A Conceptual Definition of Information Technology Project Management: A Campaign-Driven Perspective

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Abstract

Despite the importance of the project management phenomenon in information technology projects, the information technology project management (ITPM) concept lacks clarity and is narrowly defined. In this paper, we adopt a change management perspective to propose a multidimensional and configurable conceptualization of ITPM. More specifically, using a "campaign" metaphor, we identify twelve key underlying activities of ITPM, grouped under three dimensions, i.e., diplomatic, promotional, and martial, then position these activities within the organizational control theory framework.

1. Introduction

The prominent role of information technology (IT) in the competitiveness and viability of today's organizations is undeniable [1]. To better understand and explain the central role and value of this technology, IT researchers have directed their efforts over the years towards exploring the use and impact of IT, while devoting less attention to the crucial phase of their development and implementation [2-4]. Indeed, the use, impact and value of IT largely depend on the success of their preceding development and implementation initiatives [5, 6], i.e., the IT projects [7]. Yet, the track record of these initiatives has been dismal with nearly two out of three IT projects failing [8, 9]. It is estimated that on average, IT projects exceed their budgets by 189%, experience 222% schedule overruns, all while delivering 61% of the original specified features and functions [9]. These statistics are not that surprising given that the management of IT projects is non-routine and complex, involves multiple stakeholders, and often spans across many departments, and at times organizations [10-12].

To increase the probability of success of IT projects, researchers and practitioners alike have developed a number of formalized and structured methods and tools for project managers to follow (e.g., PRINCE2, PMBOK Guide, Rational Unified Process, Scrum) [13-15]. It is assumed that following a prescribed set of processes, or using certain tools reduces the complexity of IT projects that enables more control over them, which in turn increases the likelihood of their success [13, 16]. However, despite the prevalent use of these methods and tools by project managers [17, 18], IT project failures and challenges persist [19-21]. In fact, some researchers suggest that the use of these methods and tools may be counterproductive by directing managers' attention towards a "relatively narrow range of imperatives, […] with the result that managers end up losing sight of the totality of the project" [13, p. 153].

This view is supported by researchers who attribute IT project failure and poor performance to issues that include stakeholder resistance [22, 23], interpersonal conflicts [24, 25], cross-cultural differences [26], IT project managers' status reporting behaviors [27], stakeholders' mutual understanding [28], integration of fragmented pockets of specialized knowledge [29], and IT project leadership [30], rather than methodological or technical issues [8, 11, 13, 31]. These IT project failures and issues indicate the need to view the management of these projects not only from a traditional technical 'command and control' view, but by also adopting an extended view [32] which takes into consideration the organizational, social and political aspects of IT project management (ITPM) [33-35].

As such, in the next section, we argue that in addition to being technical implementations, IT projects need to be also considered as organizational change initiatives that potentially transform people's work, reward structures, and organizational structure and performance [36, 37]. Hence, IT projects are multifaceted, and require that project managers orchestrate a variety of activities during these initiatives. Specifically, we propose that project managers view IT projects not only as technical initiatives guided by the use of project management methods and tools, but also as organizational change initiatives [37]. With this objective, we draw on the "campaign" metaphor proposed by Hirschhorn [34,

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38] in section 3 to develop a conceptual definition of ITPM that defines its *properties*, i.e., the essential activities to manage an IT project, and its *entities*, i.e., the person or team responsible for achieving an IT project's objectives [39]. We then provide a conceptual definition and its implications for practice in section 4, and the paper concludes in section 5 by summarizing the importance of the proposed conceptualization and possible future work.

2. IT projects as organizational change initiatives

Several IT researchers suggest that existing conceptualizations of project management (PM) and ITPM are narrowly defined and do not reflect the required activities to effectively manage IT projects [e.g. 40, 41, 42]. While some researchers suggest viewing PM from a different perspective than the prevalent existing view [40], others have specifically called on viewing ITPM as a multifaceted construct [11, 41, 42]. For example, Morris [40] suggests using the "management of the project" expression rather than PM to put the focus on the project itself and its position in the organization. On the other hand, Keil et al. [42] called for the development of a composite model of ITPM by enlarging the underlying range of PM practices, and Barki [41] argued that conceptualizing ITPM as a global construct is likely to be useful since "managing IT projects is a complex task which often requires that managers pay simultaneous attention to many project aspects" (p.7) including the project processes, technical knowledge, team members, inter-relational dynamics, various stakeholders, and the organizational governance structure [11, 43, 44].

