PROJECT MANAGEMENT CRITICAL SUCCESS FACTORS

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**INTRODUCTION**

The success of a project is not just measured by the fulfilling specifications, meeting deadlines and being cost efficient. It is much more complex to the explain success of a project when we consider the satisfaction of the customer. The requirements, cost and deadlines does not really matter if the final product does not live up to the expectations of all the parties involved in the project. Even though the project saves expenditure and meets the deadline it is still considered a failure when the final product performs poorly. There are very few successful projects when compared to failures in any industry and in all these cases there can be various of reasons for the failure of a project. One such reason can be the lack of guidance from leadership to the project team. Risk management is one of the major factors which results in lack of project management success. Likewise, insufficient funding will also cause the project to fail, here in this case a company is very reluctant to spend money on getting the right resources for the project which causes huge losses further down the line of project. The best way to overcome these difficulties is to plan the project in a manner so that we do not face issues at the time of delivery. This paper will analyze the *critical success factors* required to deliver the project without fail. The topics include *time, cost, quality, scope, stakeholders and communication*. A detailed explanation of each success factor and an analysis of their contribution to the success of a project will be presented. In addition, studies of failures and successes of projects in various industries based on these factors will be evaluated such that the same mistakes are not made in the future. Finally, we conclude with an understanding of why these factors are so critical to the success of a project.

**PROJECT MANAGEMENT CRITICAL SUCCESS FACTORS**

**TIME**

Time management plays a very important role in any kind of business model. The successful and efficient use of the times rewards not only the business but also all the people associated with it. This section deals with the challenges that are associated with Time management and ways to deal/deliver the project deliverables on time.

Time management is one of the very critical success factors for project management. The process of capturing the divided time to do the tasks, subtasks by the staff and overall time spent by the staff and controlling the spent time to finish off smoothly a task or a project is Time Management. Issues of poor management of time, Procurement choices and use of improper tools and techniques of time management are the major issues in Construction Management (Chin, 2015). With the essential methods and a proper time management system in place, you can ensure your projects run smoothly from start to finish. Construction Management is one of the biggest and fastest-growing industries in the world and time management has a significant impact on determining the success of the project. Delays in construction management are of the most common problem that the project managers face in doing the day-to-day tasks. Delays usually result to add on cost to the overall project and Time management and delay analysis have become a very important part of today's Construction Companies (Gladysz, 2015).

Sometimes it can be affirmative that effective time management will enhance the productivity, can assure complete success to both the employees and management of the organization. Time management methods vary from one organization to another, not every company has the same architecture levels of working or not every company has similar requirements, so it depends upon several factors that will be discussed in this paper.

Rapid marketing for new products has increased the importance of time in manufacturers to succeed in launching the product quicker. The approach mainly relies on how to invest in time, how to emphasize the effectiveness of the time being concentrated on the efficiency of it. Time-dependent factors of an organization should be kept constant but must be more productive depending upon the varying the situation (Jackson P., 2009). Good time management impacts more when the project management typically knows how one can establish great completion, more contentment, less recreation, less stress, and pressure. Numerous delays can essentially affect the completion time of the project and practicality will be significant in such activities. The reality of development venture delays and the issue of maintaining a strategic distance have been completely discussed below (Gladysz, 2015). Some of the things are:

1.Scheduling the Project Early:

The task plan is the development chief's manual managing what should occur, when it should occur, and to what extent it needs to occur for, and who is mindful to get it going. While numerous business development ventures can go on for weeks to months and even years, Construction Company administrators/managers need to intensely audit, track and deal with the calendar all the time. This can help them with day by day, week by week, and month to the monthly task list. (Gladysz,2015).

