THE SUCCESS OF ENTERPRISE SYSTEM PROJECTS: FROM A KNOWLEDGE TRANSFER PERSPECTIVE

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Abstract:

We have certainly already arrived in a knowledge-based world economy, where knowledge transfer is a crucial factor in global business competition. In the era of knowledge-based management, the way we use knowledge determines the success or failure of business systems. This paper revises the project phases of enterprise systems (ES), which have been divided into three phases (pre-implementation, during implementation, and post-implementation), by expanding the relationship between the Knowledge Transfer (KT) and Project Management Process Groups (PMPG) in each phase to improve the success of ES by increasing the understanding of knowledge in each ES phase. The pre-implementation phase has two phases: Project Origination with (3) PMPG (Develop Project Proposal, Evaluate Project Proposals, and Select Projects), (8) tasks, (8) deliverables, and (3) roles. Project Initiation phase, with (3) PMPG (Initiate the Project, Approve the Project Charter, and Conduct Kick-off Meeting), (7) tasks, (7) deliverables, and (4) roles. In the implementation phase of the project ES there are two phases: Project Planning with (3) PMPG (Prepare the Project Planning, Perform the Planning Activities - Detail the Project Plan, and Confirm Approval to Proceed), (19) Tasks, (21) Deliverables, and (7) Roles. Project implementation and control with (3) PMPG (Launch Project, Management Project-Execution and control, and Gain Project Acceptance), (17) tasks, (17) deliverables, and

(7) roles. Additionally, in the post-implementation phase, there are a phase called project closure with (2) PMPG (Perform, Initiate Project Follow-up, and Administrative Closure), (5) tasks, (6) deliverables, and (5) roles.

Keywords:

It Project Success, Knowledge Sharing, Knowledge Transfer, Project Management, Enterprise System

Introduction

To successfully implement an Enterprise System (ES), different parties need a wide range of knowledge, and it is critical to transfer the right amount of knowledge at the right time between individuals (Jayawickrama 2014).

Knowledge sharing or knowledge transfer in the information and communication technology industry is more successful than in any other industry (Lee 2019).

Knowledge transfer refers to the sharing or dissemination of knowledge and contributions to problem solving (Argote and Ingram 2000).

Knowledge gives companies a competitive advantage and a strategic position in the marketplace over their rivals, as it becomes an important asset in today's businesses (Heeks 2002).

Digital transformation as successful ICT projects at different types of organizations, governmental and non-governmental, profit and non-profit organizations, achieve their intended objectives

However, based on many statistics published by organizations such as The Standish Group International's 2015 CHAOS report (The Standish Group International 2015) and the Project Management Institute (PMI 2013), trends do not show much improvement in these areas. As a result, each year there are a large number of ICT projects that are not completed on time and within budget. The authors of the report (The Standish Group International 2015) show that a staggering 31.1% of business projects are abandoned before they are ever completed. Further findings show that 19% of the projects will fail and 52.7% of enterprise projects will cost 189% of their original estimates.

The costs of ICT project failures and overruns are just the tip of the literal iceberg. The lost opportunity costs are incalculable but can very easily run into the trillions of dollars. according to the global International Data Corporation (IDC) ((IDC) 2018). Total ICT spending on ICT projects is expected to reach $5.1 trillion in 2019. Knowledge sharing refers to "the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies and procedures"(Wang and Noe 2010).

The idea is to identify and illuminate the relationship between Knowledge Transfer and the Project Management Process Group (PMPG) in Enterprise System (ES) implementation

projects. An important finding is that failure to share knowledge and learn from past mistakes is one of the main problems that hinder continuous improvement.

This paper is organized as follows: in section two, we explain some related works; in section three we explain the research methodology; in section four we demonstrate the knowledge transfer; in section five we explain the Roles and Responsibilities of Stakeholders; in section six we present the relationship between the KT and PMPG, and in the last section we cover the conclusion.

Literature Review

There are many reasons why projects fail; due to time delays, budget overruns, increased resource requirements. There are excellent opportunities, with the help of machine learning, to use current project management data to identify potential missteps in real time and correct them early by measuring KT success at each stage of the ES project.

Scholars (Lee 2019) investigate positive effects on knowledge exchange and use among ICT project participants. Apart from that, according to (Maier and Reimer n.d.)-new digital trends and tools introduce new opportunities for automatic collection, sharing and retention of lessons learned to remove a major obstacle to innovation in ICT projects that fail to learn from mistakes. Importantly, the researchers Taniguchi and Onosato (2018) found that the use of lessons learned was found to be effective based on the results of past project reviews.