As such, in addition to developing and introducing new technological capabilities, IT projects can also generate organizational transformations that include redesigning business processes, increasing collaboration, transforming roles and responsibilities, and generating new performance metrics [37]. Markus [36] notes that an effective IT project "requires a different kind of attention to the features of the *'solution'* and different change *process* from those prescribed by either IT project management or organizational change management" (p. 5, italics in original). While ITPM approaches focus on delivering systems on time, within budget, and according to the specified requirements, they do not control for people's use, resistance, or failure to extract value from the IT [11, 45]. On the other hand, while change management programs focus on motivating and training people to promote organizational readiness to the change, they do not guarantee a technical solution that aligns with the needs of – or provides value to – the users and the organization [46].

Accordingly, viewing ITPM as a multidimensional construct that is comprised of distinct activities is necessary for effectively managing an IT project. A multidimensional construct could provide a more comprehensive account of the various activities IT project managers can undertake, in addition to providing actionable, context-based guidance according to the project's characteristics rather than a standard approach to all projects [11, 25, 47]. This profile view of ITPM may be more useful for researchers and practitioners who can then recommend effective activity profiles based on each project's specific characteristics and context [48, 49]. For example, this approach would determine if some types of projects may require additional activities such as user participation or planning while others may not. In this view, the profile dimensions form the construct. Thus, the objective of this paper is to draw on the campaign metaphor to identify three main dimensions of the ITPM profile construct along with their key underlying activities [34].

3. IT project management as a campaign-driven metaphor

A metaphor is a device that can be used to frame a problem and help to better understand a situation by highlighting the correspondence between two phenomena [50]. Although the correspondences can never be complete, metaphors illuminate particular features of a phenomenon and obscure others [51]. Metaphors are more than linguistics devices, they are means that help "people create their relationship with the world" [13, p.152]. Thus, choosing a metaphor is critical since it influences how a particular phenomenon is perceived [52]. Using a metaphor can be particularly instrumental in proposing a conceptual definition of ITPM [50]. Indeed, it can provide a scientifically useful [53] and parsimonious [54] view of the different ITPM dimensions [40] while providing insights regarding its underlying activities [41, 55]. In this paper, we employ the "campaign" metaphor to develop a ITPM conceptual definition and identify its underlying dimensions [34, 39, 52].

A campaign can be defined as "a connected series of military operations forming a distinct phase of a war"[56]. By transposing this definition to an organizational context, ITPM can be viewed as *a connected series of organizational operations or activities that form a distinct phase of a project*. While the military campaign metaphor aligns with the

traditional PM view by focusing on the operational aspect, two other important types of campaigns can be potentially instructive in the conceptualization of ITPM: an election campaign and an advertising campaign [34, 52]. Although these three types of campaigns have different objectives and strategies, like managing IT projects, orchestrating these initiatives requires knowledge about the project objectives, processes and context to achieve them [57, 58]. The campaign metaphor is potentially helpful to develop a conceptual definition of ITPM given that the challenges facing IT project managers parallel those facing political candidates, advertisement designers, and military commanders. We believe that these three campaign types can help define a broader multidimensional view of ITPM. More specifically, these campaign dimensions should be understood as what project managers orchestrate when managing IT projects.

We propose that in order to deliver successful projects, IT project managers should engage in the three types of campaigns that are comprised of specific activities. Further, the intensity of each ITPM activity is likely to be contingent on the project characteristics (e.g., level of risk, ambiguity, nonroutineness), the tasks to accomplish, the individuals involved, the context, and the success criteria [12, 59, 60]. Drawing on the existing literature [e.g. 11, 60, 61, 62-64], we briefly describe the underlying activities of each campaign in the following sections.

3.1. From election campaign metaphor to diplomatic activities (D)

An election campaign can be defined as "the process by which a campaign organization (be it a party, a candidate, or a special interest organization) seek to maximize electoral gains (e.g., maximize the vote, stress particular set of issues, etc.). It consists of all those efforts (promotional or financial) made by the campaign organization to meet that goal" [65, p.161]. As a result, candidates in election campaigns have to set up an organizational structure that will help them garner the support and the involvement of many stakeholders who may have conflicting needs and demands.

