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FRAMEWORK TOOL TO GUIDE A COMPANY WHEN HAVING A SUPPLIER IN THE GAME

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ABSTRACT

Most enterprises face difficulties in completing Information Technology projects as initially planned when outsourcing involvement is needed. Each enterprise has its own project management methodology. The unawareness of different processes and activities causes issues during projects as deliver delays. To improve projects smoothness within PepsiCo, the focused company in this thesis, an integrative framework was developed and applied in Information Technologies projects that deal with outsourcing companies within PepsiCo. The result was a framework that helps projects involving third parties with a smoother execution. Framework advantages include project progress facilitation and visual lifecycle comparison representation.

Keywords: Software lifecycle methodologies; IT project management; IT outsourcing; framework

TABLE OF CONTENTS

ABSTRACT	1
INTRODUCTION	3
RELATED WORK	5
RESEARCH PROBLEM.....	7
PEPSICO	8
SOLUTION.....	10
FRAMEWORK	10
RECOMMENDATION.....	16
DEMONSTRATION	16
EVALUATION	19
CONCLUSION	23
BIBLIOGRAPHY	24
APPENDIX	26

TABLES

TABLE 1: PEPSICO WATERFALL LIFECYCLE METHODOLOGY	9
TABLE 2: PEPSICO AGILE LIFECYCLE METHODOLOGY.....	9
TABLE 3: PMBOK AS THE BASE TO CLASSIFY THE OTHERS.....	11
TABLE 4: FRAMEWORK	14
TABLE 4: FRAMEWORK (CONTINUATION).....	15
TABLE 5: PHASES CLASSIFICATIONS BASED ON PEPSICO’S TRADITIONAL APPROACH	17
TABLE 6: FRAMEWORK EVALUATION	20

INTRODUCTION

PepsiCo is a world leading food and beverage company with a 66 billion dollars revenue, offering more than 3000 products, and having 22 global brands available in more than 200 countries (Appendix 1 - PepsiCo's global brand portfolio) (PepsiCo, 2017). The company seeks for continuous improvement and projects in Information Technology (IT) are quite extensive. As an important notice, IT projects commonly involve third parties. For PepsiCo this is not an exception.

Before getting to this subject, it is important to establish concepts. To start, "a project is a temporary endeavor undertaken to create a unique product, service, or result" (PMBOK, 2017). To develop a project, a process is needed to be in place. Project Management, for instance, is an application of skills, tools, techniques and knowledge to projects to meet project requirements. Project management is accomplished using the following six process units: initiation, plan, execution, control and closure (PMBOK, 2017).

There is a lot to discuss about project management, but sticking to the important concepts to this paper, it is presented a software project life cycle concept, the name given to the phases a project goes through starting from initiation and ending on closure.

There is a continuum that allows classifying a project life cycle from predictive to adaptive. While predictive life cycles give emphasis to the requirements specification and key stakeholder milestones during initiation and planning phases, adaptive life cycles (or Agile methods) specify the requirements progressively during short cycles of iterative development, requiring high involvement with stakeholders (Project Management Institute, 2013). An example of predictive life cycle is the waterfall (or traditional) approach. Projects using this approach follow a defined sequential set of phases in a cascade, generating difficulty in adjusting requirements or design ideas

once already determined. Regarding adapting life cycle, the scrum approach would be an example. Scrum approach breaks down the project scope in feature sets (backlogs) and implements them in sprints, allowing reprioritization and modification of requirements during the project (Ahimbisibwe, Cavana, & Daellenbach, 2015). All these are important concepts that will be needed during this paper.

Projects in IT field of study are usually multidimensional and complex. Many things need to be taken into consideration including configuration management, quality assurance, testing, and integration with existing software (Project Management Institute, 2013). Moreover, when third parties are needed, the complexity of the project just raises, increasing the chances of having issues during the process.

The purpose of this thesis is to present a developed integrative framework and its application results. The framework contributes to the maintenance of a proactive approach for IT projects when third parties are involved with PepsiCo's projects by using the Design Research Methodology (DSRM). This methodology determines a specific activity sequence for problem-solving, allowing an evaluation of the framework developed. Although it was not possible to incorporate the framework in many projects, it was tested in one project within PepsiCo, which gives a practical analysis. As a co-project manager of the testing project the author was able to analyze the framework incorporation during all the project phases. The execution led to conclusions on how to improve the framework developed for other projects.

This paper is structured following the DSRM. It starts with a "Related Work" section, covering the literature review of published works that are relevant to the subject covered in this paper. "Research Problem" is the next section, where the problem is identified, and the research questions are exposed. In sequence, the "Solution" states a developed proposition to the problem. The next

section, “Demonstration”, presents the implementation of the proposal. Next, in “Evaluation” section, an assessment of the proposed solution is made by taking into consideration the solution and results of its application. To finalize, the “Conclusion” section covers the constraints and overall outcome of this research.

RELATED WORK

Although investments in software projects are limited and significant in many organizations nowadays, several software projects are not delivered on time or budget and lack of value deliverables to clients (KPGM, 2013). As per 2008, two-thirds of software projects did not meet their initial time and budget goals, and often neither its business objectives (Shenhar, 2008). Many studies propose different reasons for this high number of unsuccessful projects, but many propose the same argument that the failure comes from choosing the inappropriate project management approach (Murad & Cavana, 2012). Having a large variety of project management methodologies to choose from, makes it harder to choose the best option. It is also important to mention that it is agreed that there is no single methodology that fits all projects, since projects have different characteristics. These can define the extent a particular project management methodology could be appropriately applied (Shenhar, 2001). In sum, this brings the attention that project management lifecycle methodology’s choice helps in driving a successful project.