2.Re-Prioritization of the Tasks:

The schedule makes the undertaking list for development Project Mangers. Nonetheless, not everything on a task and at the place of work advances as expected. Regardless of whether it is a miscommunication thing conveyed to the place of dangers, or coordination with the subcontractors, numerous things require the consideration of the undertaking supervisor. In addition to the regular work like ordering of material, having a meeting with stakeholders Project or development managers has to handle daily issues mentioned above to ensure smooth completion of the daily tasks (Issa, 2013)

3.Sharing others Responsibilities:

Project Managers are workers, yet there is no requirement for Manager to completely deal with all the issues all alone. Project Managers are one in a group and the group is progressing in the direction of making a project successful. They should check their tasks whether there are any tasks/sub-tasks that can be designated to other workers of the team in times of need.

          Similar tasks/subtasks would then be able to be assigned for future issues and no guidelines should be given at that point as the assignee is already experienced enough to deal with it. This also serves as a career development opportunity for the other members (Carcano,2015)

4.Actionable Meetings:

Team Meetings are significant for teams to know the progress for each other and rapidly make effective decisions for the situations. However, if there is no clear agenda defined for the meeting then actually it leads to ineffective decision-making and wastage of time. The essential part of meetings is to have actionable items by the end of the meeting (Basar, 2019).

Have a meeting with Clear and precise agenda

– Have goal defined for the meeting.

– Have actionable items by the end of the discussion.

– End the meeting with activity things and due dates

5.Communicate Effectively:

Building Strong relationships between the workers and the stakeholders are one of the duties of a Project Manager .Key thing in building up those connections is solid relational management abilities. Project Managers with effective communication, it guarantees that the individual will finish the task effectively. In addition, Key part of effective communication is listening. Project Manager with poor listening attitude can miss crucial details that can adversely influence a task or Subtask. Posing questions and clarifying with individuals can completely clear any ambiguity and will guarantee that everybody is in agreement. Miscommunication on tasks is a significant issue, yet utilizing these methods can effectively reduce delays (Basar, 2019).

6.Usage of Right Tools:

Construction Management software plays a very important role in properly track the project information and also to reduce the overall time for searching any missing piece of documentation or the required information for a task to de done at that particular moment. It also helps all the team members to have good visibility to their respective tasks and the project manager or supervisor to track the progress of the tasks/subtasks. It gives them the ability to analyze and execute the tasks effectively without resulting in any delays. The tools and software also give us the ability to view tasks assigned, deadlines that are created, managed and tracked by the team and the supervisor.

These are the methods that one can follow to reduce the number of delays in the construction companies however there are several other factors that can have a serious impact on the project delivery on time but this discussion keeps the scope limited to the above points.

**COST**

The Costs process inspects and update costs while overseeing changes to the task cost benchmark. It clearly distinguishes deviation to the task arranged expenses and possible deviations to reduce the dangers or capitalize on prospects. This section deals with expenses for the project, tools and techniques to determine the continued viability of the project.

The quick change of progress in both innovation and the commercial center has made huge changes on existing structures. The structure is exceptionally bureaucratic, and experience has indicated that it can't react quickly enough to a changing domain. In this way, the structure must be replaced by project management, or other brief administration structures that are exceptionally natural and can react rapidly as circumstances create inside and outside the organization.

Beside the expansive extent of contemplating all development quality expenses rather than explicit parts, the work by Tawfek et al. additionally endures from its utilization of neural systems, which is a discovery technique, implying that a neural organize model is unequipped for giving pieces of information on the connections between factors influencing development quality expenses.

From when the extreme improvement was first introduced, quality pros, especially those in the compile industry, realize that an extension in quality will provides improved productivity due to the decline in redoes and unnecessary assignments, despite reducing the expenses (Gunasekaran et al., 1994). Given that the points of interest of significant worth improvements are extraordinary, the advancement business with everything considered has been late in the execution of significant worth projects. In their survey paper, Rozenes et al. (2006) have more than once discovered that collaboration among project administrators is a significant measurement.

 For instance, they refer to crafted by Jiang and Klein (2000) and Jiang et al. (2001) which draw out the key pretended by project administrators in the achievement of a task. Referring to crafted by Turner (2004), they notice that a "community oriented working relationship ought to be kept up between the leader and task supervisor". While perceiving the requirement for a comprehensive way to deal with project the executives which will incorporate the cooperative and co-employable practices of undertaking directors in project achievement, and that MPCS is the need of great importance, Rozenes' paper does exclude any references which address the human conduct parts of undertaking supervisors.