Likewise, IT project managers have to create a temporary structure and negotiate with different stakeholders (e.g. users, project team members, consultants, top management) that may have conflicting needs and requirements in order to get their support and contribution [43, 52]. As mentioned by Kling and Iacono [52], "the organizational politics metaphor is the most interesting explanation of computing developments" (p.1219). Thus, the key activities that stem from the election campaign metaphor that inform the conceptual definition of ITPM construct are: *D1. Setting up an IT project structure* (i.e., project governance and team composition); *D2. Supervising stakeholders* (i.e., conflict management and negotiation); *D3. Forging coalitions* (i.e., support, collaboration, and establishing cooperation) and *D4. Involving stakeholders* (i.e., stakeholders' participation and involvement).

3.1.1. Setting up an IT project structure (D1). Several IT researchers have noted that IT project outcomes are influenced by the project team composition, allocation, and structure [66, 67]. More specifically, governance modes (e.g., centralized or decentralized) and project structures (e.g., functional to projectized) [68, 69] have resulted in different project success outcomes in terms of adherence to budget and schedule, system quality, value to organization, or use. This is not surprising given that project governance models and structures influence project team members' behaviors as well as those of the various stakeholders [12]. Yet, even if formal structures are put in place to ensure consistency and continuity in an IT project, informal structures such as informal networks or process committees may also be necessary to adapt to project changes or overcome roadblocks that arise in the project's lifespan [62, 70]

3.1.2. Supervising IT project stakeholders (D2). During an IT project, the project manager and project team face various demands from different stakeholders such as regulatory, architectural, financial, and security aspects. At times, these stakeholders' demands and interests are conflicting and pose different priorities [43] that may jeopardize the project success [10, 52, 71]. In spite of these conflicting needs, stakeholders possess complementary skills and knowledge that are crucial to the success of an IT project [72, 73]. IT project managers need to balance these needs. Boehm and Ross [74] proposed the Theory-W (making every stakeholder a winner), which is a software project management theory that recognizes the importance of all the key IT project stakeholders. Therefore, stakeholder management is identified as one of the most important practices IT project managers should focus on to improve the success of their project [8].

3.1.3. Forging coalitions (D3). In an election campaign, a political candidate has to create strong coalitions to support his/her campaign and increase his/her chances of winning the election [75]. A project

manager faces similar challenges in an IT project, where getting and maintaining support is key to project success. This includes top management support [43, 76] and coalitions with other various stakeholders given the pluralistic decision-making process in IT projects [52, 77, 78]. These coalitions cannot be established overnight. The process of coalition building that includes the development of shared language, beliefs, and values, has to begin as early as possible as it also serves as a mean to gain legitimacy and to build credibility for the IT project manager and project team [52, 58].

3.1.4. Involving stakeholders (D4). The participation of users in the development process is another crucial element for the success of an IT project [72]. Users not only possess knowledge about the processes, but also about the organization and the different stakeholders. This knowledge and information need to be shared with the project team in order to develop and implement an effective IT that is adapted and suitable for the project's context. In addition, users often participate in project activities and exercise some control over the project's progress [57, 72, 79].

3.2. From advertising campaign metaphor to promotional activities (P)

An advertisement campaign is defined as "a series of steps or operations, focusing on the interrelationships of the various elements [of a marketing communication plan]. This plan outlines the activities, ideas, and executions that take place in order to achieve campaign objectives" [80, p.3-4]. As such, an advertisement campaign designer has to identify a set of values and/or expectations associated with the campaign's objectives, identify and understand the targeted audiences' needs and preferences, construct and disseminate effective messages to the targeted audiences, ensure message consistency, anticipate and communicate changes, stimulate positive attitudes towards the change, and motivate the target audience to use the product and service.

In a similar fashion, IT project managers need to envision their IT projects and outcomes, develop and communicate the IT projects' vision to the stakeholders, garner and motivate them to work in collaboration, and promote organizational readiness for the change. Thus, the key activities that stem from the advertising campaign metaphor that inform ITPM construct activities are: *P1. Creating a vision* (i.e., visioning); *P2. Communicating key messages* (i.e., communicating), *P3. Ensuring adoption of new behaviors* (i.e., change management) and *P4. Motivating the project team* (i.e., motivating).