It is important to discuss outsourcing in IT projects. Outsourcing in IT and business services has been growing since 1990. It is estimated that 90 percent of corporations with 1000 plus employees use outsourcing (Babin & Quayle, 2016). Companies use outsourcing to focus on their own capabilities and use the competitive advantage of the chosen outsourcing corporations. The benefits of outsourcing are confirmed by many studies, as it helps in improving companies’ main core

competencies since the resources are able to be allocated to the activities that generate their core capabilities which are likely to become competitive advantages (Barragan, Cappellino, Dempsey, & Rothenberg, 2003).

Following the line that outsourcing brings advantage to companies, outsourcing IT projects should result in advantages as well. For IT projects, outsourcing many times does not sound as advantageous, at least during its execution. Although it is quite spread that outsourcing conveys advantage to companies, when it comes to IT projects, many project management methodologies fail in not taking into consideration the involvement of another company in its methodologies (Cullen, Seddon, Willcocks, & Seddon, 2006), causing the project to be unsuccessful.

Moreover, the fact that every company has its own particular methodology, with a particular set of principles and guidelines (Ahimbisibwe et al., 2015), makes it harder to just ignore the need to find a form to facilitate the understanding of the involved companies' methodologies in a certain project. Reflecting upon this, it is important for corporations to develop or improve their project management methodologies to somehow incorporate and integrate third parties' lifecycle in its own methodology to have a better understanding of what is expected from them and how the project will run.

Considering this, it was assessed the necessity to have a framework that helps the contracted company to understand the project owner company's methodology, as well as the integration of both methodologies.

RESEARCH PROBLEM

There are external factors that influence project environments. However, the factors from the parent organization's context are the ones which impact on the way a project can be managed to success (Howell, Windahl, & Seidel, 2010).

PepsiCo uses outsourcing to maintain its current competitive advantage of offering and promoting wanted products with expected quality to costumers. The company is able to have 23% of liquid refreshment beverage category in the USA by focusing in innovation and marketing, coupled with the products' quality and distribution network flexibility (PepsiCo, 2017).

In IT project field, projects involving third parties are commonly present. The difficulty in doing projects with other companies is the different lifecycle methodologies between PepsiCo and suppliers. Issues arise when dealing with different lifecycle process phases and coordinating activities for the project. The issues often seen are deliverables delays and budget increase because the suppliers are not aware about extra information and documents that should be delivered at what time to PepsiCo. At the moment, these issues have been addressed by project managers as the situations arises, more in a reactive and intuitive approach generating constant detrition for the project manager due to the workload and stress increase for project managers.

Therefore, the research problem is the application of different methodologies by different companies in the same project. The proposal is to solve the problem by introducing an integrative framework to facilitate the project management process when the company is doing IT projects that involves outsourcing. This framework aims to improve the project delivery by finishing it in time and budget as initially planned when involving outsourcing. PepsiCo's audit policies, agile

and other used processes were considered when developing the framework, as well as flexibility to fit with Suppliers' lifecycle methodologies.

The expected result is an integrated framework that facilitates the process and decreases issues when dealing with third parties in projects, improving efficiency and reducing detrition for project managers. Finally, having the development framework incorporated in the IT project management process.

PEPSICO

Regarding project management, PepsiCo has its own Project Management Methodology standardized for the whole company. It follows the PMI methodology having five phases: initiate, plan, execute, monitor, and close. PepsiCo has developed its own software lifecycle methodology, where there are two variations, one following the waterfall and the other one the agile approach. The waterfall approach has nine phases which includes the full process to deliver a system, from identification of business need to the solution implementation (see Table 1). In this case, the phases should be completed in the determined sequence without much overlapping.

The agile development approach is a hybrid framework to allow product development by filling the gaps between different methodologies as Scrum, Kanban and others. This framework is divided in four main stages as shown in Table 2. The conception stage is when the initial idea is assessed, business case defined, feasibility request confirmed, and the project aligned with PepsiCo strategies. In inception stage the team is established, an initial roadmap is developed, environment accessed, and requirements defined. Execution is composed by two stages that can be performed simultaneously, or in sequence, depending on release management requirements. The first stage, construction, includes design, build, and testing. Here the most appropriate agile methodology for

the team is chosen (being Scrum the most used). The second stage is transition, which covers the movement of finished products into use by the business or customer.

TABLE 1: PEPSICO WATERFALL LIFECYCLE METHODOLOGY

Project Feasibility & Approval	Project Preparation	Business Blueprint	Realization Design	Realization Construct	Realization Test	Final Preparation	Go-live and Support	Project Closure
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TABLE 2: PEPSICO AGILE LIFECYCLE METHODOLOGY

Conception	Inception	Execution	
		Construction	Transition

The methodology choice happens in the beginning of the project by the project manager. To help the choice, there is available a guideline table.

Projects vary regarding costs, benefits and risks. So, projects are classified by five different tiers depending on the IT Investment Threshold, Benefits, and Risk Rating. In tier one are projects with high investments, benefits and risk while in tier five are projects that require less investments, benefits and risk.

Stage gates are formally required reviews including the Steering Committee at the end of all or certain phases (depending in its tier classification) that authorize (or not) the project team to proceed to the next phase in the lifecycle.

PepsiCo has defined audit controls and uses global standard tools to track and manage projects, as a Project Portfolio Management online tool to keep track in a more global organizational level about the ongoing projects.

In the end of projects, it is stated in the PepsiCo’s guidelines that there are templates and a database where workers are able to check, and upload lessons learned as well as best practices.

SOLUTION

To improve the current situation of delaying and un-smooth process when dealing with suppliers taking a project management perspective, a framework was created. The framework is formed by three blocks, each block is explained separately and in the end a wrap-up is done joining all together (see full framework in Table 4).

FRAMEWORK

The first block refers to the mapping of PepsiCo and its supplier's lifecycle processes. It was created to help both in having a visual image and notion on how their project phases overlap.

