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Research paper



A Theoretical Framework of Critical Success Factors on Information Technology Project Management During Project Planning

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Abstract

Organizations have made significant investments in ICT projects, hoping to gain competitive advantages, growth and improvement of productivity. The success and failures of the project is one of the fields in Project Management with most frequently discussed. Project planning is an important part in the project management and has a stronger impact on project success. However, weakness in project strategy and planning lead to lack of business support, inefficient use of resources, poor estimates, poor scope control and increase risks. Previous studies have reported that well-defined project plans play an important role in the success of the project. In recent times, various factors contribute to project success namely; organizational, human, project management, complexity, quality, and technical. Hence, this study aimed to explore and identify critical success factors on project planning that lead to project success. A model is derived from findings of the literature review and tested within the Malaysian public sector through quantitative methodology. Thus, the finding of this study provide the organization with insight to drive their performance improvement in managing investments for project management field, especially through strengthening employees and organization competence as well as benefit the public's sector.

Keywords: *Project Management; Project Planning; Critical Success Factors; Success Factor; IT Project.*

1. Introduction

The projects act a major part in the economic development of a country. Project is measured as a core component in any organization and project management success is tremendously an interesting area from scientific and practical point of view. Based on study under collaboration of University of Oxford, large IT projects running 45% above budget and 7% over time and delivering 56% less value than expected [1]. Another report by KPMG's Project Management Survey Report (2017) stated that 29% of organizations are likely to deliver projects on budget with 31% more likely to deliver projects on time [2].

Organizations have made significant investments in ICT projects, hoping to gain growth, competitive advantages and improvement of productivity. The success and failures of the project is one of the fields in Project Management with most frequently discussed yet least agreed upon. The success factor of the project firstly started by Rubin and Sealing in 1967 and have been frequently used in project management since then [3],[4].

Although it has been widely known that effective project management cannot ensure project success, weak project management typically resulting in project failure (PMBOK, 2015). Thus, in order to ensure a projects are successful, the critical success factors should be identified to increase the performance rate in IT Project. Thus, the finding of this study can offer organization in managing investments in project management.

The success of the project is determined by its time completion, within cost and meet project performance based on initial plan. Inevitably, planning has a significant role on the success of the project. Project planning consists of several major processes known as initiating, planning, executing, monitoring and controlling process. According to report by McKinsey & Company on Government Productivity, by adopting best practices procurement disciplines can save around 15% and simultaneously boosting outcomes [5]. Thus, strengthening better procurement during project planning help improve efficiency within governments and drives greater quality and innovation.

Previous studies have reported that well-defined project plans play an important role in the success of the project [6], [7]. The core purpose of planning is to reduce the uncertainty [8], [3] and thus the role of planning is related on the context in organizations. Furthermore, planning has been acknowledged as most effective in supporting project success [6], [9], [10].

Project Planning is the process where the detail project activity is planned based on the project charter, depending on the availability of resources. It involves formulating of project scope, developing the project management plan, and scheduling the project time and activities (PMI, 2004). It is a dynamic process and need to revise or review from time to time when new information is obtained which requires a change of plan [11] due to customer instructions and as a learning curve of project implementation team [12].

Quality project planning increases the chances of a project to be properly executed. Quality project planning involve integration of knowledge area and project management processes [9]. Lack of project planning and strategy lead to deficiency of business support, inefficient use of resources, poor estimation, poor scope control and increase risks. Furthermore, poor planning resulting in lack of strategic alignment, communication issues, poor time management and dissatisfied customer and lack of support from stakeholders. Despite project planning is not a guarantee the project's success, the purpose of having it is to reduce uncertainty. A quali-

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ty project planning increases the chances of the project being will implemented to achieve short-term goals and achieve objectives. Hence, this research aims to fill up the gap by striving to explore critical success factors that contribute to the success of IT project management by focusing on project planning in Malaysian public sector (MPS).

2. Related Works

This section will cover on general project management practices in Malaysian public sector focusing on project planning perspective.