3.2.1. Creating a vision (P1). Most IT projects are about bringing organizational change. However, individuals in organizations do not always question the way work is accomplished. Therefore, questioning current practices and creating a vision of more effective ones should facilitate change and increase the probability of project success [81, 82]. While Scott-Morton [83] noted that the beneficial enabling aspects of IT cannot be realized without having clear business purposes and vision of what the organization and the IT should become, Feeny and Willcocks [84] have identified business and IT vision as organizations' core IT capabilities. Thus, it is key for IT project managers to develop and communicate a clear and stimulating IT project vision.

3.2.2. Communicating key messages (P2). Open communication between a project team and the various stakeholders in IT projects has been positively related to project performance [85]. Indeed, prior IT research has shown that the quality of communication between users and developers influences IT project success [86] especially in terms of IT quality [87, 88]. Thus, it is essential for IT project managers to develop and maintain direct, clear and transparent communication with the team members but also with the various stakeholders.

3.2.3. Ensuring adoption of new behaviors (P3). The success of an IT project hinges on how the change is managed before, during and after an IT project [43, 58]. In fact, change management is identified as one of the most important elements in an IT specialist's tool box [28, 58]. Most often, IT projects bring about organizational change that is directed and implemented by people. In order to ensure that this change materializes and adds value to the organization and its stakeholders, individuals need to make informed choices regarding the project process and its anticipated consequences, and accept the responsibility of their own behaviors [28, 58, 89]. Thus, preparing both individuals and organizations for the changes induced by an IT project is a key activity in ITPM.

3.2.4. Motivating the project team (P4). The motivation of project team members is a daunting task for any IT project manager [90]. However, this task may even become more challenging with globally distributed team members, vendors, consultants and third-party vendors [58]. Thus, motivating and keeping IT projects' team members and stakeholders focused is likely to require more time and attention

from IT project managers and is essential to increase the probability of success of such initiatives [57, 91].

3.3. From military campaign metaphor to martial activities (M)

A military campaign is defined as "set of operations, typically accomplished in phases, to accomplish the mission of a combatant, commander or an associated objective" [92, p. 96]. A military commander must establish the scope of the campaign, its limits, the timing and sequence of assaults, as well as anticipate and monitor any changes on the ground that may influence the campaign's progress.

Similarly, IT project managers have to deploy similar activities in IT project such as establishing the project's scope and plan; estimating the required budget, time, and human resources; coordinating all the project tasks; as well as anticipating and monitoring any events that could impact the project's progress [44]. Thus, the key activities that stem from the military campaign metaphor that inform the ITPM construct are: i.e., *M1. Establishing the project scope, plan, budget and schedule*, *M2. Orchestrating the project tasks and resources* (i.e., coordinating), *M3. Anticipating undesirable events* (i.e., risk management), and *M4. Monitoring and controlling the project progres*s (i.e., monitoring and control).

3.3.1. Establishing the project scope, plan, budget and schedule (M1). In a military campaign, establishing a plan is crucial to dominate the opponent [92]. Even if the underlying objectives of an IT project are totally different from a those of a military campaign, the project planning process is a central theme in the PM literature and focuses on defining and refining objectives and tasks [44]. Some researchers have identified underlying activities of the planning process such identifying success criteria deliverables, and developing a contingency plan [42]; in addition to estimating the time, effort, cost, and resources required to accomplish the project tasks [57]. In this respect, previous IT research has found a strong relationship between project planning and the attainment of time and budget objectives [93], especially for complex IT projects that require more formal and detailed planning [57]. It is established that even iterative agile approaches such as Scrum require a certain level of planning [15].

3.3.2. Orchestrating the project task and resources (M2). Just like a military commander who must orchestrate different battles at different times, an IT project manager needs to coordinate various tasks and resources to meet the project objectives [67, 94]. This coordination process integrates and links the various project elements together in order to accomplish specific tasks [57]. There are multiple coordination challenges as project team members may work on different tasks at the same time, while multiple members may also work on the same task simultaneously. Adding to this coordination challenge is the fact that each stakeholder brings a different set of knowledge and perspective that needs to be integrated into a coherent effort [10, 67].

3.3.3. Anticipating undesirable events (M3). In a military campaign, anticipating the enemies' maneuvers and reacting accordingly can mean the difference between success or failure. IT project managers also have to anticipate future events and act accordingly to increase the probability of project success [95]. This has been addressed under risk management, which is about proactively identifying, evaluating, and controlling project elements that could go awry [8]. Thus, the management of IT project risks is a challenging but key activity [96].

