

How to Establish a Project Management Education Process in a Software Company: from Defining a Roadmap to Effective Implementation

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Abstract—Comtrade PMO (Project Management Office) established an expert group for PMO Education, having a vision about improving company efficiency by extending a set of PM's (Project Manager) skills, applying new processes and standards while embracing new learning habits of PM professionals. Education of project managers in the software industry should take into consideration not only market changes and demands but also employees' needs as well as internally recognized areas for improvements. It must be flexible to provide proper aligning with frequent market changes while affecting corporate efficiency in a measurable manner. Due to changed learners, habits, different content, and communication channels must be established to provide equally important self-paced learning and productive collaboration. This paper shows the whole process flow from initial roadmap to implementation, state of PMO Education, problem-solving framework as well as actionable KPIs (Key Performance Indicator), which unambiguously show significant achievements in the excellence of Comtrade PM Experts.

Keywords—PMO, learning, education, corporate education process, PM professional habits, self-pace learning, practical implementation, organizational efficiency.

I. INTRODUCTION

Many companies are struggling with the adequate education process for their employees. This challenge becomes even more significant in the era of digital transformation, where the role of training new employees and providing ongoing professional support to existing ones, becomes one of the most important [1,2]. When done poorly, it can result in unengaged, unwilling workers who stick sullenly to the familiar, inefficient ways of working and with old technologies, which evolves on a yearly base. Some researches indicate that most learning experiences occur more or less accidentally on the job and support for learning from these experiences is limited [3,4,5]. Therefore Comtrade PMO emphasizes the impact of in-house education while considering how to solve this challenge. There are hundreds of approaches and different

solutions to this challenge but what is missing is a framework with graphically designed representation that will cover all aspects, all stakeholders from the very beginning until the implementation [6,7,8]. Having well defined graphical roadmap with all phases, timelines, and responsibility matrix would significantly reduce a time for adopting and understanding newly introduced changes and outcomes. This research is intended to give a detailed overview of the framework established for scaling education process in Software Company, and applying proven practices at the enterprise level with determined scheduled outputs such are effective plans with timeline, percentage of completeness, list of goals as well as a methodology for goals achievement assessment [9,10].

A. Research questions

1. How to set up the PMO Education process flow from roadmap to implementation?
2. How to setup stakeholder relationships in PM Education and foster collaboration?
3. What are the main factors for assuring relevant Education Content for Project Managers?
4. How to identify actionable KPIs and tools for measuring progress in corporate PM Education?

II. METHODOLOGY

The research is intended to be applied research combining qualitative and quantitative approaches. The aim is to have an exploratory study for exploring the area of the educational process in Enterprise Company but without any attempt to offer final and conclusive answers to research questions [11,12,13]. Potential solutions on research question are obtained by following steps below:

1. To gather the state of education in the company, a quantitative research approach was applied. It includes setting up the survey, the summary of survey results and the drawing of inferences from the data. The survey also provided a sorted list of wanted educational content.

- Qualitative methods were used for recognizing most utilized communicational channels in purpose of sharing educational content. PM community was introduced with several communication channels (existing company portals, newsletter, skype, slack, mails, audio conferences, video conferences, live meetings). Those channels with highest utilization rate were selected to be included in PMO Education Roadmap.
- Generation of the graphical and collaborative roadmap that supports strategic alignment and dialogue between departments in Software Company and between stakeholders should provide transparent stakeholders relationship matrix.
- Assessment of process/framework's effects on corporate efficiency.
- Repeating the above steps enable a flexible framework approach to corporate knowledge growth deeply rooted in the needs of learners, with the main objective being to provide them with the most flexibility about the learning paths, schedules, collaboration and best practice exchange as possible. Our flexible framework has to provide measurable outcomes that guarantee proper aligning with frequent market changes causing emerged PM skills.

III. RESULTS

In 2016 Comtrade PMO set up an initial roadmap for the PM education process in the next 12 months [12,13]. The roadmap shown in Figure 1, covered the following 12 months but was planned to be applied in several iterations to assure process inspection and adaptation.