2.1. Methodology

The project management focusing on project planning were derived through an extensive literature review on content from high quality information system journal database and online industry articles including was limited to those published between the years 2012 – 2018. A high quality information journals databases including IEEEXplore Digital Library, Elsevier, Emerald, Science Direct, ACM Digital Library, MIS Quarterly Executive, Scopus and Google Scholar.

For this study, the keywords used to search the related literature review are" "project management", "critical success factors", "success factors", "project planning", "public sector", "IT project" and some other keywords. As a result, a total of 135 articles related to project management in general, has been downloaded for further action. Nevertheless, this study is limited to the critical success factors (CSFs) related to project management focusing on project planning. Hence, three (3) papers have been selected as the main references. Based on the papers, 30 factors have been identified which was then presented to a group of experts for validation purpose.

In next stage, all factors were extracted and validated by five (5) experts who has more than ten (10) years of working experience in Malaysian public sector (MPS). The experts included one (1) Chief Information Officer and four (4) chief assistant director. Among the participating experts, four (4) experts had more than 20 years of working experience in the public sector, and one (1) had 15 years working experience. All experts were asked five (5) standardized questions based on proposed constructs; (i) project management; (ii) project manager/project team competence; (iii) organization competence (iv) methodologies, tools and techniques; and (v) project documentation in Malaysian public sector. The experts validated all 30 factors that are closely related to success factors of project planning. The five (5) construct are as in Table 3.

For this study, a quantitative approach was used to collect data from personnel who involved with project management and project planning via questionnaire survey.

3. Project Management in Malaysian Public Sector

Project Management is defined as planning, organizing, monitoring and controlling of all features of projects, inclusive of motivation to achieve the goals of the projects in a safe way, within set schedule, budgeting and performance criteria [13]. While R. Atkinson, L. Crawford, and S. Ward (2006) defines a good project management as effective management of uncertainty including good practice in planning, coordination, achievement of the achievements and change procures, working to manage uncertainty directly [14]. Furthermore, H. Taherdoost and A. Keshavarzsaleh (2015) draws project management as measurable in terms of time, cost, quality and long-term and user-oriented [15].

Over the past few years, due to the emerging of new technology, MAMPU is now committed in increasing the success rate of ICT project towards meeting the government strategic objectives and service delivery to its citizens. The Eleventh Plan (2016-2010), Chapter 9 (Focus Area D) Transforming public service for productivity emphasized on efficient and effective project management and implementation to ensure the completion of projects within the stipulated time, quality and cost requirements. The improvements in project management will be undertaken at all stages of planning, implementation, monitoring, and evaluation. In addition to that, project management is one of the five (5) focus areas in public sector transformation in order to enhance management project for better and faster outcomes.

The report surveyed by MAMPU in 2016 among Malaysia government agencies shows that the IT project success rate is approximately 66.3%, 28.9% ongoing, whereas the failure rate is 4.8% [16]. Despite the project management efforts, one of the major finds that demonstrates the failure of ICT projects is the weakness in project management as set by the National Audit Department (2016).

Due to the existing problems in IT projects, MAMPU through the Meeting of Secretary General of the Ministry and Director on February 13th 2015 has been appointed to provide a systematic and thorough methodology to empowered ICT project management public sector known as "Metodologi Pengurusan Projek ICT Sektor Awam (PPRISA)". PPRISA guide and assists the agencies in strengthening the implementation of ICT projects in public sector. PPRISA helping in sustain the mechanism of project management such as; (1) a specific project management team, (2) important terms protecting the government and (3) to ensure the Service Level Agreement (SLA) clause in the contract and monitoring the achievement level of SLA.

From the previous research on Project Management (PM) in Malaysia, researchers focused on government project failures from stakeholders' view [17], project and change management success factors [18], project implementation success and change management from government-linked companies [19] and CSFs from construction industries [20]. However, there is little evidence that emphasize solely on project planning perspectives in public sectors especially in Malaysian public sector. Planning was the most effective step in supporting project success [4], [6], [9], [10], [17], [20]. Planning is prevalent in strategic management and project management [21]. Failing to understand the project planning factors will increase the project cost due to project planning involved revisit, recurring and continuous process as it needs to be revised when new information is obtained which requires a change of plan [22]. Project planning perspective is based on the PM processes starting from initiating, planning, executing, monitoring and controlling process.