Another study (Alawneh and Aouf 2017) asserts that in order to successfully achieve project objectives, it is necessary to make the best use of project team members' knowledge at all stages, but this is becoming a critical task in many information technology organizations due to the challenges of managing information systems projects.
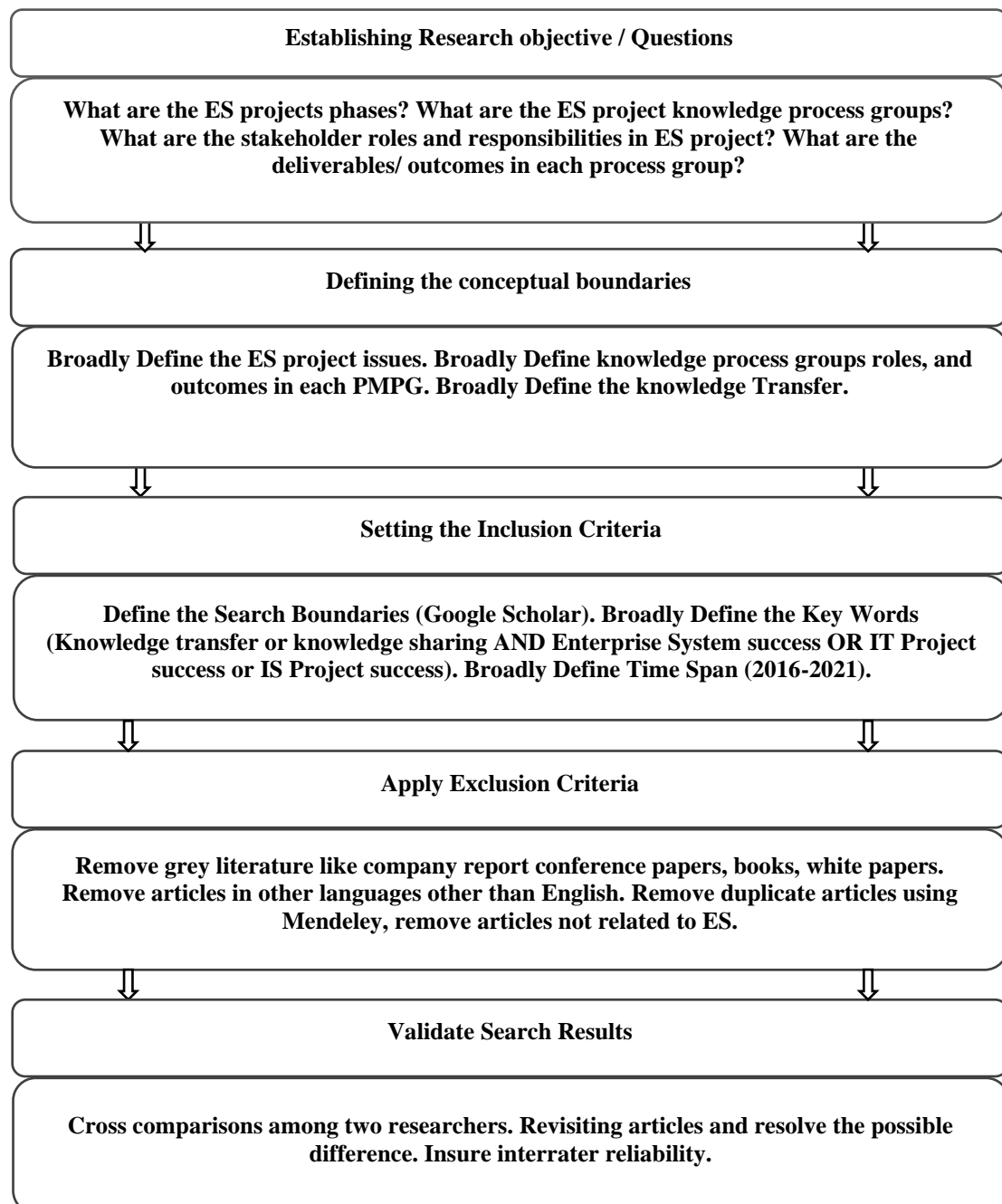
Additionally, researchers Ruchi and Srinath (2018) investigated the lack of integration of Machine Learning (ML)/ Deep Learning (DM) techniques with the existing project management framework. Researchers in (Auth, Jokisch, and Dürk, 2019) stated that Artificial Intelligence (AI) also creates new applications in Project Management PM, (Gomes, Oliveira, and Chaves 2018) and sharing cross-project knowledge could avoid rework, optimize time and reduce costs.

However, few efforts have been made to discuss KT in individual PMPGs. Therefore, this paper makes an important contribution to the research on KT in ES projects, which will be explored in the next phase of research by showing the success measurement of KT in each PMPG that can be used in future research using a predictive analysis model, to avoid problems before they arise by predicting whether KT has been achieved at each stage (before, during and after implementation) of the ES projects and at what level, as knowledge transfer and failure to learn from mistakes are some of the main reasons for the failure of ES projects.

Methodology

To achieve the goal proposed in this paper, we will perform the work in phases, as shown in Figure 1. In the first phase we start with the research objective and research questions, and in the second phase we define the boundaries for conducting the literature review. In the third

phase we identify the inclusion criteria by specifying the keywords for the online database and the setup period, and in the last phase we apply exclusion criteria to remove articles that are not in English, to remove duplicate articles that do not relate to enterprise system projects, and to remove grey literature such as books, white papers and company reports. In the last phase, we validate the result by comparing two researchers, examining the articles, and clarifying the possible differences. And we also ensure the interrater reliability.

Establishing Research objective / Questions

What are the ES projects phases? What are the ES project knowledge process groups? What are the stakeholder roles and responsibilities in ES project? What are the deliverables/ outcomes in each process group?

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Defining the conceptual boundaries

Broadly Define the ES project issues. Broadly Define knowledge process groups roles, and outcomes in each PMPG. Broadly Define the knowledge Transfer.

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Setting the Inclusion Criteria

Define the Search Boundaries (Google Scholar). Broadly Define the Key Words (Knowledge transfer or knowledge sharing AND Enterprise System success OR IT Project success or IS Project success). Broadly Define Time Span (2016-2021).

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Apply Exclusion Criteria

Remove grey literature like company report conference papers, books, white papers. Remove articles in other languages other than English. Remove duplicate articles using Mendeley, remove articles not related to ES.

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Validate Search Results

Cross comparisons among two researchers. Revisiting articles and resolve the possible difference. Insure interrater reliability.

Figure 1: Flow Diagram For Literature Review Process

Knowledge Transfer

There are many available definitions of knowledge transfer. In earlier times, some scholars identified knowledge exchange with knowledge transfer, e.g. Huber 1991(Huber 1991). More recently, much of the literature on knowledge transfer has typically adopted a generic "source and recipient" model.

