THE FEASIBILITY OF PRINCE2 PROJECT MANAGEMENT METHODOLOGY AND MATURITY LEVEL IN A PHARMACEUTICAL COMPANY

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DEDICATION

This project report is dedicated to my father, who taught me important life lessons and to work hard for the things I want. He is there guiding me through, always has been and has always said that education is everything.

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ABSTRACT

Project management maturity model is regarded as a useful tool to evaluate organizations' current project management capability. The Project Management Maturity Model offers a framework for evaluating the ability of an organization by assessing the maturity of project management processes. Project Management Maturity Model (PMMM) is getting popular because of its versatility and its ability to control time and cost most efficiently. Research shows that organizations with a higher level of project management (PM) maturity are likely to be efficient in terms of project effectiveness and productivity and thus have a competitive advantage in the marketplace. However, despite many project management maturity models (PM3s) built over a span of more than 20 years, knowledge of how PM3s are implemented in organizations is scarce in the PM literature. There were concerns raised from the Project Management Office (PMOs), on project management and the understanding and application of the Project Management methodology. Besides that, the project management maturity level were needed to be identified and also for Project Managers who needs to justify the funding of their projects and to ensure the costings stays flat. Therefore, this study is to assess the current maturity level of the project management practices in the pharmaceutical company and to explore the extent to how a pharmaceutical company follows and apply a systematic approach to their project management based on the PRINCE2 methodology. Besides, key processes that needs to be embedded are identified along with recommendations to achieve the next maturity level in the pharmaceutical company. Data was gathered from 56 respondents working and managing projects using a set of questionnaire and a descriptive analysis was carried out to achieve the first and second research objectives. Four semi-structured interviews were conducted with the main stakeholders of a project who possessed up to 20 years of working experience in project management in the pharmaceutical company. The purpose of the interview was to achieve the third research objective, which is to gather recommendations on how to achieve the next level of maturity and improvement of the key processes that need to be adapted. The study has revealed that most of the respondents agree that the project managers have adopted the seven process perspectives of P2MM when managing pharmaceutical projects. Project managers in the pharmaceutical company apply the seven process perspectives of P2MM when managing projects by the mean score ranging from 3.63 to 4.02. The overall maturity level of the pharmaceutical company was analysed to be at Level 3. Recommendations were proposed in the study for the improvement of maturity level – from Level 3 to Level 4&5 and adaptation of the processes that need to be strengthened.

ABSTRAK

Model kematangan pengurusan projek dianggap sebagai alat yang berguna untuk menilai kemampuan pengurusan projek semasa organisasi. Model Kematangan Pengurusan Projek menawarkan kerangka kerja untuk menilai kemampuan organisasi dengan menilai kematangan proses pengurusan projek. Model Kematangan Pengurusan Projek (PMMM) semakin popular kerana fleksibiliti dan kemampuannya untuk mengawal masa dan kos dengan paling berkesan. Penyelidikan menunjukkan bahawa organisasi dengan tahap kematangan pengurusan projek (PM) yang lebih tinggi cenderung cekap dari segi keberkesanan dan produktiviti projek dan dengan itu mempunyai kelebihan daya saing di pasaran. Walau bagaimanapun, walaupun terdapat banyak model kematangan pengurusan projek (PM3) yang dibina dalam jangka masa lebih dari 20 tahun, pengetahuan tentang bagaimana PM3 dilaksanakan dalam organisasi jarang terdapat dalam literatur PM. Terdapat keprihatinan yang dikemukakan dari Pejabat Pengurusan Projek (PMO), mengenai pengurusan projek dan pemahaman serta penerapan metodologi Pengurusan Projek. Selain itu, tahap kematangan pengurusan projek perlu dikenal pasti dan juga untuk Pengurus Projek yang perlu memberikan justifikasi ke atas pembiayaan projek mereka dan memastikan kos pembiayaan tidak meningkat. Oleh itu, kajian ini adalah untuk mengenalpasti tahap kematangan amalan pengurusan projek di syarikat farmaseutikal dan untuk mengetahui sejauh mana cara syarikat farmaseutikal mengikuti dan menerapkan pendekatan sistematik untuk pengurusan projek mereka berdasarkan metodologi PRINCE2. Selain itu, proses utama yang perlu disertakan dikenal pasti bersama dengan cadangan untuk mencapai tahap kematangan seterusnya di syarikat farmasi. Data dikumpulkan dari 56 responden yang bekerja dan menguruskan projek menggunakan satu set soal selidik dan analisis deskriptif dilakukan untuk mencapai objektif kajian pertama dan kedua. Empat temubual separa berstruktur dilakukan dengan pihak berkepentingan utama sebuah projek yang memiliki pengalaman kerja hingga 20 tahun dalam pengurusan projek di syarikat farmasi. Tujuan temubual adalah untuk mencapai objektif kajian ketiga iaitu mengumpulkan cadangan bagaimana mencapai tahap kematangan seterusnya dan peningkatan proses utama yang perlu disesuaikan. Kajian telah menunjukkan bahawa sebahagian besar responden bersetuju bahawa pengurus projek telah menyesuaikan penerapan tujuh perspektif proses P2MM ketika menguruskan projek farmaseutikal. Pengurus projek di syarikat farmaseutikal menerapkan tujuh perspektif proses P2MM ketika menguruskan projek dengan skor min antara 3.63 hingga 4.02. Tahap kematangan keseluruhan syarikat farmaseutikal dianalisis berada pada Tahap 3. Saranan dicadangkan dalam kajian untuk peningkatan tahap kematangan - dari Tahap 3 hingga Tahap 4 & 5 dan penyesuaian proses yang perlu ditambahbaik.