Project planning quality increases the chances of the project being will implemented to achieve short-term goals, to accomplish specific targets or even wider objectives [23]. Research work shows that the lack of good project planning is listed as the source of failure of the. Effective planning is beyond than just providing a complicated and extensive plan at the start of a project. The entire life cycle of project management might have been impacted by improving a quality project plan. This is because if at the planning phase, one process is done correctly, it will be easier to continue managing the other phases at the same quality until the project is successful [9]. Previous study features a correlation also exists between the planning quality and the project success [9] and inversely related to the risk [10].

4. Critical Success Factors (CSFs) on Project Management during Project Planning

A number of studies have found that wide range of critical success factors on project management that contribute to project success. The preliminary for critical success factors that cause to project success namely; project management, human, organizational, process/technical, complexity, quality, and top management as per

Table 1. Considering the amount of literature that has been published on project management, the aim is to identify appropriate CSFs in Malaysian public sector focusing on project planning that lead to project success.

According to M. Radujković and M. Sjekavica (2017), project management success factor has been categorized into three (3) categories or elements; namely; project management competence; organization competence and project management methodologies, methods, tools and techniques [13]. The first category, project management (PM) competence comprises of project manager and project team competence where project involves of technical, behavioural and contextual competencies. The second category, organization category consists of structure of organization, culture in the organization, atmosphere in organization and organization competence. While the third category consists of methodologies in project management, software and tool used in project management, techniques for decision making, tool for risk assessment and support tools. The classification structure of project management success factors has been applied on three projects and had recommended on three (3) future PM developments which are; education on PM competence, project relationship and parent organization and also importance of methodologies, methods, tools and techniques of PM. In conclusion, the proposed PM success factors of the classification methodology is in line with current project trends.

Table 1: Critical Success Factors on Project Management

Critical success factor	Number of CSFs	Authors
Project Management	25	[4], [10], [17], [18], [24]–[28]
Human	12	[4], [10], [20], [24], [29]
Organizational	11	[9], [10], [17], [27], [30]
Process/technical	11	[17], [6], [30], [24], [4], [27]
Complexity	7	[17], [20], [30], [4]
Quality	2	[4], [18], [24], [27], [30], [31],
Top management	2	[17], [32]

For this study, the objective is to explore CSFs in project planning perspectives. The main basis of project planning is on uncertainty reduction [10]. From current research, there is little evidence that focus on project planning. This study identified several CSFs related to the project planning from three (3) studies.

First, the study by E. Tesfaye et al., (2016), examined four (4) planning factors known as human, managerial, technical and organizational factor, showed there is a correlations between the planning input factors and knowledge area (cost, time, scope, risk, quality, communication, human resources, integration) [10]. The result obtained that human factor which are project manager and project team has a negative relationship to cost, time and risk. However, human factor has a strong relationship to procurement and integration. Under the technical factors, the results strongly showed in relation to risk, communication and integration. The factors under organizational affect time, scope and procurement. While, management factor affect scope, cost and communication. This study indicates that cost and risk lead to project success compared to others.

Next research by D. J. Laird (2016) identified and highlighted that the organizational factors which directly impact on project planning in small IT projects [9]. The study found that all eight evaluated CSFs known as mission of project, support of top management, project schedule/plans, client consultation, personnel, technical task, client agreement, monitoring and feedback, communication and trouble-shooting has a strong positive relationship with project success [9]. The study also collected data regarding the level and effectiveness of planning in large projects involving documentation such as project management plan, project scope, requirement, design specification, work breakdown structure, schedule of project quality management plan, communication management plan, risk management plan and procurement management plan.

While the third researcher by P. Serrador (2013) has identified impact of planning phase on project success vary in different industries as stated by [3]. From information technology industry, the researcher highlighted the earlier defects identified the lesser cost involved to fix especially in software development projects. The researcher also stating that fixing and reworking is much smaller in the earlier phases compared to the later phases. Work Breakdown Structure (WBS) is a key of deliverable of planning and also an important planning tool to benefit software project success [3].