Authors in (Ko, Kirsch, and King, 2005) define knowledge transfer as a unidirectional flow of knowledge from a source to a destination.

A study carried out by Jayawickrama (2014) argues that the implementation of an Enterprise System (ES) requires knowledge from different parties and it is imperative that everyone involved in the implementation passes on the right amount of knowledge to the other members.

Scholars define the life cycle of knowledge management as consisting of four phases, (Alvis and Leidner 2001) which are creation, storage, transfer, and application. Additionally, Horwitch and Armacost (2002) identify knowledge management life cycle as creation, capture, transfer, and access. However, Gable (2005) defined it as creation, transfer, storage, and reuse. Moreover, Parry and Graves (2008) identify it as use, create, organize, and disseminate. Metaxiotis (2009) defines it as creation, organization, sharing, and use, Sedera and Gable (2010) as creation, transfer, retention, and use, Candra (2014), creation, retention, transmission, and application, and Jayawickrama, Liu, and Smith (2016) as creation, transfer, retention, and application.

Due to the different objectives of knowledge transfer in the implementation of ES projects, only a differentiated operationalization of the term can suffice in this context. Since the literature identifies knowledge transfer and knowledge utilization as key aspects of knowledge transfer, this paper will address these two ideas by defining knowledge transfer as the transfer of knowledge from a source to a recipient who learns and utilizes it.

The Roles and Responsibilities of Stakeholders

Stakeholders are all the people who are affected in some way by the new product or service. Somers and Nelson (2004) identify the following project stakeholders: Top management, project champion, steering committee, implementation consultant, and project team, Amoako-Gyampah (2004) gives another list of project stakeholders: Top management, project manager, team leader, trainer, end user, consultant, and vendor. Themistocleous, Soja, and da Cunha (2011) identify provider project managers, provider consultants, developers, project sponsors/champions, steering committee members, auditors, key users, implementation team members, and corporate staff IT. Since the literature provides an ambiguous list of project stakeholders and some of the categories seem to overlap, the project stakeholders for this paper have been summarized in table 1 below.

Project Management Process Groups (PMPG) and Knowledge Transfer

The Project Management Institute (PMI) defines a project as "a time-limited endeavour undertaken to create a unique product or service". The common notion that a project is a series of tasks that must be completed to achieve a particular result, or a series of inputs and outputs required to achieve a particular goal, is correct too.

Knowledge transfer (KT) is a key process in transforming individual learning into organizational capabilities; it is an essential aspect of knowledge management (Dalkir 2005). Authors in Wang and Noe (2010) state that KTs can be created by documenting, analysing, organizing, and collecting knowledge for others through written or face-to-face interaction or networking with others.

Authors in Nesheim and Hunskaar (2015) define a project as "The core of project management is the management of a time-bound task with a defined beginning and end point". Knowledge sharing can improve the quality of work within a project and also between projects. Scholars in (Todorović et al. 2015) define projects as limited in time and scope.

Table 1: Stakeholders Roles and Responsibilities

No	Stakeholders	Roles and Responsibilities
1.	**Project Sponsor**	Demonstrated interest in the outcome of the project, is responsible for securing spending authority and resources for the project. Ideally, he must have full authority to make all decisions necessary to complete the project, including decisions to expand the project scope and budget. He initiates the project proposal process, represents the project to the implementing organization, he is the final decision maker for the project. He assists the project manager, approves key deliverables, and provides approvals to move to each phase of the project.
2.	**Project Steering Committee**	Group of the management team that provides guidance and support to the project manager. It depends on the size of the project, for larger projects there may be different levels of project steering committees.
3.	**Performing Organization Management (POM)**	Includes all members of the organization's management team who can influence project team members or are affected by and involved in the development and implementation of the project product. The committees formed to evaluate and select proposed projects for the implementing organization consist of Performing Organization Management members.
4.	**Project Proposal Team**	Is a group responsible for preparing the Project Proposal in the origination phase; the Project Sponsor organizes it.
5.	**Project Selection Committee**	The Project Selection Committee consists of members of the executive organization's management team who meet regularly to evaluate project proposals and select projects for initiation; they maintain project proposal evaluation models and project selection criteria.
6.	**Customer Decision Makers**	Are members of the POM, who are responsible for building consensus among their business unit on project issues and deliverables and communicating that consensus to the project team. They attend project meetings at the request of the project manager, review and approve process deliverables, and provide their expertise to the project team. On some projects, they may also serve as a customer representative.
7.	**Project Team**	The project team is the group responsible for planning and implementing the project. It consists of a project manager and a varying number of project team members who must perform their tasks according to the project plan.
8.	**Project Manager**	The project manager is the person responsible for ensuring that the project team completes the project. The project manager works with the team to develop the project plan and directs the team's execution of the project tasks. The project manager is also responsible for ensuring that deliverables are signed off and approved by the project sponsor and stakeholders.
9.	**Project Team Members**	Project team members are responsible for performing tasks and producing deliverables as described in the project plan and as directed by the project manager, depending on the level of effort or involvement defined for them. On larger projects, some project team members may serve as project team leaders.
10.	**Project Team Leaders**	Project Team Leaders, sometimes referred to as Business or Technical Team Leaders, have the same responsibilities as the team members, but also assist the Project Manager in leading and managing the various tasks of the team.
11.	**Customers**	Customers include the business units that have identified the need for the product or service to be developed as part of the project. Customers can be at all levels of an organization, from the CEO/president to the lowly employee. Since it is often not possible for all customers to be directly involved in the project, the following roles are defined.
12.	**Customer representatives.**	Customer representatives are members of the customer community who are identified as subject matter experts on the project (SMEs) and are made available to the project. Their role is to represent the needs of their business units to the project team and describe the product or service that the project will produce. Customer representatives are also expected to use and evaluate the product or service and provide feedback information about the project to the project team and the customer community.
13.	**Customer Decision-Makers**	Are the members of the customer community who have been designated to make project decisions on behalf of key business units that will use or be affected by the product or service that the project will deliver. They also serve as customer representatives on some projects.
14.	**Suppliers**	Suppliers are contracted to provide additional products or services needed for the project and may be members of Project Team.
15.	**Customers**	Customers include anyone who will use the product or service that the project is developing. Internal customers of the implementing organizations may also be customers.

