PROJECT MANAGEMENT
- Insights in the digital context

Purpose

This position paper presents an overview of key insights pertaining to the management of projects in the digital business context, as derived from pertinent academic and practitioner literature. These insights, along with insights from subject matter experts, have informed development of IVI's IT-CMF Project Management (PM) Critical Capability.

Relevance of Project Management in the Digital Context

Over the last decade or more, with the ever increasing availability of high speed, affordable broadband [1], [2], and the ubiquitous release of Internet-related technologies, trends have emerged that are affecting all of us in how we now live and work. The business context is becoming more complex, turbulent, and digitized [2]. Businesses from the small entrepreneur to the multinational company have had to adapt to harness the value from social, mobile, cloud, and data [3].

Digital transformation is also reforming and accelerating project delivery models [2]. The proportion of project work completed by organizations and the need for project management skills is increasing with the accelerated pace at which businesses need to operate. Project management is indispensable to modern dynamic businesses [4]. As outlined by Schwalbe in 2015, "*the U.S. spends $2.3 trillion on projects every year, and the world as a whole spends nearly $10 trillion on projects of all kinds. Projects, therefore, account for about one fourth of the U.S. and the world's gross domestic product*" [5].

However, the planning and execution of innovative projects in today's digitized context needs to be completely rethought in order to remain competitive. It is no longer acceptable to execute projects at the same pace and with the same methodologies and tools as in the past [2], [3], [6]. This paradigm shift has had a transformative effect on the project manager's job and on project management as a whole [2].

Managing Projects in the Digital Context

Project managers need to adapt their approaches to how projects are managed in order to remain competitive [7]. Digital advances have seen an infinite number of increasingly advanced tools emerge for project planning, budgeting, monitoring, and controlling to more easily facilitate the calculation of variances, smooth out resources, define the critical path, and forecast cash flows. These tools and techniques can support the automation of plans, track budgets, and produce detailed reports, all of which can be shared around the world at the click of a button. In addition, faster time-to-market results, speed of response and flexibility [2], [7], ability to select the correct business initiatives, better risk/opportunity analysis, and a capability to analyse results in short cycles [2] are the new norm.

Project Management (PM) covers a number of key phases. These include initiating, planning, executing, monitoring and controlling, and closing projects.

'Initiating' happens at the outset of any project and effectively covers everything from assigning a project manager [8], [9], to formal project approval and governance guidelines, to concept development. This may be done through developing a project charter for example [9]. The key benefit of this process is a well-defined project start and project boundaries, creation of a formal record of the project, and a direct way for senior management to commit to the project [9]. As we move to a digital context, issues arise if this initiation phase has not been carefully considered at the outset. For example, many businesses may not have the ability to use real-time data to select the right initiatives during this initiation phase because the focus is solely on financial factors and there is a lack of empowerment at lower levels of management to make decisions [2].

'Planning' is fundamentally important to the success of any project. The amount of planning should reflect the overall project scope. The planning processes are subject to frequent iteration before the plan is complete. For example, if the planned completion date is too late, project scope may need to be amended or the budget may need to be increased. Some detailed planning processes have clear dependencies that require them to be performed in sequence. For example, tasks must be defined before they can be scheduled or costed [8].

'Executing' is usually the longest phase of the project lifecycle and is usually the most demanding. It is concerned with carrying out the project plan, performing the tasks identified, and constructing the deliverables to present to the customer, while at the same time, managing the various technical and organizational interfaces [8], [10].

'Monitoring and controlling' is the measurement of project progress to identify variances from the plan (enabling the necessary adjustments to be made), as well as to determine a project completion date [8], [9].

Finally, project 'Closing' is concerned with ensuring that the project deliverables have been completed satisfactorily. Resolution of any outstanding administrative matters and the archiving of contract documentation must be completed, as well as gathering and disseminating information to formalize project completion [8].

Critical activities in the initiating, planning, executing, monitoring and controlling, and closing phases include: stakeholder interactions management, governance, resourcing, communication, methodology management, time management planning, cost management, quality management, performance management, risk management, change management, and project closure management. These key activities are now briefly discussed.

In any project, it is imperative that stakeholders are identified at the outset in order to ascertain their project needs and aspirations. Different stakeholders may have different needs that may create

conflicts within the project [9]. Managing stakeholder needs and expectations includes dealing with any issues and answering queries to ensure their understanding of the process. Important components of this process are change requests and the issue log [10]. One of the key stakeholders for any organization is the customer. In the digital context, there is increasing recognition that having a mature customer experience (CX) capability results in significant benefits for the organization such as a lowering of costs [11], [12], increased customer satisfaction, richer differentiation, higher brand advocacy [11], and faster iteration and delivery of service [12], [13,].

In tandem with this, project governance is critical as it helps ensure stakeholder needs align with organizational objectives/strategy. It provides a framework in which the project manager/sponsors can make decisions that give appropriate weighting to stakeholder needs and organizational objectives, particularly when these are not in sync [9]. A 2012 study undertaken by Booz & Company found that poor decision-making or badly executed strategy was the main reason (81%) for loss of shareholder value in organizations over the last 10 years. These findings support a case for sound governance to be a key factor in increasing responsiveness in today's business environment. Today, executives require a capability to respond to changes fast through better governance systems that are more than just controlling measures [14].

It is impossible for any project to be run without access to the necessary resources. These resources can include money, people, time, and the physical availability of goods such as servers, software, and space and power in the data centre. Each resource must be approved by the relevant business unit to enable delivery of project outcomes [9]. However, the capability to respond quickly to changing circumstances also requires personnel with the right capabilities and competences, as well as the right structures and culture to be in place. These two elements are often missing in many organizations. For many years, CEO surveys have outlined the shortage of competent resources and lack of talent development as a key issue for organizations [15], [16], and numerous studies have found that, although executives regularly encourage innovation, the culture they promote stifles it [2], [17], [18].