Check Table 4 on page 14 where the first block is identified. First it is presented the PepsiCo's lifecycles (in blue), traditional and agile approaches. While the traditional approach constitutes nine phases, the agile contains only four. Comparing both approaches just within PepsiCo, it can be seen that the length of the phases differs quite significantly depending on the chosen lifecycle method by the project manager. In orange, it is included the supplier's lifecycle process phases, which is divided in six phases in this case. To create a more robust and reliable framework as well as to help in classifying other suppliers when needed, PMBOK lifecycle process phases (referring to Software development subject) for traditional and agile approaches were incorporated in purple as well.

It is important to mention that the first row (PepsiCo - traditional) was taken as the base to classify the others. It was realized during the framework development that the phases overlapping change depending which lifecycle process is taken as the base for the others. As it can be seen in Table 3, where PMBOK was taken as the base to classify the others, the overlap of phases changes. This can be used for other companies to compare its lifecycles with suppliers.

TABLE 3: PMBOK AS THE BASE TO CLASSIFY THE OTHERS

	traditional		Analyze	Architect	Design	Construct	Integrate	Test			
PMBOK	agile		Product Vision	Product feature set	Interaction feature set	Frequent internal interactions	Product increment	software			
PepsiCo	traditional	Project feasibility & Approval	Project preparation	Business blueprint	Realization Design	Realization Construct		Realization Test	Final Preparation	Go-live and Support	Project Closure
	agile		Conception		Inception	Execution - Construction				Execution - Transition	
SUP1	agile		Start Strong	Strong Team	Planning for Change	Education		Preparing for Testing	Preparing for Go Live		

Since this framework was designed to be used in PepsiCo, the overlapping classification has PepsiCo’s as its base. In order to make the overlap phases mapping, the concept of each phase of all three institution classifications were compared to each other having PepsiCo’s phases concepts as the items of comparison (see explanation of all phases of all institutions on Appendix 2). After doing the overlap phases mapping, it was added different colors to help identifying the different lifecycle phases. It is also possible to add other suppliers’ lifecycle processes to adapt the framework for future projects that deal with different suppliers.

Therefore, the aim of this first block (page 14) is to provide a visual tool to guide and maintain the project under control and decrease project manager’s detrition. In sum this first block helps both parties to be able to plan the project from their side, taking into consideration a graphical representation of the overlapping phases, and to consult when needed.

The second block is divided in two parts (blue 2A and yellow 2B), both of which contain documentation, deliverables, and required activities, respecting the base lifecycle process chosen (this case the PepsiCo – traditional). The classification aligns with the first row of the lifecycle processes, being divided by the nine traditional phases.

The block 2A (in blue) found on page 14 and 15 within Table 4, refers to PepsiCo’s side, in other words, which documents, deliverables and activities need to be in place by the end of every phase. Checking the documentation row set of this block 2A, there are all documents required by phases (checking vertically), and it is also indicated when each of them starts and need to be concluded (horizontally). The stronger blue colors indicate when to begin and conclude the documentation,

while the lighter blue indicates the document that needs to be updated. The deliverables row set refers to the actions to be taken in place not only for having the required documentation in place but also to make the project progress without forgetting important steps. The Activities row set refers to the regular documentation of the process per phase, usually delivered weekly.

All these three row sets provide detailed guidelines for the project manager in PepsiCo to keep in mind all the documents, deliverables and activities to be accomplished, broken down in phases. Having all this information in one sheet decreases the time spent to find all the information needed in different sources. Also, it gives a detailed common set of deliverables for projects that the project manager can extract and add in his or her plan/agenda which decreases the possibility to encounter missing activities along the project process.

On the block 2B found on page 15 within Table 4, in yellow, was developed to inform suppliers upfront about what is expected from them in each PepsiCo phase of the project. It was decided to break down into the same rows for PepsiCo and Supplier for reference and organization purposes. The documentation row informs suppliers about what is expected to be provided by them taking into consideration the Documentation section of PepsiCo. Deliverables row provides to suppliers what is expected from them taking into consideration the deliverables section of PepsiCo. There is no Activities row for Supplier because there are no expected actions required, only upon request.

This block 2B is especially important to improve communication with suppliers and let them be aware about the expected information to be delivered by them, so that they are able to plan accordingly. By creating a better planning, fewer issues are expected to happen related to time and budget perspectives of the project. Thus, this second block provides for PepsiCo a good consulting sheet to better prepare and organize for projects, which improves meeting deadlines. Also, for

suppliers it is a good source for planning preparation regarding time, effort spend documenting/providing information for paper work (budget related) when working with PepsiCo.

The third block refers to PepsiCo's audit controls and where in the timeline of the project these documents should be in place. This block was added to create milestones for audit controls, which brings emphasis of these documents' importance and its deadlines. Please look at Table 4 page 15.

The dashed red lines delimitate by when the PepsiCo audited documents (positioned by the left side of the dashed lines) should be completed. The first-row states which audit group it refers to, 40X, and the following rows, the documents that are also mentioned in the second block at PepsiCo's first part are listed. Then, this third block provides milestones focused in audit documents, helping PepsiCo's project managers to better plan the project schedule to guarantee that these documents are in place when they should be.

The three blocks form one framework (as can be seen in Table 4 on page 14 and 15) designed to provide visual comparison of project phases, communication improvement, and information sharing for PepsiCo and suppliers. This visual table helps both parties to plan more accurately the timelines and budget of a project. This framework is valid for all different project sizes. It is possible to filter and select which Tier classification is the project (as can be seen in the first column of Table 4), leaving only the documentation needed for that classified project.