The goal of the project organization must have S.M.A.R.T. objectives (specific, measurable, achievable, realistic, and timed).

The Project Management Institute describes the PMPGs in the (Includes: the standard for project management 2017) Project Management Body of Knowledge PMBOK, 2017 sixth edition . Each of the PMPG (Initiating, Planning, Executing, Monitoring and Controlling, Closing) contains several dossiers submitted by the PMBOK (2017).

In addition to the PMPG, the ICT project process group in this paper is divided into three phases based on the available literature: pre-implementation, during implementation, and post-implementation.

In the following sections, we will summarize and describe the knowledge areas within the "Before", "During", and " Post-Implementation " phases in each process group to identify the inputs, artifacts, and roles for each business process group.

Pre-Implementation Stage

This stage summarizes all knowledge processes from project orientation to initiation group (Malik and Khan 2020). Activities in the pre-implementation phase are Organization Readiness (Zhang et al. 2005); (Wu, Jun, School of Economics and Management 2007), Software Selection process (Umble, Haft, and Umble, 2003); (Wu, Jun, School of Economics and Management, 2007), Suitability of hardware H/W and software S/W, Organization IT skills, Clear goals and objectives, and organization culture (Wu, Jun, School of Economics and Management, 2007), Training (Umble, Haft, and Umble, 2003), Employee Attitude (Abdinnour-Helm, Lengnick-Hall, and Lengnick-Hall, 2003), Project Scope (Razi and Hossain, 2012), financial budget (Sun, Ni, and Lam, 2015), ,formation of team (Sun, Ni, and Lam, 2015), and vendor selection (Razi and Hossain, 2012); (Dey, Clegg, and Cheffi 2013). The pre-implementation phases shown in Figure 2 consist of six process groups grouped into two phases, project origination and project initiation, described as follows.

Project Origination

At this stage, to solve a particular obstacle or meet a need in the performing organization, a person may propose a project to produce a new product or provide a new service; the list of the PMPG, tasks, deliverables and roles are summarized in table 2; in addition, table 3 particularly describes each of the PMPG tasks at this stage.

Table 2: Project Origination PMPG, KT, Tasks, Outcomes, and Roles

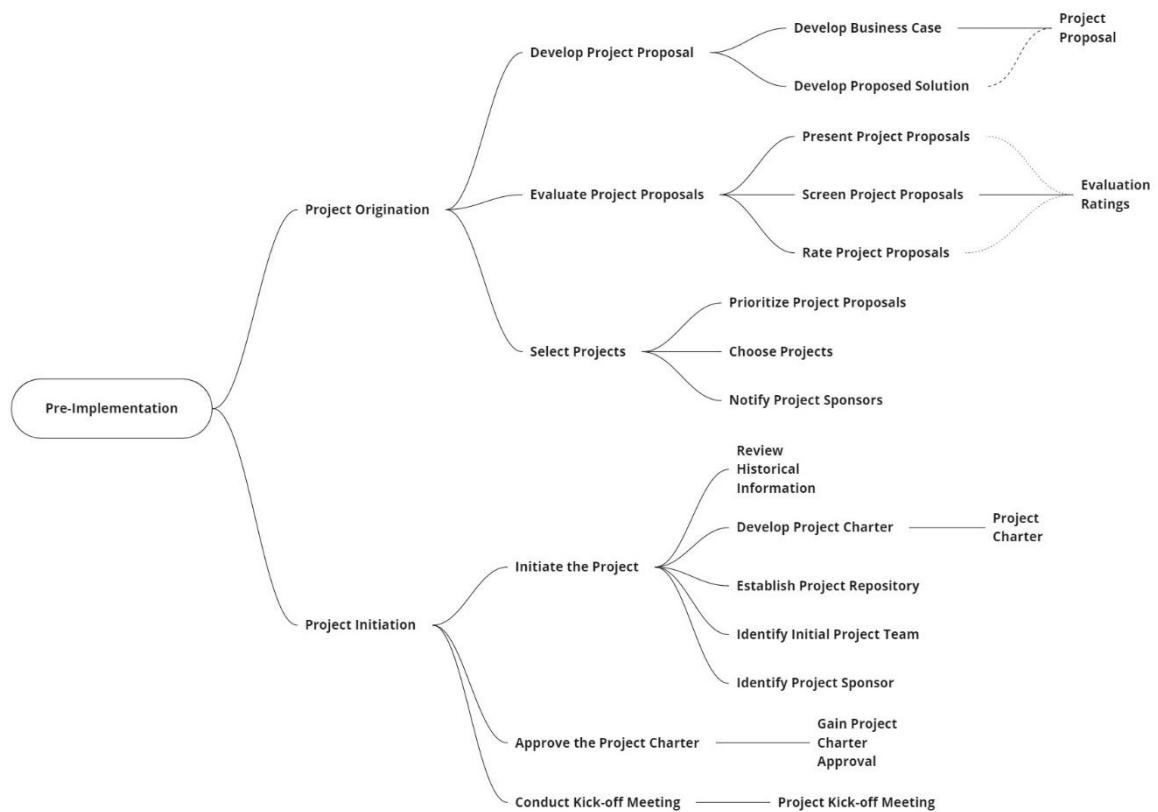| Stage	Pre-Implementation						
	Project Origination						
Process Group	Develop Project Proposal		Evaluate Project Proposals			Select Projects		
Tasks	Develop Business Case	Develop Proposed Solution	Present Project Proposals	Screen Project Proposals	Rate Project Proposals	Prioritize Project Proposals	Choose Projects	Notify Project Sponsors