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LIST OF ABBREVIATIONS

PRINCE2	-	Projects IN Controlled Environments
P2MM	-	PRINCE2 Maturity Model
PMI	-	Project Management Institute
PMMM	-	Project Management Maturity Model
PMO	-	Project Management Office

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Project management is a systematic approach that can be extended to all sectors, irrespective of the product or service they are designed to deliver. Outside of its simple application across multiple sectors, project management has immense value when applied successfully to significantly boost the success of the product or service that are provided (Tognon, 3). Project management can be characterized as a general purpose management method that directs projects to a successful completion and to the satisfaction of project stakeholders, despite the common constraints, of known scope, quality standards, budgeted costs and timeline. C.Demir (2010) stated that the need for project management and the potential benefits of implementation of project management methodologies is well established and, in many fields, project management has now been both a core practice and a third aspect to corporate management processes that bring balance, unity and efficiency to multinational organizations.

The first task in project management is ensuring that projects are completed under specified conditions. The more challenging task is the optimization of delivery and alignment of inputs needed to achieve the desired outcomes. The project consists of a specified set of activities that use capital (money, resources, supplies, power, space, services, coordination, etc.) to achieve the desired outcomes. One claims that project management is an art, someone says it is a science. Project management is much more like an art than a science, and the implementation of project management is varying across industries, conditions and backgrounds (Sara, 2012).

In a pharmaceutical industry, project management is a key component in dealing with such a dynamic framework due to its distinctive regulatory, enforcement and industry quality requirements. All the pharmaceutical companies are entering a new epoch where the long process of product development poses immense challenges along the road. Their best way to success relies on delivering a new product to the market in a safe, quick and affordable manner. Yet increasing competition, tighter regulatory standards and increasing R&D costs are generating even more hurdles for pharmaceutical companies and the need to restructure their strategy in an attempt to practice agility and minimize internal costs. Productivity in all facets of business is therefore necessary (Tognon, 3).

Currently there is a comprehensive professional literature providing guidelines and frameworks for best practice in project management. The Project IN Controlled Environment 2 (PRINCE2) developed by OGC (Office of Government Commerce) is one of the most important process-oriented project management methodologies (Zhang, 2010). Gokhale (2005) said that a project manager applies knowledge, skills, tools, and techniques to project activities to meet project requirements. A project manager's job is essentially one of integration. A project manager is responsible for the coordination and supervision of the project and its processes. They choose the team that will carry out the project and oversee its work to ensure that it is carried out correctly and on schedule. The project manager also ensure that the project is executed by following the plan and processes that guide the project, each with a set of relevant tasks to help direct, manage and execute the project. By the project management methodology being applied, pharmaceutical companies are able to achieve productivity, reduce costs and optimize timesaving. Project management can also contribute to process change and optimization and significantly contribute to the overall drug production through leadership and corporate governance (Tognon, 3).