TABLE 4: FRAMEWORK

BLOCK 1

Lifecycle processes

PepsiCo	Initiate		Plan			Execute			Monitor		Close
	traditional	Project feasibility & Approval	Project preparation	Business blueprint	Realization Design	Realization Construct	Realization Test	Final Preparation	Go-live and Support	Project Closure	
	agile	Conception	Inception			Execution - Construction			Execution - Transition		
SUP1	agile	Start Strong	Strong Team	Planning for Change	Education	Construct	Integrate	Preparing for Testing	Preparing for Go Live		
PMBOK	traditional		Analyze		Architect	Design	Construct	Integrate	Test		
	agile		Product Vision	Product feature set	Interaction feature set	Frequent internal interactions		Product increment	Demo working software		

BLOCK 2

From PepsiCo:

Tier	traditional phases ->	FA	PP	BB	RD	RC	RT	FP	GL&S	PC
T1,T2,T3,T4,T		PPM proposal								
T1,T2,T3,T4		CapEx	CapEx							
T1,T2,T3,T4		Test Assessment	Test Assessment	Test Assessment						
T1,T2,T3,T4,T		Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template	Service Transition Template
T1,T2,T3		Value Map		Value Map		Value Map		Value Map	Value Map	Value Map
T1,T2		Business Case Document	Business Case Document	Business Case Document						Business Case Document
T1,T2,T3,T4			Master test Strategy	Master test Strategy						
T1,T2,T3,T4,T			Business Control Certification Form	Business Control Certification Form						
T5			PLM light PP - RD (N/A)	PLM light PP - RD (N/A)	PLM light PP - RD (N/A)	PLM light RC - FP (N/A)	PLM light RC - FP (N/A)	PLM light RC - FP (N/A)	PLM light GL&S - PC (N/A)	PLM light GL&S - PC (N/A)
T1,T2,T3			Stakeholder analysis and communication plan matrix & chart	Stakeholder analysis and communication plan matrix & chart	Stakeholder analysis and communication plan matrix & chart	Stakeholder analysis and communication plan matrix & chart	Stakeholder analysis and communication plan matrix & chart			
T1,T2,T3,T4,T			Information Security Services Request (ISSR)	Information Security Services Request (ISSR)	Information Security Services Request (ISSR)	Information Security Services Request (ISSR)	Information Security Services Request (ISSR)	Information Security Services Request (ISSR)		
T1,T2,T3	Documentation		Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log	Project Lessons Learned Log
T1,T2,T3,T4			Project Charter							
T1,T2,T3			Solution Architecture Document							
T1,T2			Training Strategy Workbook							
T5				Test Plan	Test Plan	Test Plan				
T1,T2,T3,T4				Consolidated Test Plan	Consolidated Test Plan	Consolidated Test Plan				
T1,T2,T3,T4				Usage of HP ALM Testing Tool	Usage of HP ALM Testing Tool	Usage of HP ALM Testing Tool	Usage of HP ALM Testing Tool			
T1,T2,T3,T4				Requirements Specification						
T1,T2,T3,T4,T					Change Request	Change Request	Change Request	Change Request	Change Request	
T1,T2,T3,T4					Design Document					
T1,T2,T3,T4							Test Summary Report			
T1,T2,T3,T4								Customer Approval Doc		

Block 1

Block 2A

The result expected for implementing this framework for PepsiCo is to provide a more solid project process, improving assertiveness of deliverables deadlines, and keeping the initial budget for IT projects involving outsourcing. It is also expected secondary results (that are consequential) as a decrease in detrition and time spent by the PepsiCo's project manager in resolving issues raised by uncommunicated information needed from the supplier, minimizing stress by providing a detailed list of documents, deliverables and activities per project phase, and the ability to spot risks faster since a solid plan was able to be created.

RECOMMENDATION

A recommendation in how to apply the framework:

1. Assessment of supplier's lifecycle process to classify taking into consideration PepsiCo's lifecycle process being used as a base. (Needed to be done once the supplier company is confirmed);
2. Adding supplier's lifecycle process assessment to the first block;
3. Choosing and filtering the Tier the project fits in;
4. Do a meeting with the supplier to show him the yellow part of the second block, so the company can plan the budget and time needed accordingly;
5. During beginning of each phase bring this framework again to the table and share the activities expected by each party during that phase.

DEMONSTRATION

This framework was applied at PepsiCo in one project due to the restricted timeframe. The project was about replacing an older and outdated system related to Access Control at a manufacture in Belgium. The project had the involvement of one supplier, called in this paper SUP1. The duration

was 12 months, classified as Tier five (smallest size project possible), and the PepsiCo’s lifecycle methodology chosen to follow was waterfall for this project.

The application of this framework started in September, from the second phase - Project Preparation – onwards. The application followed the steps as proposed in the Solution section of this paper. Here it is explained how the application occurred and its results.

Step 1: SUP1’s lifecycle process was shared during the first phase of the project, so an assessment of the company’s phases was done and how it was compared to PepsiCo’s phases. The detailed description of each phase explanation that was taken as base to compare can be found in the Appendix 2.

Step 2: After doing the assessment, SUP1’s lifecycle was added to the framework’s first block. As PepsiCo chose to use a traditional approach lifecycle for this project, the classification has taken this approach as a base as it can be recognized by being in Bold within the framework. As it can be seen in Table 5, the phases differ, raising phases that will demand more attention by PepsiCo’s side, as ‘realization design’ and ‘final preparation’ to guarantee all the information needed from SUP1 by those phases are in place on time.

TABLE 5: PHASES CLASSIFICATIONS BASED ON PEPSICO’S TRADITIONAL APPROACH

Lifecycle processes		Initiate	Plan			Execute			Monitor	Close
PepsiCo	traditional	Project feasibility & Approval	Project preparation	Business blueprint	Realization Design	Realization Construct	Realization Test	Final Preparation	Go-live and Support	Project Closure
	agile	Conception	Inception			Execution - Construction			Execution - Transition	
SUP1	agile	Start Strong	Strong Team	Planning for Change	Education		Preparing for Testing	Preparing for Go Live		
PMBOK	traditional	Analyze			Architect	Design	Construct	Integrate	Test	
	agile	Product Vision	Product feature set	Interaction feature set	Frequent internal	Product increment	Demo working software			

Step 3: As mentioned, the filter selected is T5 (meaning Tier 5) since it is a small size project. After applying the filter, all the documentation needed by both PepsiCo and Supplier is determined and the second and third block of the framework could be followed.