Deliverables and Outcomes	Business Case	Proposed Solution	Project Proposal Understanding	Proposals Removed from Further Consideration	Evaluation Ratings	Prioritized Proposals	Selected Projects	Proposal Decision Notice
Roles	Project Sponsor/ Project Proposal Team		Project Sponsor /Project Selection Committee			Project Sponsor /Project Selection Committee		

Table 3 Project Origination PMPG Tasks Description

PMPG	Description
Project Origination	
Develop Project Proposal	The Develop Project Proposal process group consists of two main tasks where the initial business case is formulated and the proposed solution, including any selection criteria, is formalized. Project Sponsor and Project Proposal Team are the role of these tasks. The output in this phase is the project proposal.
I. Develop Business Case	The business case should contain all the information that is important for the decision to initiate the project. It includes a cost estimate for the solution and highlights the benefits to justify whether the project is consistent with the company's mission.
II. Development of a Proposed Solution	Proposed Solution is a summary of the business requirements from the business case. However, it also includes a description of the best solution to meet the business requirements, with a comparison of alternative solutions and a justification for the selected solution; it also includes the time basis and cost estimate for the proposed solution, derived from expert judgment or from the availability of historical data on similar projects or from responses to requests for information (RFIs). In addition, an independent third party must review the proposed solution. Project Sponsor, and Project Proposal Team are the roles for this step.
Evaluate Project Proposals	Many proposals for various new initiatives are usually presented to the senior management of the organization; however, selecting the right project that supports the strategic goals and mission statement of the organization becomes a critical activity, the roles in this phase lie with the project sponsor and the project selection committee, the tasks in this phase include the following.
i. Present Project Proposals	The goal is to allow decision makers to interact with those who best understand the business case for the initiative and the proposed solution.
ii. Screening project proposals	The next phase is not only about evaluating, prioritizing, and selecting the presented project, but also about screening competing proposals by asking some important questions such as: i. Is the proposed solution in line with the organization's strategic roadmap and technical landscape? ii. Does this initiative support the organization's mission?
iii. Rate the project proposals	Usually conducted by the project selection committee. It is an integral part of the organization's strategic/tactical planning and budgeting process. The process is usually formal, and proposals are typically evaluated against a set of specific business criteria. The process may include an extensive technical review to determine if the proposal meets the organization's current standards and technical architectures. Funding associated with a project is also an important part of the evaluation process. A Performing Organization may have its own rules for proposal funding. At the time of project preparation, the Project Sponsor must indicate whether funding is expected from the Performing Organization's current/future operating budget or whether additional funding sources are available. The level of approvals required may vary depending on whether the project exceeds or falls below defined thresholds. Thresholds may be based on cost, involvement of more than one functional area, project needs within or outside of standards and procedures, or other areas specific to the Performing Organization. The evaluation process generally assigns a score to each project to assist in the selection process.
Select Projects	The Project Selection Committee will inform the Project Sponsor of the decision based on the best evaluated proposals, ability to keep pace with organizational changes, and consideration of agency budget and resources.
I. Prioritize Project Proposals	Based on the quantitative scores generated during the evaluation process, prioritization is simply a matter of sorting scores from highest to lowest. However, it is worth revisiting the generic evaluation criteria to determine if additional metrics are needed.
II. Choose Projects	Most project selection decisions are made by an organization's board of directors. Even though the commissioner or other agency heads (chair, director, etc.) make the final decision, an organization's board reviews the approach and makes recommendations.
III. Notify Project Sponsors	Once a decision has been made, it must be documented and the reasons for it must be explained to Project Sponsors and others involved. There are three possible outcomes: To proceed with the project, cannot move on the project without some additional information, or a decision is made to decline the proposal.

Project Initiation

Stakeholders, project sponsor, and performing organization review historical information, strategic plan, project proposal, project selection criteria, and benefits to update project charter and adoption protocol, and identify the project sponsor and initial project team. Table 4 shows a summary of the stage PMPG, tasks, roles, and deliverables. At this stage, approval is sought from the project charter, but the kick-off meeting is organized by the project manager with the help of the project sponsor. The different tasks that are needed to be performed during this stage are shown in table 5.

Figure 2: Pre-Implementation PMPG & KT

Table 4 Project Initiation PMPG, Tasks, Outcomes & Roles

Stage	Pre-Implementation							
	Project Initiation							
Process Group	Initiate the Project					Approve the Project Charter		Conduct Kick-off Meeting
Tasks	Review Historical Information	Develop Project Charter	Establish Project Repository	Identify Initial Project Team	Identify Project Sponsor	Gain Project Charter	Approval	Project Kick-off Meeting

Deliverables and Outcomes	Information Reviewed	Project Charter	Project Repository	Project Team	Project Sponsor	Project Charter Approvals	Kick-off Meeting
Roles	Project Manager /Project Sponsor /Project Team Members					Project Manager /Project Sponsor/ Performing Organization	Project Manager /Project Sponsor/ Performing Organization/ Project Team Members