1.2 Problem Statement

While project management has been proven to drive industrial progress by successful risk management in other sectors, it has only been applied to the pharmaceutical industry in the last decade, and is constantly evolving and faces its own challenges. Analysis of significant factors, such as responsibilities of project managers and stakeholders, organisation culture and core business processes, is important to help to define solutions to overcome these challenges (Pattanaik, 2014).

Gupta (2020) has stated few common challenges of Project Managers in managing a projects in a pharmaceutical company which are much related to the pharmaceutical company in this study such as, when a new domain are introduced where, similar initiatives have not been managed and stakeholders have no previous experience with the project. In addition, the implementation of new technology or complex technology could lead to a delay in the completion of the assignment, eventually a project. Besides that, moving the ranking of projects (uncertainty in project priorities) is also a common issue. Example, a project from No.1 (top priority) is ranked to No. 5 or vice-versa, the priorities are changed often and such dynamics are difficult to align resources and communications accordingly. Other than that, the lack of engagement of the project team where the project manager or the project team members do not provide the exact status of the projects or provide inaccurate information, such as timelines given by the stakeholders, is incorrect and unrealistic timelines because the necessary planning of the project or work is not carried out. A significant point to consider about planning is that the amount of time the team spends on project planning and the extent of detail achieved in the planning should be relevant to the needs of the project. Finally yet importantly, resource competence is essential where and where resources with the right experience, skills and expertise for the project are not available. Complete team dynamics are not available at times as well as the management of key activities with trainees (new sources with no previous experience) and therefore the managing of projects becomes challenging.

There are few main concerns raised from the Project Management Office (PMOs) in the pharmaceutical company, such as how well are projects being managed and how far is the understanding of the seven project management principles, themes and processes among the Project Managers? Besides that, what is the current project management maturity level in the pharmaceutical company? What are the upshots of the pharmaceutical company in implementing the project management processes and recommendations to improve their practices and maturity level in managing one or multiple projects? These concerns are raised and especially important to project managers who must justify in a rigorous manner the funding of their projects as the goal is to deliver the projects according to the business needs and deadlines with costings which are expected to stay flat. Therefore, this study is aimed to look into the application of the project management methodology and its project management maturity level to overcome these challenges in the pharmaceutical company.

1.3 Research Objectives

The followings are the objectives proposed for this study:

1) To determine the extent to which the seven project management principles, themes and processes based on PRINCE2 been adopted in the pharmaceutical company;
2) To determine and characterize the organization's relative project management maturity level based on the five-level maturity framework used in the Project Management Maturity Model (PMMM) as proposed by the Project Management Institute; and
3) To recognize the key practices that need to be improvised in order to enhance the process capability and to suggest ways of reaching the next stage of maturity in the pharmaceutical industry.

1.4 Research Goal

The study focuses on the application of the seven principles, themes and processes of the Prince 2 project management methodology, the current maturity level of project management and ways to improve the practices of the project management methodology and maturity level at a pharmaceutical company. A survey with a set of questionnaires as well as semi-structured interviews will be conducted in this study. The target respondents and interviewee selected for this study are experienced project managers and team members who manage multiple projects across various organizations within the pharmaceutical company.

1.5 Significance of study

The main aspects of project management are to ensure that the right benchmarks are set for what can be achieved, when and how much can be delivered. Without proper project management, cost estimation and project completion schedules can be developed which are unrealistic or inadequate in similar project estimation insights. At the end of the day, this indicates that works are delivered late and over budget without proper planning. Efficient project managers should be able to negotiate realistic and attainable timelines and goals through stakeholders, departments and management. A successful project manager sets out a transparent process, with reasonable deadlines, which allows everyone within the project team to work within a logical responsibility and not an unreasonable expectation (Aston, 2).

This study offers management feedback and awareness to the company as to where project management is within the organisation by defining areas in which project management methods can be strengthened and providing recommendation for enhanced project management maturity in the pharmaceutical company.