Step 4: The budget confirmation happened before the framework was created, therefore, the meeting, which should have happened before the budget assessment could not happen. The meeting aimed to share the framework and the involved documentation needed from the supplier side so they could provide a more accurate budget. Once the framework was ready and this project chosen to be used, a meeting was organized to introduce the framework for the supplier. This happened in the beginning of the second phase: project preparation. During the meeting it was mentioned the framework's aim and that it could be used to help to better prepare or the project.

Step 5: A summary of how the project went is presented, pointing out some important topics on the way. To see a more detailed, phase per phase report, please see Appendix 4.

As already mentioned, the framework was introduced during the second phase of the project: project preparation. An assessment of the prior phase was done and only 60% of the all the documents, deliverables, and activities reports were completed. Once the framework was introduced, the project manager took the framework as a base and kept it as a guide to support the progress. A detailed planning (GANTT chart) of the project was developed having the framework as a base line - to create a more complete planning, guaranteeing that nothing as the basic project was forgotten – and including specific activities for this project (see Appendix 3). This is particularly important when coordinating a waterfall project, since project planning is an important aspect for a project success (Ahimbisibwe et al., 2015).

The project was implemented on time and on budget. The time was short, so everything had to be well-planned. A must was to ensure that all documents were covered on the right project phase and that all parties were aware about them. The created framework may be considered as an important tool to the success of the project. During the project, communication and expectations related to information involvement from the supplier side were smooth without having any friction between

PepsiCo and the supplier. Moreover, there were no delays in the documentation provided by the supplier side.

During the project; however, issues arose along the way. None of the issues encountered were related to missing or delays linked to supplier documentation delivery. This is important since these are the relevant issues to the framework application. Although not that relevant, some of the issues encountered are described in sequence. One of the first issues was associated to the supplier ability to access internal information, which caused some time constraint. Another one was correlated to data migration. It was unexpected that the data was not up to date in the older system; therefore, when this was discovered, resources had to be shifted to have the correct information completed on time. After the old system started to be switched for the new system, it was discovered that some incorrect information was provided from a department related to the data migration document, which caused some stress to resolve. In all means, all the issues were resolved.

EVALUATION

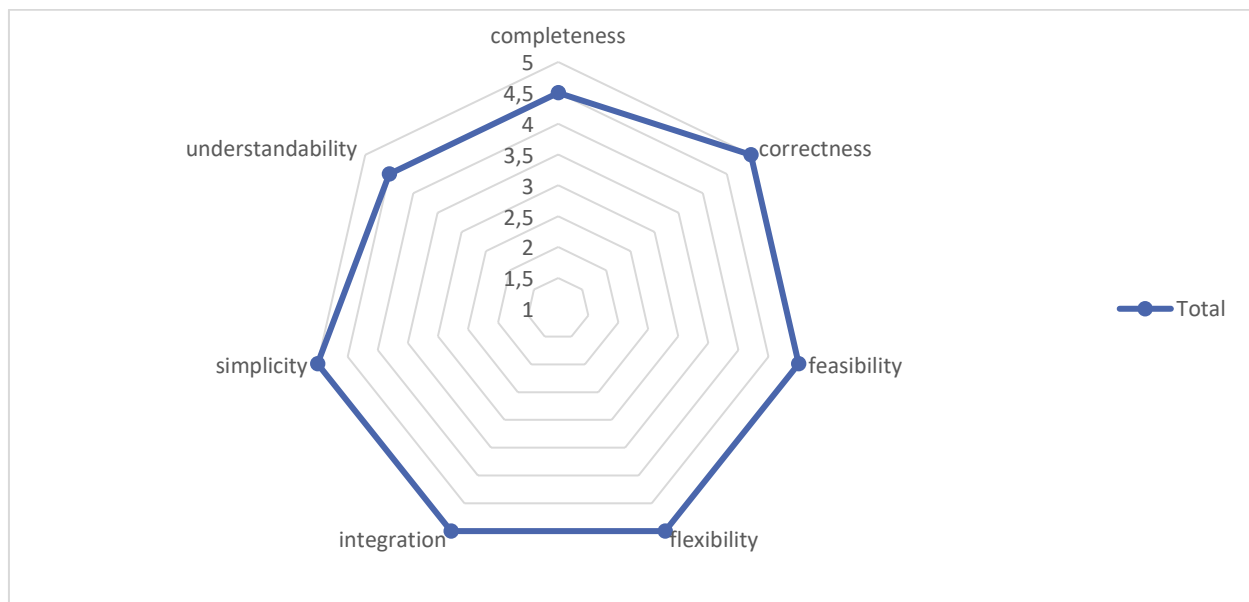
It is important to evaluate the framework proposed to have a more consistent piece of work. The evaluation was based on Moody & Shanks (2003) quality management framework. The theory is a combination of field and research methods as action research, laboratory experiments and system development. It should be applied following a process that contains four steps: planning, action, observing, and reflecting (Moody & Shanks, 2003).

When applying the framework, first it was developed an action plan. It determined how the framework developed in this paper would be incorporated into projects (as shown in the Proposal section) to reduce cases of delays and improve coordination smoothness in projects. The plan was put in practice by adding it to one project at PepsiCo. Then, the observation step came into action

and here the results of the implementation were collected (as shown in the Demonstration section) and assessed. The last step was to reflect on how effective this framework was, considering what worked and what did not work as planned to propose improvements in the developed framework.