Table 5 Project Initiation PMPG Tasks Description

PMPG	Description
Project Initiation	
Initiate the Project	
I. Review Historical Information	The development of the Project Charter requires the review of documents compiled or submitted at Project Origination. Information and resources reviewed may involve the strategic plan, the project proposal, project selection criteria, information that relates to funding for the project, information from a previous project that was similar in size, scope, and objective, and project knowledge and experience of individuals in the project team.
II. Develop Project Charter	Project manager, project sponsor and the stakeholders work together to develop the project charter and adoption protocol based on the business documents and business case, organizational process capacity, benefits management plan, business environment factors, and letters of intent.
III. Establish Project Repository	The orderly management of information about the project eases the transition for new team members and creates a central reference point for those developing project definition documents. Most importantly, there is an audit trail documenting the history and development of the project. All relevant project-related materials, documents produced, decisions made, issues raised, and correspondence exchanged must be recorded for future reference and historical tracking. Project records may be kept in hard copy in a binder or notebook, or as electronic files and email folders, or both, A confidential project repository should be set up in a separate location to secure confidential information.
IV. Identify Initial Project Team	During project initiation, the proposal is reviewed to determine the roles required to staff the project. Names of the individuals needed to complete the project initiation tasks will be documented in the project charter. Although the extent of the involvement necessary for each team member may not be known at this time, the project manager should provide those who will be involved in project initiation with a brief project orientation, and review with individual team members, their current and future roles on the project.
V. Identify Project Sponsor	The project manager must work with the performing organization management to identify and formally appoint someone to that position. The project sponsor is the champion of the project within the organization, secures spending authority and resources, and provides support to the project manager; building a relationship between the project manager and the project sponsor is critical to project success.
Approve the Project Charter	
Gain Project Charter approval	Once the project charter has been developed, the project manager should schedule a meeting to review its contents, secure necessary resources, and gain formal approval. Approval of the project charter is a critical step in project initiation because now, the project sponsor may also decide to terminate the project. This "go/no-go" decision may be based upon factors outside the control of the project manager.
Conduct Kick-off Meeting	
Project Kick-off Meeting	The project charter is presented by the project manager and discussed in an open forum, At the conclusion of the meeting, the project team members will understand their «next steps» and be ready to begin work. An agenda and a presentation highlighting the contents of the project charter should be prepared by the project manager. The project manager must ensure that the project sponsor has provided his/her signature on the project charter.

During-Implementation Stage
This stage will start after hiring the project team members, starting with performing of the planning activities, defining the details of the project plan process group, and gaining approval signature from the project sponsor for the project plan.

Moving ahead is the project execution and control stage which consists of the launch project stage, up to the next stage, which includes the management project execution and control stage, which consists of the processes required to track, review, and regulate a project's progress and

performance, identify any areas in which changes are needed in the plan, and initiate the corresponding changes. This stage ends with the reception of the project acceptance signature from project sponsor. Figure 3 is mind map of the PMPG and the KT at this stage.

Project Planning

Project planning continues to build on the work accomplished during project initiation by the development of a project plan, list of PMPG, tasks, deliverables, and roles as presented in table 6. The tasks in this stage are described as follows.

Project Planning Preparation

At this stage, the project manager and the project team members will prepare the project plan shell document and conduct an orientation session for the new project team members, and kick-off project planning.

Perform Planning Activities Details Stage

Based on the project charter, enterprise environmental factors, and organizational process assets, the project manager, project sponsor, and project team members will develop the project management plan. Roles for this step will be the project manager and project team members.

At this stage they will define the project scope, schedule, budget, quality standards, human resources, risks, communication plan, procurement plan, and change control/problem plan for the project. The information in the project plan is developed step by step and the implementation of the planning activities and the development of the project plan is an ongoing process.

The list of inputs to perform the tasks at this stage are project charter, organizational process capacity, advantage management plan, corporate environmental factors, and memorandums of understanding.

The artifacts in this stage include the Scope Statement, Work Breakdown Structure (WBS), Deliverable Approval Process, Project Schedule, Budget Estimate Cost Management Plan, Quality Management Plan, Roles and Responsibilities Assignments, Staffing Management Plan, Organizational Change Management Plan, Communications Plan, Risk Management Log, Procurement Management Plan, Change Control and Issue Management Process, Project Implementation and Transition Plan, Time and Cost Baseline, and Accepted Project Plan.

Confirm Approval for Execution

Before finalizing the project plan and submitting it to the project sponsor for review and approval, the project manager reviews and refines the business case and ensures that all additional resources are in place.

Project Execution and Control

The roles in this phase consist of stakeholder, customer representative, project sponsor, project manager, customer, consumer, and project team member, list of PMPG, tasks, deliverables, and roles presented in table 7. The goal of project execution and control is to build the product or deliver the service for which the project has been contracted. Typically, project

implementation and control uses all the plans, timelines, processes, and templates that were prepared and provided for in the earlier phases.

Launch Project

The intended purpose of the project kick-off is to formally confirm the start of project implementation, control, and to facilitate the transition from project planning. Roles at this stage include the project manager, project sponsor, project team members, and stakeholders.

Management Project Execution and Control

The project manager must manage every single aspect of the project schedule to ensure that all work on the project is completed correctly and on time. This will include managing changes to the project scope and schedule, implementing quality assurance and quality control processes in accordance with quality standards, controlling and managing costs as defined in the project budget, and using the risk management plan.

Gain Project Acceptance

In which the project manager, the client's decision makers, and the project sponsor confirm that all deliverables created during project implementation and control have been completed, tested, accepted, and approved, and that the project's product or service has been successfully transferred to the implementing organization.