3.3.4. Monitoring and controlling the project progress (M4). In order to effectively use resources during a battle, a military commander monitors the various activities of a military campaign [92]. In a similar vein, IT project monitoring entails "collecting, measuring and disseminating performance information and assessing measurement and trends to effect process improvement" [44]. This monitoring provides feedback to the IT project manager and team who can then compare their progress with what was planned and make the necessary adjustments [57, 97].

4. IT project management: A conceptual definition proposition

The "campaign" metaphor was used as a springboard to propose a new conceptual definition of ITPM. Based on the election, advertising and military campaign metaphors, key underlying activities of the ITPM construct have been identified and grouped under three main dimensions: diplomatic, promotional and martial. Each dimension covers different yet complementary essential activities orchestrated by IT project managers or the project team to increase the probability of a successful IT project. According to this view and based on the dimensions and activities identified above, we propose the following ITPM conceptual definition [39, 41]:

*A dynamic and complementary set of **diplomatic** (i.e., D1. Setting up an IT project structure, D2.*

Supervising stakeholders, D3. Forging coalitions, D4. Involving stakeholders); ***promotional*** *(i.e., P1. Creating a vision, P2. Communicating key messages, P3. Ensuring adoption of new behaviors, P4. Motivating the project team) and* ***martial activities*** *(i.e., M1. Establishing the project scope, plan, budget and schedule, M2. Orchestrating the project tasks and resources, M3. Anticipating the undesirable events, M4. Monitor and control the project progress), that are undertaken and orchestrated by a project manager or a project team during an IT project in order to meet the project objectives, within a set of contextual constraints.*

As recommended by Podsakoff et al. [39], this conceptual definition of ITPM describes the type of *property*, i.e. "the nature of the phenomenon (e.g., intrinsic characteristics, thoughts, feeling, perception, actions, or performance metrics) to which the focal concept refers" (p. 192) as well as the *entity* to which the property applies, i.e. "specify the object or event [e.g., person, task, process, relationship, dyad, group, team, organization, culture, etc.] to which the property applies" (p. 192). The diplomatic, promotional and martial activities described in the ITPM definition capture the nature of the phenomenon. The definition also establishes the dynamic and complementary nature of these activities during an IT project. In addition, the proposed ITPM definition also underlines the entity to which the property applies by identifying the role of the IT project manager and team.

4.1. Control mechanisms: ITPM activities in practice

While we argue that project managers need to undertake and orchestrate all the above ITPM activities for effective project success, their ability to monitor and control these activities may vary. The level of activity control can be informed by the organizational control framework which implies that the regulation of stakeholders' behaviors is exercised through control mechanisms, i.e., activities and/or structures, in order to motivate them to achieve desired project objectives [31, 60, 63, 98]. Likewise, the underlying activities of ITPM can be viewed as mechanisms used by IT project managers to motivate the projects' stakeholder to meet the project objectives [99-101]. Because the three dimensions of ITPM encompass 12 key activities orchestrated by project managers to regulate stakeholders' behaviors in IT projects, we conjecture that each of the three ITPM dimensions can be viewed as clusters of control mechanisms.

More specifically, as presented in Figure 1, we conjecture that the level of enactment of each one of the twelve ITPM activities depends on 1) the level of project-related knowledge and skills, and 2) the ability to capture activities characteristics, i.e., behavior observability and outcome measurability. Thus, the orchestration of ITPM activities by an IT project manager or a team will depend on the level of project-related information, knowledge, and skills required. In addition, it will depend on the extent to which the ITPM activities enacted can be observed by the IT project managers and to what extent the outputs of these activities can be measured and evaluated. Accordingly, these two dimensions translate into a diagonal continuum representing the level of formalization of each activity as shown in Figure 1. Hence, while project activities with clearer procedures and measurable outputs can be more formally evaluated and controlled, those with less observable outcomes and more ambiguous procedures are less amenable to standard evaluation and control.

Similarly, although each IT project is unique, based on the authors' own experience, Figure 1 shows the level of control a project manager has over the 12 ITPM activities during a 'typical' large organizational IT project. These activities have been positioned according to the level of project-related knowledge and skills required, as well as the extent to which the activities are observable and their outcomes can be measured.

Figure 1 could help researchers better understand and study the phenomenon of ITPM by identifying, describing and characterizing the key activities required to successfully manage an IT project. For practitioners, these elements should serve as guideline for how to manage IT projects.