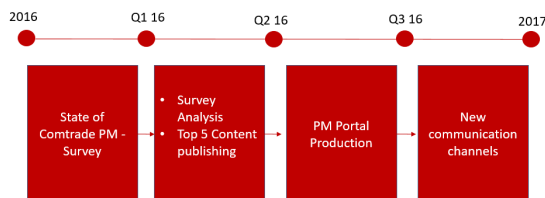


Figure 1. Comtrade PM Education roadmap

The first survey was set up in January 2016. Obtained data, shown in Figure 2, clearly presented that the existing educational approach did not meet expected results: responded did not use available resources.

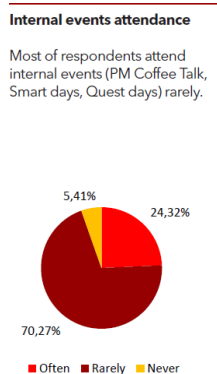


Figure 2. Utilization of existing communication channels

Survey also showed which of the existing communication tools used for education, respondents mostly utilized – Figure 3. Those channels with the lowest ranking were marked for a replacement and the opposite. The best-ranked communication channels were selected for publishing shorter forms of educational content aka bite-sized content; the channels with the highest utilization were selected as obligatory in the future roadmap.

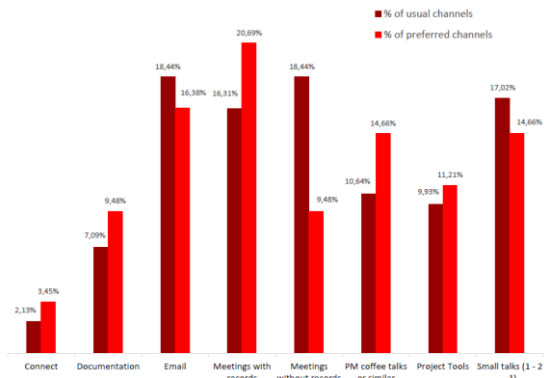


Figure 3. Attendance of internal educational events

Based on the answers related to actually spent hours of PM training shown in Figure 4 the complete educational process needed to be re-established. Instead of the “push” method for creating content, when content is created only based on market trends and external insights, survey respondents provided a list of relevant content based on their needs, business challenges and global trends as shown in

Figure 5 and Figure 6. This determined future “pull” method in the initial educational roadmap. The pull method is intended as a natural feedback approach. It provides feedback from survey attendees (or respond from any relevant communication channel) and at the same time, it quarantines better engagement rates since the PM community would get the exact content recognized as necessary.



Figure 4. Number of hours dedicated to PM training



Figure 5. Wanted content in PM area

Other sources respondents find useful in PM work:

- Experience from other PMs shared on formal events or meeting
- PM Coffee breaks
- PMO
- Google
- PMBOK®
- Previous projects documentation
- PMI sites and Agile methodology sites

Figure 6. Preferred PM sources

One of the most essential information was regarding the value of colleagues working in the same company who were dealing with the same or similar challenges on a daily basis. It appeared that in-house PM experience was top-ranked among other relevant sources. This feedback was considered as the most importation in the process of assuring relevant content and fostering a collaborative environment. Taking into consideration all the above data initial roadmap for establishing an educational process in Enterprise Company was transformed to be as shown. Since roadmap included not only schedule plans but also stakeholders and interconnections among gathered data, Comtrade PMO embraced this as an official framework for Project Management Education.

IV. DISCUSSION

Such an established framework provides a relational database containing data from all stakeholders in the process, all sources, and all channels in different moments, shown in Figure 7. A combination of that data provides plenty of metrics, list of KPIs that unambiguously shows whether a process is effective [14,15]. For that purpose, it is valuable to track content relevance thoroughly. Obtained data also gives enough information about PM contribution, engagement and skills. Therefore, it is easy to make conclusions on whether efficiency and PM skills are significantly improved.

Collected data contains indicators about the percentage of active users (PM community), percentage of content completeness, weak and persuasive skills and areas for every user (PM), sorted list of content providers etc.