In his book, Lewis (2007) says that "at last, the best way to control a task is for each individual from the task group to be responsible for their own work". He has articulated the conditions under which project administrators can work in a shared way. While Lewis has stressed numerous elements that influence the project, and which were explained in the CRMP, he has not referenced about the subtleties of the contingency sharing technique that was advanced in the CRMP.  Olawale and Sun (2013) have built up a Project Control Management Model for the construction business. They report a study led by Iyer and Jha (2005) which demonstrated that the coordination among members was the key for activities' prosperity.

Project success is also dependent on detailed planning of the overall project which defines the scope of the project, objectives, resources required and budget. The project manager is responsible for making the trade-offs between budget, schedule, and scope that are needed for project success (Project Management in Practice, Meredith Pg No. 46). In order to be successful, the project manager should be effective and efficient in making the right decisions that does not hamper budget, scope and quality of the deliverables.

A successful project begins with clearly defined objectives(Harvard Tutorial, Establish Project Scope). Therefore, project objectives should be stated very carefully and clearly to ensure they reflect the stakeholder’s needs. As mentioned in Harvard Tutorial, each project objective should be defined as “SMART Objectives”:

S- Specific: To the point and very clearly defined, what needs to be achieved.

M- Measurable: At the end of the project, success should be measured in qualitative and quantitative terms.

A-Action-oriented: The technology, methods, processes should be aligned with the needs of the project.

R- Realistic: Achievable goals and objectives should be defined with the available resources, time and budget.

T- Time-limited: Every project should specify a time frame in which it has to achieve its overall objectives and goals.

For example: During my professional experience, I worked on an end-to-end hiring project wherein the India hiring team had to shift its entire candidate database from the existing software to a new software within a span of 6 months. The main objective of this project was to increase the speed of processing candidate profiles which was taking time in the existing software. The existing software was Oracle Taleo and we had to move the entire hiring team and candidate database of 10 years to Application tracking system (ATS) software which is much fasterthanTaleo. The project team of 15 people decided upon the objectives (increasing candidate processing speed), budget (new software cost) and time(6 months). The objectives set were realistic that we were able to achieve successfully within a span of 6 months. After the end of 6 months, the hiring team was up and running the new software successfully with entire transfer of candidate database from old to new. After the successful running of the new ATS we were able to process the candidate interviews, feedbacks very fast which was increasing the overall hiring target completion of a particular quarter. The success of a project will be measured if it is completed on time, with available resources, and within the budget. Therefore, the critical factors that influence the success or failure of this project are scope, time, quality and cost. The project was aligned with the strategic decisions of the company which was to increase the overall target hiring completion each quarter.

After looking at a few project control models created by specialists, they focus toward the process-based models utilizing Dr Deming's standard of PDCA. Utilizing the PDCA and a survey overview, they built up the PCIM as a "practice grounded examine process as underlined by the way of thinking of building up a hypothesis of clarification to a marvel". Their review distinguished 20 most significant elements for project cost control among which the 6th most significant one was "strife between project parties". The achievement of the PCIM in singular circumstances depends upon how well the "project inhibitors" are distinguished also, managed. In this way, the PCIM has constrained, as it is to a great extent "general" in nature. Barazza and Bueno (2007) have proposed a probabilistic model for project controls; nonetheless, this is more a hypothetical approach and is restricted by its appropriateness just to development projects.

**QUALITY**

Quality management is about managing quality of all resources. In project management ensuring the desired quality of the project is the goal. Some of the important quality characteristics are: functionality, consistency and performance. Quality does not always mean perfection and high quality services, but maintaining consistency in quality across projects. These factors set up expectations to determine if the project is successful or not.