With this in mind, the proposed ITPM activities can be combined in various configurations to provide project managers with actionable advice that enable them to manage an IT project according to its specific constraints and context [12, 102, 103]. According to the project context and progress, some ITPM activities will be more predominant than others. For example, during the initiation phase of an IT project, a high-level of planning might be appropriate, while little monitoring is necessary. Thus, the proposed ITPM conceptual definition should be considered as a multidimensional and configurable (i.e., profile) concept [25, 47].

5. Conclusion

Drawing on the campaign metaphor, we identify three dimensions, i.e., diplomatic, martial and promotional, composed of a number of activities that

underlie ITPM. We believe this conceptualization of ITPM extends existing views to encompass what projects managers need to do and orchestrate for effective IS project management.

Future empirical research could help validate and refine this conceptualization and explore its relation to IT project team performance and project success. Furter, the proposed ITPM activities can be operationalized following suggested guidelines used in qualitative [104-106] or quantitative studies [104, 107]. More significantly, the proposed multidimensional and configurable ITPM conceptualization could be used to identify the best fit between the various management activities and the different IT project characteristics and contexts [48, 58]. Other research avenues could also be to follow to explore the relations between the proposed ITPM conceptualization and other phenomena in the field such as project escalation [108] or user resistance [109]. Future research may also examine the effect of different project settings (i.e., social, cultural, or organizational) on the maintenance and enactment of the different ITPM activities [110].

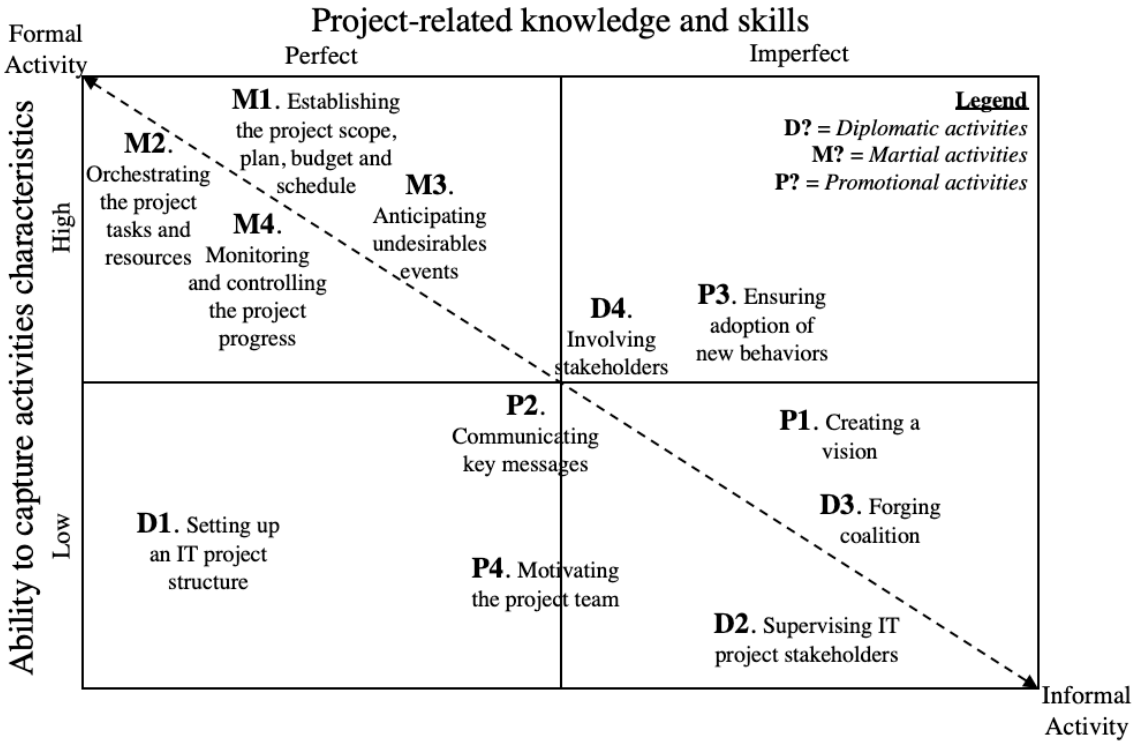

Figure 1. ITPM activities positioned in the organizational control framework (adapted from Ouchi [63], Snell [60])

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