Table 6 Project Planning PMPG, Tasks, Outcomes & Roles

Stage	Process		Task	Deliverables and Outcomes	Role
During-Implementation	Project Planning	**Prepare for Project Planning**	Create the Project Plan Shell Document	Project Plan Shell Document	Project Manager Project Team Members
			Orient New Project Team Members	Team member buy-in and understanding of Role.	
			Review outputs of Project Origination and Initiation and the current Project Status	Team member buy-in and understanding of Project	
			Kick-off Project Planning	Kick off Meeting	
		Perform Planning Activities and Detail the Project Plan	Scope Planning	Scope Statement	Project Manager/ Project Sponsor/ Project Team Members/ Customer Representatives/ Stakeholders/ Performing Organization/ Customer Decision-Maker
			Scope Definition	Work Breakdown Structure (WBS)	
			Define Acceptance Management Process	Deliverable Approval Process	
			Schedule Development	Project Schedule	
			Budget Development	Budget Estimate Cost Management Plan	
			Quality Planning	Quality Management Plan	
			Human Resources Planning	Roles and Responsibilities Assignments Staffing Management Plan Organizational Change Management Plan	
			Communications Planning	Communications Plan	
			Risk Management Planning	Risk Management Log	
			Procurement Management Planning	Procurement Management Plan Change	

			Change Control and Issue Management Planning	Change Control and Issue Management Process	
			Develop Project Implementation and Transition Plan	Project Implementation and Transition Plan	
			Establish Time and Cost Baseline	Time and Cost Baseline	
		Confirm Approval to Proceed	Prepare Formal Acceptance Package	Acceptance Package	Project Manager/ Project Sponsor/ Performing Organization
			Gain Approval Signature from Project Sponsor	Accepted Project Plan	
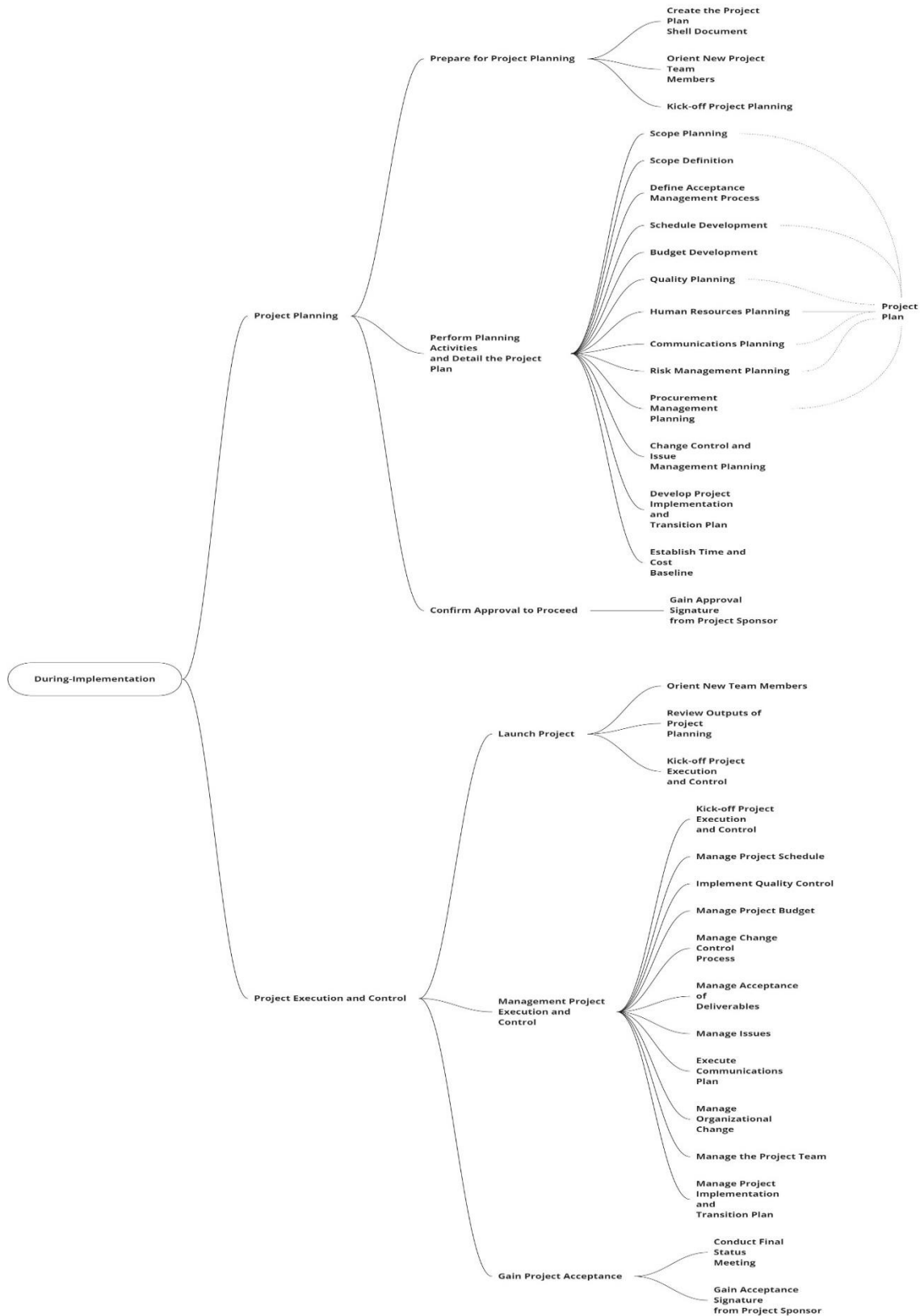
Figure 3: During- Implementation PMPG & KT