Table 2 illustrates the findings from previous literature indicating similar factors using various terminologies and related to project planning. These factors are based on three (3) studies on project planning and adapt terminologies on project management success factors breakdown structures by M. Radujković and M. Sjekavica (2017).

Table 2: CSFs Terminologies in Project Planning to be adapted

Author	Factor of Project Planning	Terminologies
E. Tesfaye et al. (2016)	Human factor	Project Management Competence (Project Manager/Project Team)
	Management factor	Project Management Methodologies, tools and techniques
	Technical factor	Organization competence
	Organization factor	
D. J. Laird (2016)	Scope document and quality document plan, Project schedule/plans, Mission of project, Support of top management Monitoring and feedback, Client consultation, personnel, Client agreement, Communication and trouble-shooting, Technical task,	Project documentation Organization competence Project management Methodologies, tools and techniques
P. Serrador (2013)	WBS	Methodologies, tools and techniques

Table 3 shows the factors consist of 30 CSFs that has been constructed into five (5) constructs and validated by five (5) experts namely; (i) project management; (ii) project manager/project team competence; (iii) organization competence (iv) methodologies, tools and techniques; and (v) project documentation in Malaysian public sector.

Table 3: Critical Success Factors on Project Planning

Critical Success Factors	E1	E2	E3	E4	E5
Project Management Factor					
Involvement of Functional Department in planning	√	√	√	√	√
Involvement of client in planning	√	√	√	√	√
Authority of Project Managers	√	√	√	√	√
Monitoring and feedback	√	√	√	√	√
Client consultation	√	√	√	√	√
Communication	√	√	√	√	√
Monitoring and feedback	√	√	√	√	√
Project Manager/Project Team Competence					
Experience of Project Manager	√	√	√	√	√
Planning effort	√	√	√	√	√
Team member experience	√	√	√	√	√
Team member commitment	√	√	√	√	√
Customer involvement	√	√	√	√	√

Organization Competence					
Priorities of project by team leader	√	√	√	√	√
Training	√	√	√	√	√
Project Manager appropriate assignment	√	√	√	√	√
Project Manager involvement in planning stage	√	√	√	√	√
Communication among project manager and organizations	√	√	√	√	√
Project mission	√	√	√	√	√
Support of top management	√	√	√	√	√
Project schedule/plans	√	√	√	√	√
Client agreement	√	√	√	√	√
Methodologies, tools and techniques					
A well-defined scope	√	√	√	√	√
All resource were defines	√	√	√	√	√
Usage of WBS	√	√	√	√	√
Usage of Gantt Chart	√	√	√	√	√
Usage of CPM	√	√	√	√	√
Usage of Project Management software	√	√	√	√	√
Technical tasks	√	√	√	√	√
Trouble shooting	√	√	√	√	√
Project Documentation					
Level and effectiveness planning	√	√	√	√	√

E=Expert

5. Development of Conceptual Model

The conceptual model with five (5) construct as per Figure 1 is derived based on the literature review. The conceptual model is developed in line to identify the project planning perspectives that contribute to project success in Malaysian public sector. There are five (5) construct namely; (i) project management; (ii) project manager/project team competence; (iii) organization competence (iv) methodologies, tools and techniques; and (v) project documentation in Malaysian public sector. The conceptual model will be empirically tested to identify the CSFs focusing in project planning that contribute to project success.