Table 6 presents the observation step assessment, in which the framework was evaluated accordingly to the quality factors (correctness, completeness, flexibility, simplicity, integration, understandability, and feasibility) determined by Moody & Shanks (2003) after the framework implementation. The data was collected via a checklist to certify that the framework met the needs of PepsiCo and the supplier taking into consideration the quality factors. It was sent between the project go-live and project closure phase to the people who actually used the framework. It included two people: the project and delivery manager in PepsiCo and the supplier consultant. Each quality factor follows a scale from 1 to 5 (5=Excellent; 1=Poor) (9). In sequence, an interview followed the checklist to have a better understanding and interpretation of their evaluation. This evaluation was objectively made to validate the proposal fit to the problem resolution.

TABLE 6: FRAMEWORK EVALUATION



As it can be observed, from an internal point of view, the framework satisfies most of the quality factors. There are some improvements to be made related to completeness, and understandability. Completeness was perceived as almost complete by the PepsiCo's side. Through the interview, it was acknowledged that a document was missing in the PepsiCo's part of the framework's second block, 2A. Therefore, include this document in the framework is one of the first and easy improvements to be made for the upcoming projects. Regarding the understandability factor, the supplier classified it as 'most of it is understandable'. After the interview it was acknowledged that for the supplier the documentation terminology for the PepsiCo's second block was not clear. The terminology is not needed to be understood by the supplier, therefore an improvement in communicating which blocks the supplier should be focusing on while checking the framework is important.

All the other factors had the full score. Correctiveness and feasibility factors were considered as adequate with no further comments. Flexibility wise, the PepsiCo project and delivery manager mentioned that it would take extra hours to do the first two recommended steps in applying the framework, which is associated to the assessment of the supplier's project management methodology and compare to the PepsiCo's one. The extra working hours were not considered as something good. However, it was mentioned that having the methodologies mapped out would save time during the project period. This is the reason why it was given the maximum punctuation for this topic. For the supplier, flexibility referred to the use of the framework in other projects that contained the same contracting company, which is very straightforward.

During the interview it was stated that the framework integrated well taking the PepsiCo needs. For the supplier, it was suggested to make it more complete, to include the suppliers' side documentation involvement needed by PepsiCo. This is possible indeed; however, this

modification would mean a dependency in the supplier for the framework adaptation. Related to Simplification, which refers to the framework straightforwardness, it was considered as very simple by both parties. Both stated that the framework is simple, once it was understood. Moreover, it was clear that at first the framework seemed confusing due to the three blocks existence, but once it was explained to the supplier how to look at it, the answer was that the framework was indeed simple. This topic is associated with the understandability topic and an improvement would be necessary.

Taking the results of the questionnaire and together with the follow up interviews it was identified two improvements in the framework to be done if chosen to be used. First, to add the missing document in the PepsiCo's second block. Second, to add another sheet in the Excel file explaining the reason for the framework, and how to use it depending on the party origin (PepsiCo or Supplier). The additional explanation sheet will better support the framework and facilitate its comprehension. Moreover, the explanation sheet also facilitates the framework addition internally to PepsiCo's general lifecycle methodology documentation, making it clear on what it is used for and how to use it.

CONCLUSION

The developed framework showed it has the potential to improve the project delivery (on time and budgeted) as initially planned. The framework gives a good picture of the parties' lifecycle processes interaction as well as a review of what needs to be completed during the project taking as a base PepsiCo's matters. Having all this information in one sheet facilitates the project progress, which is likely to decrease the issues often faced in IT projects with outsourcing. These issues include deliverables delays and budget increase due to unawareness from the supplier's side of the extra information and documents that should be delivered to PepsiCo at a certain time. Then, the framework seems to be appropriate to help projects involving third parties to be smoother.

It is important to mention that this thesis faced a constraint, since the framework was fully applied in only one project due to time constraints and new projects availability. Through this application, it can be said that the framework generally seems to improve the project delivery with less issues. However, after its application and evaluation, some aspects should be corrected before implementing in the project management process. First, the topics to be covered should be complemented to include all the essential actions needed to be taken by PepsiCo as it was pointed out by the PepsiCo's representative. Second, it is important to include an explanation sheet of the framework clarifying the reason why to use it and how to 'read' it depending of which party you represent. Having this sheet would improve the comprehension of the framework and decrease the time spent on understanding it.

Therefore, improvements should be incorporated, and the framework should be applied repeatedly to evolve and provide an assistance to finalize the project as it was initially planned.

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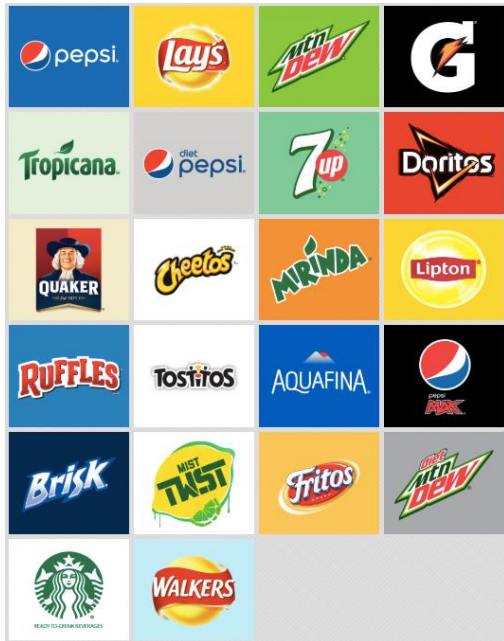
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APPENDIX