Table 7 Project Execution and Control PMPG, Tasks, Outcomes & Roles

Stage	Process		Task	Deliverables and Outcomes	Role
During-Implementation	Project Execution and Control	Launch Project	Orient New Team Members	Team Members Prepared to Work	Project Manager/ Project Sponsor/ Project Team Members/ Stakeholders
			Review Outputs of Project Planning	Project Planning Outputs Reviewed	
			Kick-off Project Execution and Control	Kick-off Meeting Agenda Kick-off Meeting Notes	
		Management Project Execution and Control	Manage Project Scope	Scope Under Control	Project Manager/ Project Sponsor/ Project Team Members/ Customer Representative
			Manage Project Schedule	Updated Project Schedule	
			Implement Quality Control	Quality Control Processes In Place	
			Manage Project Budget	Updated Budget	
			Monitor and Control Risks	Updated Risk Log Updated Issue Log CSSQ Managed	
			Manage Change Control Process	Updated CSSQ	
			Manage Acceptance of Deliverables	Project Deliverable Approval Forms	
			Manage Issues	Project Status Report	
			Execute Communications Plan	Project Status Report and Other Communication Tools	
			Manage Organizational Change	Organizational Change Processes Executed	
			Manage the Project Team	High Performing Team	
			Manage Project Implementation and Transition Plan	Product of the project	
		Gain Project Acceptance	Conduct Final Status Meeting	Final Project Status Report	Project Manager/ Project Sponsor/ Project Team Members/ Customer Representative/ Customer Decision-Maker
			Gain Acceptance Signature from Project Sponsor	Signed Project Acceptance Form	

Post-Implementation Stage

The process in this stage will start after the product or service goes live. The post-implementation stage activities are as presented in figure 4 below, which include user satisfaction, user education and training, perceived contribution to performance (Wu, Jun, School of Economics and Management, 2007), product or service utilization (Razi and Hossain, 2012), Continuous improvement (Umble, Haft, and Umble, 2003) and Celebration ERP success (Umble, Haft, and Umble, 2003). The purpose of project completion is to evaluate the project and identify lessons learned and best practices that can be applied to upcoming projects. The roles involved at this stage are project manager, project sponsor, project team member, customer, customer representative, consumer, internal stakeholders, external stakeholders, and performing organization management. Table 8 shows the PMPG, tasks, outcomes & roles at the post-implementation stage.

The outputs of the stage are Post-Implementation Survey, Project Assessment, Post-Implementation Report, Updated Skills Inventory, Performance Feedback, and Archived Project Repository.

Conduct Project Post-Implementation Review

Project closure begins with a post-implementation review. The review can begin with a survey intended to capture the feedback on the project from the consumers, customers, the project team, and other parties involved. Once the feedback has been collected and evaluated, an assessment meeting is held to derive best practices and formulate lessons learned that will serve as the basis for future efforts. Ideally, lessons learned and best practices need to be stored in a central repository so that the project managers can easily access and retrieve them on future projects.

Perform Administrative Closeout

Project closure ends with an administrative closure, providing feedback to project team members recording key project metrics, and storing all relevant project materials in the project repository.
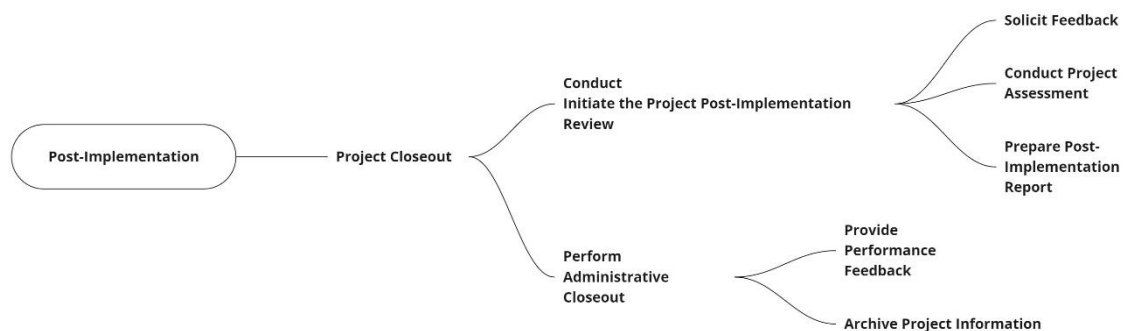
Figure 4: Post- Implementation PMPG & KT

Table 8 Project Closeout PMPG, Tasks, Outcomes & Roles

Stage	Process	Task	Deliverables and Outcomes	Roles
Post-Implementation	Project Closeout	**Conduct, Initiate Project Post implementation review** — Solicit Feedback	Post-Implementation Survey	Project Manager/ Project Sponsor/ Project Team Members/ Customers/ Consumers
		Conduct Project Assessment	Project Assessment Meeting	
		Prepare post implementation report	Post-Implementation Report	
		Administrative Closeout — Provide Performance feedback	Updated Skills Inventory Performance Feedback	Project Manager / Team Leaders
		Archive project Information	Archived Project Repository	

Conclusion

In this paper, an overview about the relationship between the KT and the PMPG in enterprise system projects was introduced with the identification of ES phases and respective process groups before, during and post implementation of ES projects, with the outcomes and results that affect the success of enterprise system projects. The input, output, and roles list in each PMPG was also presented.

In the future, we are planning to propose a conceptual framework that prevents problems before they occur by studying the success measurement of KT at each PMPG to predict whether KT was completed at each stage (before, during, and post implementation) of the ES projects phases.

In summary: From a business process perspective, ES project management according to specific standards such as PMI, PMBOK seems to make sense in order to better understand and evaluate the potential of new methods for process automation with ML / DL technology.

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