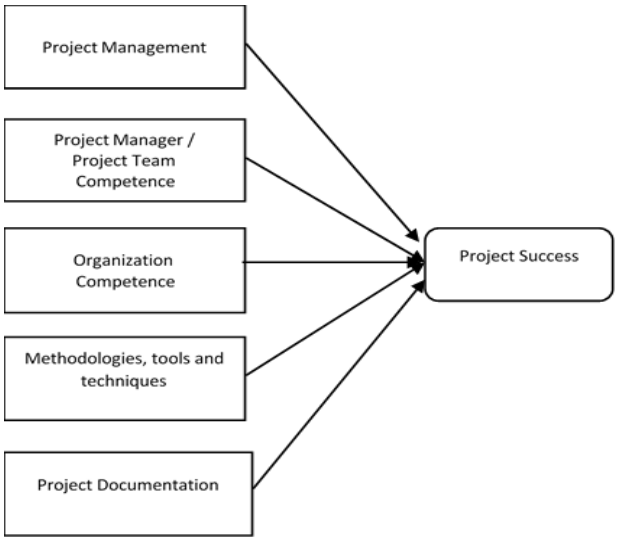


Figure 1: Conceptual model of project planning

5.1 Project Manager/Project Team Competence

Project Manager is defines as the person who is responsible to steer the team to achieve the project objectives [9]. Project team is defined a set of individuals performing the project work to achieve their mission and objectives by supporting project managers [9]. Project managers are required to have an adequate background knowledge and skills in IT Planning which involved ten (10) knowledge areas known as cost, time, scope, risk, quality, communication, human resources, integration.

A good project manager with strong leaderships, strategic thinking and knowledge in project management will drive the project from project starts to project ends. In addition, the success of projects relate to the efficient management skills, effective leadership skills and project manager's technical competence [10], [17]. Project Managers should communicate well with top management, project team and stakeholder involve in the project and acknowledge about the responsibility with the project team [9]. Communication plays an important role between project managers/project team with stakeholders. Commonly, the ability of the IT project team through its key competencies ensures the project is timely and complete. [33]. The importance of project manager/project team competence is proven that lack of managerial skills produces negative results and also other variables.

Recent research has shown the competency of a project manager and project team associated with the success of the project [34] [35]. While K. Heaton, W. Skok, and S. Kovela (2013) highlighted that similar skills in developing competency is a strategic priority to become an effective project manager in software business variables [12], [36]. Thus, project manager/project team competence has a positive impact on the success of the project.

5.2. Project Management

Project Management includes budget, project timeline and personnel assignment to the project. The purpose of the second construct is to measure whether the allocation of the budget is realistic during project planning in Malaysian public sector. Project implementation is implemented within timeline.

During project planning, what is important is the involvement of other unit/department this stage/phase [10], [26]. The Project managers must consider stakeholders in any major decision or development projects made. This enables opposing viewpoints during initial idea. Engaging stakeholders to stay involved in the process will increase the changes of project success[17]. A smart project manager will keep informed the stakeholders of project updates and any information regarding project progress [9], [10], [30].

The definition of roles and responsibilities are core to all project. The Project manager is required to ensure that each assigned role and responsibilities is clearly identified and communicated to the project team members [10]. When roles and responsibilities are clearly defined, team members are more productive, less confusion and less duplication of efforts.

Therefore, this study will investigate whether the project management factors contribute to project success.

5.3. Organization Competence

In project management, organization competence in IT projects involves the delivery or improvement of products and services that contribute to the achievement of organizational strategic goals [37].

Accomplishing project success is the most important and in vein with the investment by large organizational [37]. The Organizational influence includes shared values, norms and beliefs, structures, competencies, policies and procedures [31],. [38] suggested by identifying organizational competences, as well as indicate processes will lead to success in the project and exposes critical success factors.

During the project planning, organization should have clear scope, vision, goals and business plan before the project starts. Moreover, the project goals and expectation must be realistic and reachable. Furthermore, during project planning a project organization structure should be developed appropriately whether it is based on functional, matrix or other suitable structure.

An establishment of Project Management Office (PMO) is increasingly becoming the central hub of organization. Conversely,

PMO ensure that their directives for project reaches all in the organization.
Organization should also provide an adequate training for the project manager/project team. The objective of training is to coordinate and facilitate learning and development, accelerate achievement of the skills, knowledge, and empower job performance.
An organization should also consider the stakeholder satisfaction survey to be implemented after each project ends. Gathering the input from stakeholders is an important activity and makes good business sense.
Therefore, this study will investigate whether organization competence contribute to project success.