Among all these details, it is meaningful to identify at least four (4) areas and track them in agreed intervals. For this research 4 categories are identified and following KPIs are distinguished in TABLE I:

TABLE I.
SAMPLE OF KPI PERFORMANCE MEASURES, RECOMMENDED FOR ENTERPRISE EDUCATION PROCESS

Area	Source/ Communication Channel	Framework Metrics	Tracking Interval
Content Relevance	Survey	% of Survey selection	Annual
Content Relevance	Newsletter	# Clicks and Open Rates	Monthly
Content Relevance	Portal	#Readers, #Reactions	Monthly
Content Relevance	Slack	#Reactions	Daily
PM contribution	Portal	#Posted Articles	Quarterly
PM contribution	Live Events	#Attendees, #Questions, #Follow Ups	Quarterly
PM contribution	Newsletter	#Written Articles	Annual
PM engagement	Portal	#Read Articles, #Completed Training	
PM engagement	Survey	Completed/Not Completed #Proposals for Open Questions	Annual
PM skills	Portal	Diversity of covered areas	Quarterly
PM skills	Live Events	#Attended Events	Quarterly
PM skills	Slack	#Initiated Topics	Quarterly

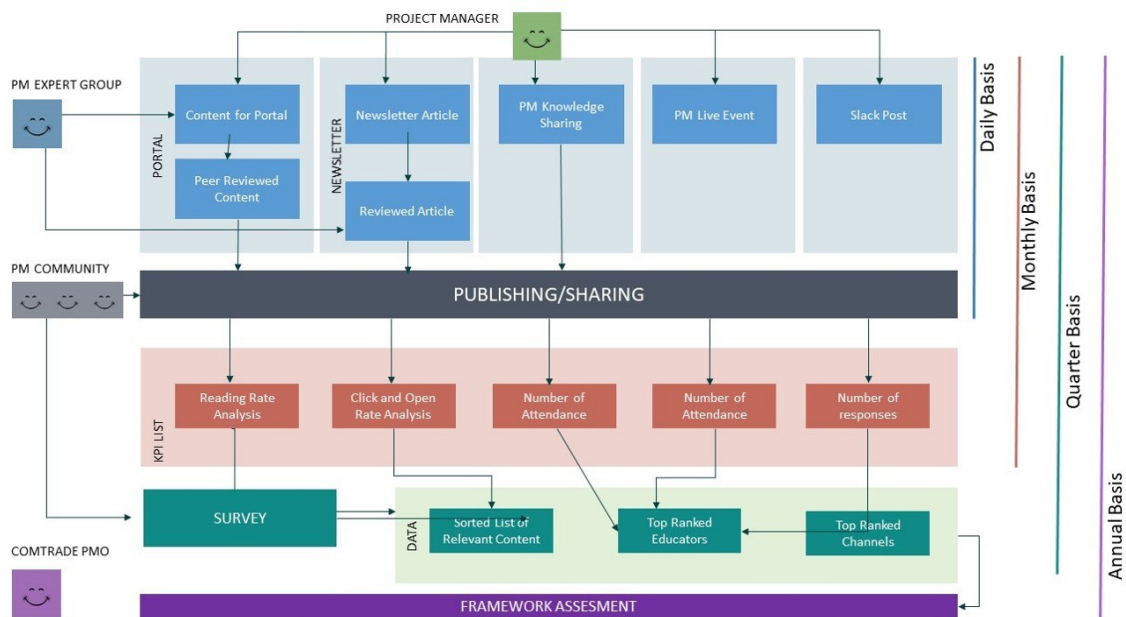


Figure 7. Graphical Representation of the established process – PM Educational Framework

V. CONCLUSION

The solution for establishing an effective educational process is a framework for scaling the educational process at the enterprise level [16]. The structure is intended to deliver value on a regular and predictable manner while providing clear transparency about roles, and outcomes in all phases. Relevancy of educational content is obtained and guaranteed by standardized procedures, while the additional inspection is regularly scheduled for the purpose of extending available content.

Comtrade PMO recognized the following challenges for PM Educational Framework establishment and implementation:

- To get the state of education in the company, the relevance and credibility of a quantitative research approach depend on the determined statistically significant sample size of respondents. The company could have difficulties encouraging employee participation and feedback and ensure relevant, statistically data set.
- All content provided through different PMO communication channels for education requires the engagement of a lot of employees or several dedicated to being administrated and updated on time.
- Hard to define the correlation between KPI performance measures for the education process and employee's project performance improvements.
- Difficult in finding the right balance between employees' enterprise education and engagement on commercial projects since it requests high self-motivation.

The solution requires the disciplined engagement of stakeholders and investing time for understanding the whole concept and intersections but it is rather easy to follow once when it is adopted. The crucial prerequisite for obtaining anticipated results relates to dependencies among identified ceremonies. Its graphical representation significantly simplifies initial understanding in the adoption phase and reduces ambiguousness for all later stages.

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