The success of project management in any organization is also based on an effective communication approach [9]. Project managers need a good flow of information both inwards, to them from the project team and the customer, and outwards, from them to the project team and the customer [6]. With the advent of globalization of the project management profession, this is especially true [9]. An example of this is where project managers are now able to effectively communicate with the project team/key stakeholders who may be based all over the world, to facilitate real time access to project information [7] and enable effective decision-making [9]. Organizations are now able to establish an online project community that can easily be updated with the latest information [7].

Selection of the most appropriate project management methodology is also key to project success. The methodology selected must match the nature of the project and the most relevant mode of work of the project assigned resources. The move to DevOps, Agile and continuous delivery helps to speed-up the pace at which projects are completed [19]. This requires project managers to adapt their approaches, toolsets, and methodologies. In the digital context, willingness to consider the most

appropriate methodology to suit each project is key [7]. Execution speed can be improved by modifying and simplifying the project management approach and methods. For example, organizations can embark on some rapid prototyping as a proof of concept before implementing the final product, or break down the project into several smaller projects that can move faster independently as opposed to together [7].

Time management planning is also a key component of effective project management. This enables the project manager to set a realistic timeline for each project team member to complete their assigned tasks, whilst ensuring the project continues as smoothly as possible and keeps to an agreed deadline [20]. Additionally, a project team typically exists for a fixed period of time. During this time, people will join and leave for a multitude of reasons. Consequently, the project manager has to deal with the knock-on effects that such transitions have on the team [6]. This is achieved through using project scheduling tools which incorporate some element of adaptability to address unforeseen delays [20].

Project cost management is also a crucial aspect of effective project management. It includes estimating, planning, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget [9]. Cost management should also consider the cost of using, maintaining, and supporting the product/service delivered by the project. For example, decisions made to reduce the number of design reviews during the project can reduce the cost of the project but increase the product's operating cost [9].

As well as a keen focus on timeline and costs, the resulting project output must achieve the required level of quality to satisfy stakeholder needs [2]. "*Even projects that are delivered within budget and on time are not successful if the quality of the deliverable is poor. Quality management is all about identifying and following quality requirements, auditing the results of quality control measurements, and using quality measurements to control quality, recommending project changes if necessary*" [20]. This is increasingly important as the ability to integrate different work products becomes a necessary skill for project managers to deliver exceptional results [2].

Performance management is the capability to identify and define key performance indicators to measure, record, and analyse project performance improvement opportunities [23], [24]. With the advent of digitization, real time data, and a multitude of tools to aid project performance management, this enables improved project monitoring to ensure that task progress is not encountering any delays or unforeseen setbacks [20]. However, it is imperative to remember that while plans, Gantt-charts, forecasts, and trial-and-error iterations during product development are important, methodology and specific techniques must not get in the way of the needed results [7].

Project risk is an uncertain event or condition that if it occurs will have a positive or negative effect on one or more project objectives. There are a multitude of tools and techniques now available to assess risks and mitigate against them [25]. Risk management is a key project management practice to ensure that the least number of surprises occur during the course of the project. While it is virtually impossible to predict the future with much certainty, it is possible to apply a simple and streamlined risk

management process to predict uncertainties in the projects and minimize the occurrence or impact of these uncertainties. This significantly improves the chance of successful project completion and reduces the consequences of those risks [26]. Risks need to be managed from both a defensive and proactive standpoint. Defensively, the recruitment of talent to protect against cyber threats and competition from disruptive outsiders is vital. Proactively, progress will more and more depend on a highly focused, customer-centric approach, where enhanced customer engagement ensures there are no unforeseen requirements/issues later in the project, for which the leveraging of new digital technologies could be central. Digital can also help reduce costs, and improve distribution. In this demanding environment, the biggest risk may be doing nothing [27].

When an organization endeavours to implement change with a project or initiative, the change needs to be reflected in both the technical and the people sides. The technical side ensures that the change is developed, designed, and delivered effectively. The people side ensures that the change is embraced, and adopted by the users who have to undertake their jobs differently as a result of the project. Project management provides the structure, processes, and tools to enable both of these things to happen. Project management and change management both seek to increase the likelihood that projects deliver the planned results and outcomes. Although each discipline can work independently, the most effective approach is the integration of change management and project management to construct a unified approach to implementing change on both fronts [28]. Change is inevitable and accelerating. Organizations that manage change effectively will pull ahead of their competition. Change initiatives are time consuming and costly, however, through dealing with change using a disciplined approach, organizations can survive and thrive [29].

The effective closure of the project is also key to any project's success. Knowledge of the closure criteria and the processes to be used when closing a project are key. Knowing when to 'pull the plug' is also something that is regularly misunderstood or not accepted by project managers [9]. A project closure event requires that learnings are captured and incorporated into a continuous improvement process, in line with best practice [22].

Conclusions

The concept of an IT project is changing rapidly, and many have struggled to keep up with what has been happening. However, there are many options available to the IT project manager – choosing the right strategic solution to support a highly flexible and dynamic IT environment based around such things as agile and DevOps approaches just requires a little more thought than before [30]. The challenge for today's project and business teams isn't solely about installing a new cloud solution for task management or time tracking. It's also about such things as how the data in the system can be best leveraged to gain an advantage [3]. Organizations need to keep abreast of and take advantage of the tools that let them manage projects in a way that's compatible with the speed of change.

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