5.4. Methodologies, Tools and Techniques

The identification of appropriate methodologies, tools and techniques in managing the projects is important in order to achieve successful project. The need of project management methodology such as PRINCE 2 and PMBOK as a guideline is important to ensure a successful projects [39]. This will help to explore and identify best practices characteristics for both methodologies in decision criteria to the organization. This study has found that generally PMBOK is suitable for IT projects with high client responsibility, complex and project with large teams, comprehensive contracts, high level of outsourcing and high level of stakeholder commitment whilst PRINCE2 is a good choice for small size IT projects.
In Malaysian public sector, the standard project management methodology known as "Metodologi Pengurusan Project ICT Sektor Awam". This study will measure the awareness of the project manager and project team about the new methodology introduced by MAMPU. Furthermore, the objective of this fifth construct is to measure the project management software such as Microsoft Project, Microsoft Excel, Primavera or other related Project Management software which are used comprehensively during the project planning. This help in consistently monitor and review project progress.
Project Management tools also play an important role during project planning. Some of the examples are Gantt chart, work breakdown structures, project chart, reporting system and others. Moreover, in order to make the best decision, the decision making techniques during project planning phase is also important to be considered precisely.
Project risk is a condition or an uncertain event that, if it occurs it has an effect on at least one (1) of the project objective. The effect can be a positive or a negative effect, but the focus is to assess the risks and managing those risks to minimize the effect on the project. So it is essential to consider the risk management in the processes during project planning phase.
The application of core competence and methodological approaches requires the involvement of employees throughout the organization to realize successful outcomes and deal with a rather difficult process [40]. Therefore, this study will investigate; methodologies, tools and techniques contribute to project success.

5.5. Project Documentation

There is no doubt that project documentation is a vital part in project management. The formal documentation process should start from the beginning until the end of the project [23] and help in dealing with time constraints and estimates as well as ensuring customer satisfaction [41]. Report by Modernising Government in Action initiate that all departments and agencies need to document chosen approach before initiating large projects [42]. This is supported by Boston Consulting Group stating that any projects must have documentations such as master schedules, reports, and charts of formal organizations are largely neglected as they really do not help in managing the project. Project documentation should include a minimum project planning components such as a project definition report, milestone planning and role and responsibility charts and status that a further, more detail planning may be required [43].
The lack and failure of documentations requirements such as milestone deliverables in project plans is found to be an important contributor to IT project failure [9]. A standard project management practices should set procedures that specify criteria for changes and provide adequate coordination, communication and documentation of changes [14].
There are numerous documentations involved in project planning which includes the project planning document, cost management plan, quality assurance, risk management, change management, communication plan and document contract. Moreover, a project documentation plays an important role to the project manager, project team and stakeholder over unmanageable document. Therefore, this study will investigate whether the last construct; project documentation contributes to project success Malaysian public sector.

6. Discussion

Using critical success factors approach, this research study proposes a conceptual model to identify key factors that contribute to successful project management. By assessing previous literature, five (5) critical success factors are identified and proposed. The results from literature reveal that with (i) project management; (ii) project manager/project team competence; (iii) organization competence (iv) methodologies, tools and techniques; and (v) project documentation can be effectively developed, resulting in success of project planning. The conceptual model will be empirically verified and tested to identify the CSFs in project planning that lead to project success.
This study is expected to contribute to project manager, project team and project team practice in Malaysian public sector. Practically, the results of this research study will help organizations in better planning on IT projects. With the identification of critical success factors, project managers/project team can focus on the key issues to project success. Further, the potential empirical test of this study can offer manages with a way of evaluating the reliability or objectivity of the claimed best practices in practical standards and guidelines.

7. Conclusion

Critical Success Factors (CSFs) need to be explore to ensure project failure rate can be reduced. It is important to explore the CSFs tailored to project planning perspective involved revisit, recurring and continuous process. The core purpose of project planning is to reduce the uncertainty related to staffing, budgets, time lines, deadlines, goals and measurements.
Thus, this study tried to identify these factors namely project management, project management/project team competence, methodologies, tools and techniques, organizational competence and project documentation that strongly contribute to project success focusing on project planning. By understanding the related factors, it will provide new insights and guideline to enhance strategic planning in better maintaining project management. Thus, the finding of this study can offer organization in managing investments in project management field, especially through strengthening employees (skills, competency, knowledge) and organization competence (governance, alignment, resources, management).