1.6 Definition of key terms

i. PRINCE2 - PRINCE2, an acronym for Projects IN Controlled Environments, is today one of the most commonly used project management methodologies in the world. This well-structured approach makes it easier to manage the whole working process. Originally developed by the UK Government for its information technology programs in 1989, it was launched as a methodology for non-governmental projects in 1996 (Simplilearn, 2019).

ii. Project Management Maturity - Project management maturity is the growing level of recognition and application of project management as a business model. All organisations have a PM level of maturity. Some organisations have a low maturity, which means that programs are not well established, adopted or completed. Organizations with high level of maturity means that they have an established project management process, see it as one of the main ways to achieve strategic goals, and projects are well organized, implemented and closed. Most of the organizations running projects would fall somewhere between the two extremes (A Project Management Professional (PMP)® Exam Prep Provider, n.d.).

iii. Project Management Maturity Model - The Project Management Maturity Model (PMMM) It is a formal method developed by PM Solutions and used to assess the maturity of the project management organization. When the initial level of maturity and areas for progress have been recognized, the PMMM sets out a roadmap, detailing the required actions to be implemented towards the progression of maturity in project management and improvement of results (PM Solutions, 2012).

iv. Prince2 Maturity Model – The aim of the PRINCE2 Maturity Model is to allow organizations to evaluate their maturity by means of an evaluation using the PRINCE2 project management system (PRINCE2 Maturity Model (P2MM) , 2006).

1.7 Organization of chapters

Chapter 1 introduces to the background of the study, followed by the problem statement, research objectives, research scope, significance of the study, and definition of key terms and the organization of the chapters in this study.

Chapter 2 discussed on the literature reviews done related to the study and the overview of the issue that was related to this study including e-books, journal publications, websites and web journals related to the PRINCE2 project management methodology and its related maturity level.

Chapter 3 discussed on the four phase of methodology which involves research design, data collection methods, questionnaire design, interview, data analysis method and subsequently summarized the research objectives for this study.

Chapter 4 discussed on the data analysis from the study. Reliability test was performed to determine the internal consistency of the questions. Statistical analysis was conducted for the first and second objectives and interview was conducted for the third objective.

Chapter 5 discussed the findings and recommendation to incorporate the Project Management Methodology into the organization and to improve the maturity level. Conclusions were drawn from the research and ideas for related future work were being suggested.

REFERENCES

A Project Management Professional (PMP)® Exam Prep Provider. (n.d.). *Project Management Maturity - Where Does Your Organization Fall?* Retrieved from Project Management Academy: https://projectmanagementacademy.net/articles/project-management-maturity/

Aston, B. (2, June 2020). *Why Is Project Management Important?* Retrieved from Digital Project Manager: https://thedigitalprojectmanager.com/why-is-project-management-important/#:~:text=Project%20management%20is%20important%20because%20it%20ensures%20proper%20expectations%20are,estimating%20insight%20from%20similar%20projects.

Axelos. (2019, November 29). *What is Prince2*. Retrieved from Axelos Global Best Practice: https://www.axelos.com/best-practice-solutions/prince2/what-is-prince2

Bentley, C. (2010). *PRINCE2: A practical handbook.* Amsterdam: Elsevier/Butterworth-Heinemann.

Bolderston, A. (2012). Conducting a Research Interview. *Journal of Medical Imaging and Radiation Sciences*, 66-76.

Borgatti, P. S. (2010). *HANDOUT Cronbach's Alpha*. Retrieved from International Center for Research: http://www.analytictech.com/ba762/handouts/alpha.htm

Buehring, S. (2020, April 20). *PRINCE2® vs the PMBOK® Guide: A comparison*. Retrieved from Knowledge Train: https://www.knowledgetrain.co.uk/project-management/pmi/prince2-and-pmbok-guide-comparison

Crawford, J. (2012, August 16). *What is project management maturity?* Retrieved from pmsolutions: https://www.pmsolutions.com/resources/view/what-is-project-management-maturity

George Ursachi, I. A. (2015). How reliable are measurement scales? External factors with indirect. *Procedia Economics and Finance 20,* 679 – 686.

HARTNEY, J. (2018, October 29). *The 7 Principles of PRINCE2*. Retrieved from Project Engineer: https://www.projectengineer.net/the-7-principles-of-prince2/

Law and Justice Foundation of New South Wales. (n.d.). *What is a Steering Committee.* Retrieved from Law and Justice Foundation of New South Wales: http://www.lawfoundation.net.au/ljf/site/templates/resources/$file/SteeringCommittee.pdf

Murray, A. (2017). *Managing successful projects with PRINCE2.* London (London) : TSO, 2017.

