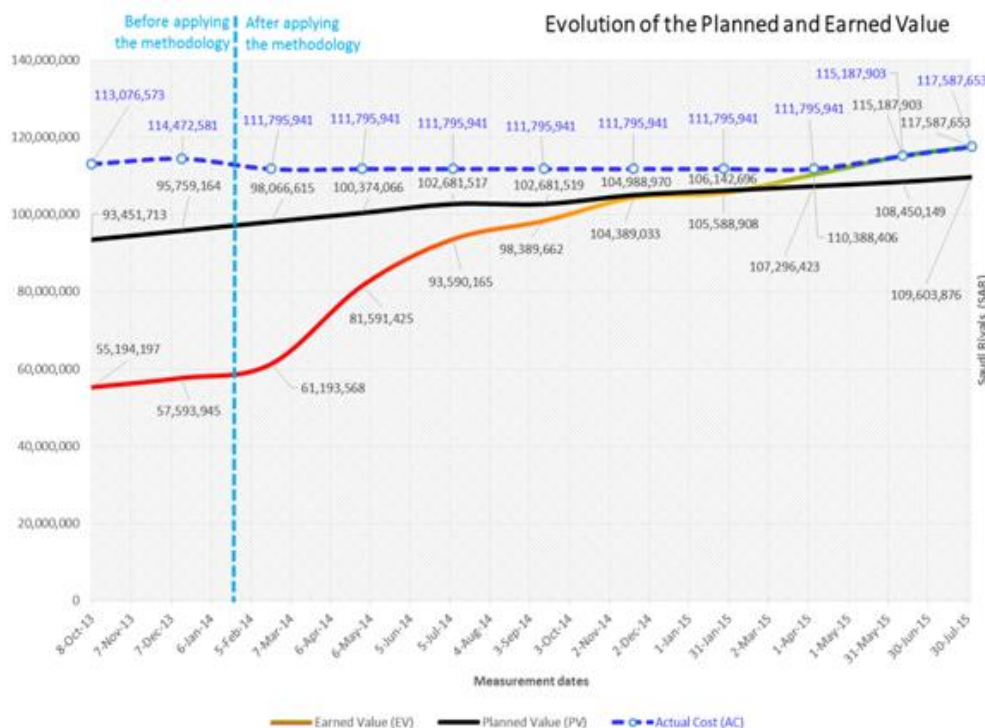

Figure 4. Project (University Hospital): Analysis of the Planned Value vs. Earned Value

6. Conclusions

The Integrated Project Management Methodology (IPMM) has been designed to transform the current industry practice in general project management, which focuses on individual project delivery (outputs), to a value driven approach based on projects which can deliver benefits to all stakeholders (users, business, management, suppliers, partners *etc.*).

However the IPMM has also specifically been designed to be used in managing construction projects by integrating construction specific best practice: namely AIA

and CSI. In this way it can be described as an Integrated Construction Project Management Methodology (ICPMM).

Further researches and studies can be conducted to discover the areas for improvements as the innovation in managing projects across all industries. All project managers should be qualified and certified based on international and local qualifications and certification schemes. Any organization willing to adopt this methodology should perform assessment for the organization and the project management practice within the organization based on international benchmark.

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