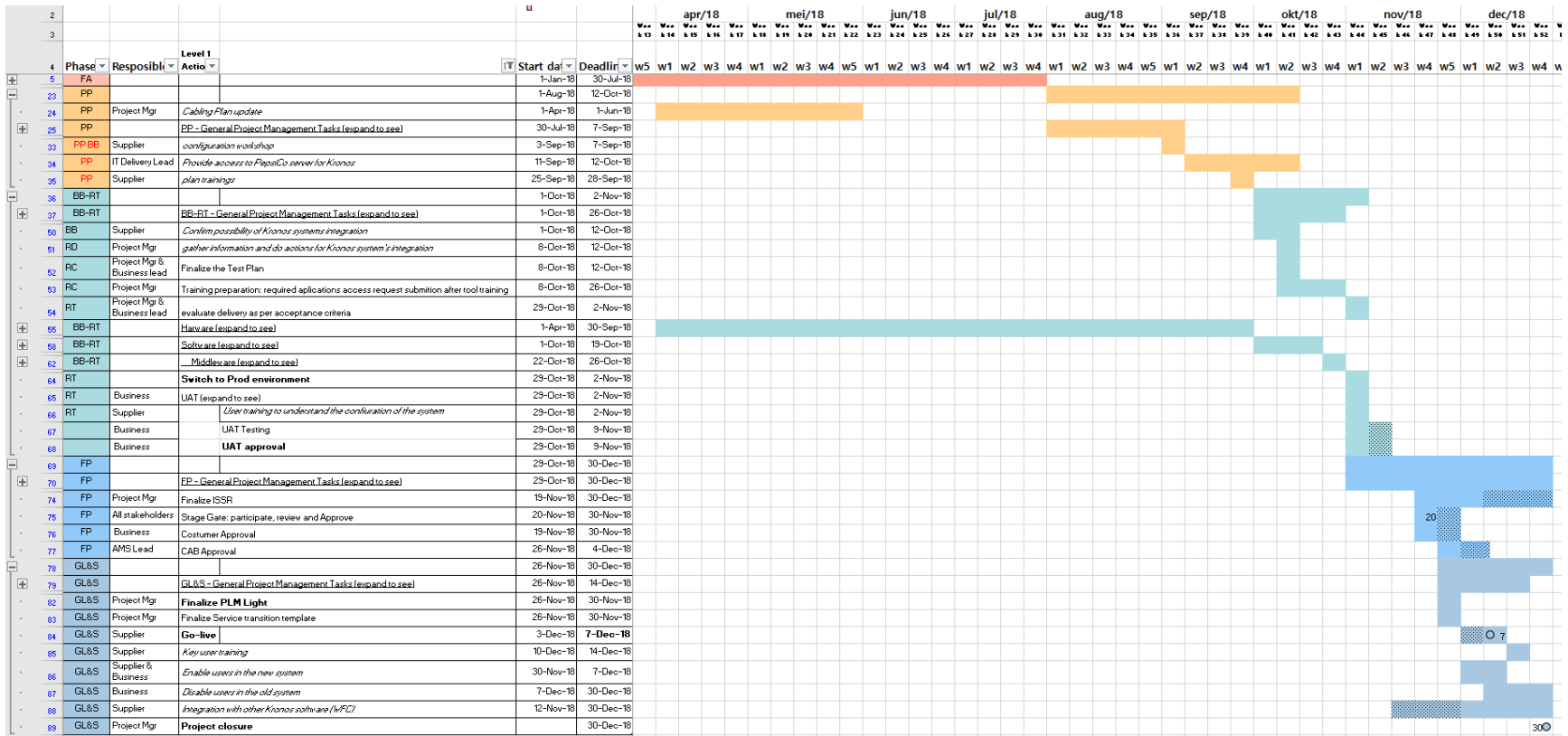
APPENDIX 1: GLOBAL BRANDS FROM PEPSICO (PEPSICO WEBSITE, 2018)



APPENDIX 2: DETAILED EXPLANATION OF EACH PHASE MEANING OF LIFECYCLE METHODOLOGIES FOR PEPSICO, SUP1, AND PMBOK

PepsiCo Waterfall Management Methodology	Project feasibility & Approval	Project preparation	Business blueprint	Realization Design	Realization Construct	Realization Test	Final Preparation	Go-live and Support	Project Closure
Meaning	Formal project Initiation	Agreed project scope and project plan created	Project requirements agreed and test strategy completed	Project architecture diagrams and technical designs completed	Complete build and unit test of design create test plans	Testing completed and build ready for go live	Cut over plan communication and change agreed	Go live and hand over to support	Formal closure of project
PepsiCo Agile Development Methodology	Conception	Inception	Execution				transition		
Meaning	Initial exploration of an idea after being approved during AOP	planning, team is gathers, a road map is developed and a product backlog is created	design, build and testing to implement the requested product				the moment of putting into use the new product by the business		
SUP1 Project Management	Start Strong	Strong Team	Planning for Change	Education			Preparing for Testing	Preparing for Go Live	
Meaning	Initiating the project by having executive sponsor, understand project goals	planning the team, timeline, responsibilities	communicate the change, train users, requirements	development phase with user interaction			testing	concluding documentation to go live	
PMBOK Predictive Lifecycle - Traditional Approach	Analyze		Architect	Design	Construct	Integrate	Test		
Meaning	software requirements analysis process		software architectural design process	software detailed design process	software construction process	software integration process	software qualification testing		
PMBOK Adaptive Lifecycle - Agile Approach	Product Vision	Product feature set	Interaction feature set	Frequent internal interactions		Product increment	Demo working software		
Meaning	Initial product planning	Features are divided in big blocks	Big blocks are break down in smaller blocks (that are able to be developed quickly)	Development of the smaller blocks happen based in daily meetings		Internally the developed small block is demonstrated and reviewed (usually daily or weekly)	Customer review of the small block developed (in cycle of 1 to 4 weeks)		

APPENDIX 3: GANTT CHART - DETAILED TIMELINE PLANNING



APPENDIX 4: PROJECT PHASE PER PHASE FRAMEWORK IMPLEMENTATION

It is presented a summary of how each phase occurred, including its accomplishments, risks, and issues.