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References

[1] A. October, B. M. Bloch, S. Blumberg, L. L. It, B. T. Centre, and M. P. Management, "Delivering large-scale IT projects on time, on budget, and on value," *McKinsey Co.*, no. October 2012, pp. 1–11, 2012.

[2] G. Barlow, A. Tubb, and G. Riley, "Driving Business Performance: Project Management Survey 2017," pp. 1–52, 2017.

[3] P. Serrador, "The impact of planning: On project success a literature review," *J. Mod. Proj. Manag.*, vol. 1, no. 2, pp. 28–39, 2013.

[4] M. A. N. Masrom, M. H. I. A. Rahim, S. Mohamed, G. K. Chen, and R. Yunus, "Successful criteria for large infrastructure projects in Malaysia," *Procedia Eng.*, vol. 125, pp. 143–149, 2015.

[5] McKinsey Center for Government, "Government Productivity," no. April, 2017.

[6] K. Almgren, "Information technology project management processes and practices: A comprehensive study for successful implementation of IT projects," *Int. J. Bus. Soc.*, 2014.

[7] R. Baker, *A synthesis and survey of critical success factors for computer technology projects*. 2012.

[8] D. Dvir, T. Raz, and A. J. Shenhar, "An empirical analysis of the relationship between project planning and project success," vol. 21, pp. 89–95, 2003.

[9] D. J. Laird, "the Impact of Planning and Other Organizational Factors," 2016.

[10] E. Tesfaye, T. Lemma, E. Berhan, and B. Beshah, "Key Project Planning Processes," vol. 11, no. 1, pp. 159–172, 2016.

[11] D. Rosa, I. Júnior, and C. Araújo, "A New Approach to Managing Lessons Learned in the PMBoK Process Groups: The Ballistic 2.0 Model," *Syst. Proj. …*, 2016.

[12] K. Heaton, W. Skok, and S. Kovela, "Learning lessons from software implementation projects: an exploratory study," *Knowl. Process*, 2016.

[13] M. Radujković and M. Sjekavica, "Project Management Success Factors," *Procedia Eng.*, vol. 196, no. June, pp. 607–615, 2017.

[14] R. Atkinson, L. Crawford, and S. Ward, "Fundamental uncertainties in projects and the scope of project management," *Int. J. Proj. Manag.*, vol. 24, no. 8, pp. 687–698, 2006.

[15] H. Taherdoost and A. Keshavarzsaleh, "A Theoretical Review on IT Project Success/Failure Factors and Evaluating the Associated Risks," *14th Int. Conf. Telecommun. Informatics*, no. August, pp. 80–88, 2015.

[16] MAMPU, *Pelan Strategik ICT Sektor Awam 2016 - 2020*. 2016.

[17] H. Sutan and A. Nawi, "Government ICT Project Failure Factors : Project Stakeholders ' Views," *J. Inf. Syst. Res. Innov.*, pp. 69–77, 2012.

[18] A. Ghanim, F. Munassar, and A. R. A. Dahlan, "Project and Change Management Success Factors from \nMalaysian Government Departments and Agencies Perspective," *IOSR J. Bus. Manag.*, vol. 11, no. 2, pp. 36–45, 2013.

[19] S. S. Basamh, M. N. Huq, and A. R. Ahmad Dahlan, "Project implementation success and Change Management practices in Malaysian Government-linked companies (GLCs)," *J. Soc. Dev. Sci.*, vol. 4, no. 7, pp. 349–355, 2013.

[20] Z. Alias, E. M. A. Zawawi, K. Yusof, and N. M. Aris, "Determining Critical Success Factors of Project Management Practice: A Conceptual Framework," *Procedia - Soc. Behav. Sci.*, vol. 153, pp. 61–69, 2014.

[21] D. Dvir and T. Lechler, "Plans are nothing, changing plan is everything: The impacts of changes on project success," *Res. Policy*, vol. 33, no. 1, pp. 1–15, 2004.

[22] M. Chaves, C. Araújo, and L. Teixeira, "A new approach to managing Lessons Learned in PMBoK process groups: the Ballistic 2.0 Model," *Syst. Proj. …*, 2016.

[23] J. Gomes and M. Romão, "Improving Project Success: A Case Study Using Benefits and Project Management," *Procedia Comput. Sci.*, vol. 100, pp. 489–497, 2016.