Pattanaik, A. (2014, May 5). Complexity of Project Management in the Pharmaceutical Industry. *PMI® Global Congress 2014—EMEA.* Dubai, United Arab Emirates. Newtown Square: PA: Project Management Institute. Retrieved from https://www.pmi.org/learning/library/project-management-complexity-pharmaceutical-industry-1487

PM Solutions. (2012, August 16). *What is the Project Management Maturity Model (PMMM)?* Retrieved from PM Solutions: https://www.pmsolutions.com/resources/view/what-is-the-project-management-maturity-model

PRINCE2 Benefits. (n.d.). Retrieved from whatisprince2: https://www.whatisprince2.net/prince2-certification/prince2-benefits#:~:text=Communication%20The%20use%20of%20PRINCE2,members%20accountable%20to%20one%20another.

PRINCE2 Maturity Model (P2MM) . (2006, March). Retrieved from www.ogc.gov.uk: https://www.annemiekedeveer.nl/wp-content/uploads/2011/01/PRINCE2_Maturity_Model_Version_1.pdf

Principles, Themes, and Processes of PRINCE2 - Explained! (n.d.). Retrieved from Invensis Global Learning Services: https://www.invensislearning.com/articles/prince2/principles-themes-and-processes-of-prince2-explained

Quad, A. (2016, March 7). *RESEARCH METHODOLOGY IN EDUCATION*. Retrieved from https://lled500.trubox.ca/2016/225

Questionnaires and Interviews. (n.d.). Retrieved from http://cbdd.wsu.edu/edev/nettom_tot/Resources/Other/TOM614/page62.htm

Radhakrishna, R. B. (2007). Tips for Developing and Testing Questionnaires/Instruments. *Journal of Extension*, Volume 45.

ROSEKE, B. (2018, October 30). *The 7 Themes of PRINCE2*. Retrieved from Project Engineer: https://www.projectengineer.net/the-7-themes-of-prince2/

Sara, T. (2012). Project Management in Pharmaceuticals . *International Journal of Pharmaceutical and Life Sciences*, Volume 1, Issue 1, Serial 4.

Simplilearn. (2019, Novemeber 20). *What Is PRINCE2 and Why Is It Important?* Retrieved from Simplilearn: https://www.simplilearn.com/what-is-prince2-and-why-is-it-important-article

Sincero, S. M. (2012, October 16). *Online Surveys*. Retrieved from Explorable: https://explorable.com/online-surveys

Siti Zaleha Abdul Rasid, W. K. (2014). Assessing Adoption of Project Management Knowledge Areas and Maturity Level: Case Study of a Public Agency in Malaysia. . *Journal of Management in Engineering*.

Tognon, A. (3, March 2019). *Project Management in pharmaceutical industry.* Retrieved from Apppm: http://wiki.doing-projects.org/index.php/Project_Management_in_pharmaceutical_industry

Turley, F. (n.d.). *Tailor to Suit the Project Environment*. Retrieved from Prince2 Wiki: https://prince2.wiki/principles/tailor-to-suit-the-project-environment/#:~:text=A%20PRINCE2%20project%20should%20be,%2C%20importance%2C%20capability%20and%20risk.&text=Ensure%20that%20the%20project's%20controls,%2C%20importance%2C%20capability%20and%20ris

Turley, F. (n.d.). *What is PRINCE2?* Retrieved from PRINCE2 wiki: https://prince2.wiki/extras/what-is-prince2/

Vaníčková, R. (2017). Application of PRINCE2 Project Management Methodology. *Studia commercialia Bratislavensia* , 227-238 .

What is PRINCE2? (2020). Retrieved from Invensis Global Learning Services: https://www.invensislearning.com/articles/prince2/what-is-prince2

Williams, G. (2010). *PRINCE2 Maturity Model (P2MM).* Retrieved from www.ogc.gov.uk: http://www.uml.org.cn/xmgl/2011331_pdf.pdf

Zhang, J. C. (2010, Aug). *PRINCE2 Based Project Management Maturity Model.* Retrieved from 2010 International Conference on Management and Service Science: https://ieeexplore.ieee.org/document/5578608