Project feasibility & Approval: the framework could not be presented in this phase since I started in PepsiCo after the setting up for this project. Although the author was not present, it could be confirmed, as soon as the author joined PepsiCo, what was completed and what was not completed. As an overall rating, 60% was completed as expected. Evaluating this phase, it can be said that the results could have been improved if the framework was in place by them taking into consideration the other phases' completion rates.

Project preparation: The author joined PepsiCo in the beginning of this phase, so the information available could be checked, the framework finalized, and present it in the first meeting with the supplier. This gave the SUP1 consultant an idea om what to expect during the phase. By the end of the phase, 90% of the documentation was in place. In this phase a heavy amount of work is needed by the project manager to guarantee that all the information is in place. The project manager took the framework as a base and kept it as a guide to support the progress. Evaluating this phase, the guideline was very useful to guarantee many documents were put together in the moment of the project.

Moreover, in this phase, a detailed planning (GANTT chart) was put together and continuously updated to better visualize the progression of the project (see Appendix 3). There, all the key activities were listed in which had as a base the framework developed in this paper. It was incremented with specific activities for this project, as well as having key milestones all in a timeline. Having the framework as a base provided a form to create a more complete planning,

guaranteeing that nothing was forgotten. This is particularly important when coordinating a waterfall project, since project planning is an important aspect for a project success (Ahimbisibwe et al., 2015). The plan was well developed, leading the project to be implemented in the estimated time frame with few shifts in the deliveries but none that caused to be a showstopper.

Business blueprint: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, again 90% of the documentation was in place. Two documents were still not created by then, but it was not a major issue since they were supposed to be finalized towards later phases. Also, a deliverable could not be completed due to the need for further information.

Realization Design: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, 84% of the documentation was in place. The most important document needed to adapt the software configuration started to be created in this phase. However, to create this document, decisions had to be made and the time to have this document completed was underestimated. Therefore, the document was not finalized in this phase, it was only finalized at the end of the construct phase, shifting the schedule a bit but not affecting the final deadline.

Realization Construct: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, 100% of this phase documentation was in place. During this phase it was encountered some issues related to the supplier ability to access internal information, causing some time constraint. Due to security reasons, a bureaucratic procedure had to be followed and it took longer than it was estimated. The issue was resolved, but this tightened the projects' deadlines. Another point that took more time than expected was related to the data migration information from the other system to the new one. The information from the

old system was not up to date, which was not expected, increasing the workload for this part of the project, which was managed by reallocating resources to guarantee this was completed on time. Thinking through the project, there were two trainings, one held in this phase and another one held in the go-live and support phase. This first training was very important, but related to the outcome, it seemed that it would have been best if it was held in the beginning of the realization design phase. During the training, it was the first contact that the users had with the software, so it was the first time that they were able to understand how the information were interrelated, giving them a better understanding about the details of the design document. Therefore, it would have saved some discussion time and would have decreased the workload of reworking in the design document if the training happened right after the design document had been presented to be completed.

Realization Test: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, 100% of this phase documentation was in place. This was a short phase in the project, very intense but everything went as expected. Few defects were spotted but all easy to be fixed.

Final Preparation: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, 100% of this phase documentation was in place. This phase was short and intense, to be able to prepare things to go-live. The workload was extended due to the issue related to the data migration document and needed to have a technical cutover plan, a contingency plan if the implementation did not work as expected.

Go-live and Support: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, 100% of this phase documentation was in place. This phase went well, the software went live on time with the project planning. An issue emerged after a few doors switched from the old to the new system due to the incorrect information

provision from a department related to the data migration document, which caused some stressed to resolved. For this reason, the contingency plan that was put together in the project phase before, was put into practice, showing how important contingency plans are.

Project Closure: the framework was presented in the beginning of this phase and the supplier knew what to expect during the phase. By the end of it, the software was being used, with a few issues that could be resolved easily and fast with the support of the supplier. The project was closed with no outstanding topics, which is a great sign.

APPENDIX 5: CHECKLIST QUESTIONS

This survey is related to a framework developed for PepsiCo **aiming to improve the project delivery finishing in time and budget as initially planned** when involving outsourcing. This framework gives a **clear visualization** of PepsiCo lifecycle topics that should be covered during a project and the **supplier expected involvement** on them. This framework was developed satisfying PepsiCo's audit policies, agile and other used processes, and being flexible to fit with Suppliers' Project Lifecycle methodologies.

OK

1. Classify the framework from 1 to 5 regarding its COMPLETENESS (Does it provide all the documentation required?)

not complete at all



slightly complete



half complete



almost complete



very complete



2. Classify the framework from 1 to 5 regarding its CORRECTNESS (Does it provide the correct information?)

not correct at all



slightly correct



half correct



almost correct



fully correct



3. Classify the framework from 1 to 5 regarding its FEASIBILITY (How viable is to introduce the framework in the project process?)

not feasible at all	slightly feasible	moderate feasibility	quite feasible	completely feasible
☆	☆	☆	☆	☆

4. Classify the framework from 1 to 5 regarding its FLEXIBILITY (is it easy to adapt to use in other projects?)

not flexible at all	very limited flexibility	limited flexibility	flexible	very flexible
☆	☆	☆	☆	☆

5. Classify the framework from 1 to 5 regarding its INTEGRATION (Does it have an appropriate assimilation between PepsiCo and supplier? - refer more about the first block, related to lifecycles)

don't see any integration	slight integration	half integration in place	integration there but missing few points	fully integrated
☆	☆	☆	☆	☆

6. Classify the framework from 1 to 5 regarding its SIMPLICITY (How simple the framework is?)

not simple at all	not simple	half way	quite simple	very simple
☆	☆	☆	☆	☆

7. Classify the framework from 1 to 5 regarding its UNDERSTANDABILITY (The framework is comprehensive?)

don't understand it at all	sightly understand	understand 50%	understand most of it	clear understanding
☆	☆	☆	☆	☆

DONE