[24] A. Bouras and S. Bendak, "Managing IT Projects in Public Companies : A Case Study," *J. Eng. Proj. Proj. Manag.*, vol. 4, no. 2, pp. 74–80, 2014.

[25] K. Jaber, B. Sharif, and C. Liu, "An empirical study on the effect of 3D visualization for project tasks and resources," *J. Syst. Softw.*, 2016.

[26] V. R. Montequin, S. Cousillas, F. Ortega, and J. Villanueva, "Analysis of the Success Factors and Failure Causes in Information & Communication Technology (ICT) Projects in Spain," *Procedia Technol.*, vol. 16, pp. 992–999, 2014.

[27] P. Ramos and C. Mota, "Perceptions of Success and Failure Factors in Information Technology Projects: A Study from Brazilian Companies," *Procedia - Soc. Behav. Sci.*, vol. 119, pp. 349–357, 2014.

[28] H. Taherdoost and A. Keshavarzsaleh, "Critical Factors that Lead to Projects' Success/Failure in Global Marketplace," *Procedia Technol.*, vol. 22, pp. 1066–1075, 2016.

[29] H. Taherdoost and A. Keshavarzsaleh, "A Theoretical Review on IT Project Success/Failure Factors and Evaluating the Associated Risks," *14th Int. Conf.*, 2015.

[30] L. Gingnell, U. Franke, R. Lagerström, E. Ericsson, and J. Lilliesköld, "Quantifying Success Factors for IT Projects—An Expert-Based Bayesian Model," *Inf. Syst. Manag.*, vol. 31, no. 1, pp. 21–36, 2014.

[31] Y. J.-T. Zidane, B. A. Hussein, J. Ø. Gudmundsson, and A. Ekambaram, "Categorization of Organizational Factors and Their Impact on Project Performance," *Procedia - Soc. Behav. Sci.*, vol. 226, no. 1877, pp. 162–169, 2016.

[32] L. Gingnell, U. Franke, and R. Lagerström, "Quantifying success factors for IT projects—an expert-based Bayesian model," *Inf. Syst.*, 2014.

[33] J. Goh, S. Pan, and M. Zuo, "Developing the agile IS development practices in large-scale IT projects: the trust-mediated organizational controls and IT project team capabilities perspectives," *J. Assoc.*, 2013.

[34] J. Wilfong, "Organizational culture and information technology (IT) project success and failure factors: A mixed-methods study using the competing values framework and," 2014.

[35] B. J. Sauser, "Assessing NASA strategic project leadership in an era of 'better, faster, cheaper,'" vol. Ph.D., no. October, p. 197, 2005.

[36] F. T. Anbari, E. G. Carayannis, and R. J. Voetsch, "Post-project reviews as a key project management competence," *Technovation*, vol. 28, no. 10, pp. 633–643, 2008.

[37] O. P. Sanchez, M. A. Terlizzi, and H. R. de O. C. de Moraes, "Cost and time project management success factors for information systems development projects," *Int. J. Proj. Manag.*, vol. 35, no. 8, pp. 1608–1626, 2017.

[38] G. Y. Abbasi *et al.*, "Project Management Maturity Analysis in the Serbian Energy Sector," *Int. J. Proj. Manag.*, vol. 33, no. 2, pp. 638–649, 2015.

[39] E. Karaman and M. Kurt, "Comparison of project management methodologies: prince 2 versus PMBOK for it projects," *Int. J. Appl. Sci. Eng.*, 2015.

[40] Merkl-Davies, "Article Information :," pp. 1–6, 2011.

[41] A. M. Warren, "Critical Success Factors for IT Project Management: A Case Study of a UK MOD IT Project," in *European Conference on Research Methodology for Business and Management Studies*, 2014, pp. 425–432.

[42] I. McCartney, "Successful IT: Modernising Government in Action," 2000.

[43] J. H Payne and J. Rodney Turner, "Company-wide project management: The planning and control of programmes of projects of different type," *Int. J. Proj. Manag.*, vol. 17, no. 1, pp. 55–59, 1999.