This case study in a large-scale company with employees over 3000. The organization was a million dollar enterprise and is part of the product life cycle management business. The lessons learned in the study for the quality of the leadership in the organization determined that there was a huge lack of understanding in the understanding of the roles and responsibilities among the leaders of different departments within the company. The leaders were too focused on their deliverable of the project in their department that they lost sight of the main project deliverables. The recommendation is to have a revisit on the role and responsibilities among the leaders and get an alignment on the project deliverables. This will drive quality of the project in order to improve the success factors for a management (Hacker and Doolen, 2007).

For online and blended learning in adult education, a conceptual study in Turkey was tested and validated to understand success factors for the Conceptual Quality Framework. The conceptual quality framework theory was originally proposed by Ossiannilsson and Landgren (2012). It is also designed to provide a new approach to the teaching instructions from the already existing traditional teaching approach. In this study, students and concerned teachers were interviewed on the importance of OBL learning to be introduced, it was found that all the success factors of the OBL framework are linked to the quality areas and dimensions of every existing quality frames (Blieck, Ooghe, Zhu, et al., 2017).

Project success factors on the other hand are very different from the project management factors. One such example is the Sydney opera house; it is quoted as the best example of a project success. However, the project was not based on the iron standards of a quality. The Sydney opera house was considered an engineering masterpiece but the project exceeded its time limit, went over the budget and had some quality compromised from the standards that were set at the planning stages of the project. It is recommended for a large-scale project to include quality as a standard in the large-scale project.

Consulting Service Providers (CSP) are considered to be superior in knowledge and experience. For this research, many project professionals and project managers were interviewed from Romania, Bulgaria, Moldova, Ukraine and Serbia. The data collected from these interviews suggested that the most important factor in the suceess of the project mangement is the communication skills and showing quality leadership. This was even more than the technical aspects. The results clearly demonstrated that the communication skills improvements will drive quality leadership. (Ceptureanu, Ceptureanu, Luchian, et al., 2017). Tonsillectomy is very common ENT practice in the medical field. The complete research was carried out in three cycles:

Cycle 1 included the analysis of the previous cases in order to identify the intervention point in the process. This multi-faceted intervention consisted of an evidence-based change to local day case tonsillectomy guidelines. This also consisted of the improved lists, planning and clinician education and learning. Cycle 2 consisted of post operation data collection in the short-term improvements followed cycle 3, which included the post operation data in the long-term improvements from the patients. The experiment showed no growth in the post-operative complications and the financial costs associated with it (Afteh, Richardson-May and Rainsbury, 2018). Similar studies to these were conducted to incorporate leadership skills among the nurses of hospital. (Luger and Ford, 2019)

Although agile and hybrid project management technique is quite popular in the IT industry. It does not have an algorithmic approach such as the traditional quality- time- cost trade off approach of a project management. They proposed a matrix based mathematical solution to the issue in order to bridge the gap between the new project management tools and traditional ones. The mathematical solution took into consideration the flexible task dependencies and undecided, supplementary task completion and included the traditional time quality and cost trade off approach. The proposed algorithm was a successful efficient and fast approach in the agile project management techniques. It provides an optimal solution based on the predefined preferences based on the time-cost and quality trade off as agreed in the plane. (Kosztyan, and Szalkai, 2018).

Coming to the manufacturing sector a study was conducted on the SME (Small Medium Enterprise) for the TQM (Total Quality Management) . TQM is hugely popular in big enterprises in the manufacturing sector but not in the SME. A quantitative approach was made to this research and data was collected through a  very detailed questionnarie in the Cape Town , South Africa area. It was found that majority of the SME which implemented TQM showed profits and were successful overall than those enterprises which did not implement TQM. This research clearly displayed that the quality of the products in the manufacturing sectors directly impacts the success of a company or a project. (Matsoso and Benedict, 2015)

The implementation of ISO 9001 Quality Management in their organization was discussed the research was conducted over 21 organizations and it was found that most of the countries followed the quality principles as the standard project management procedure. The cost of internal factors such cost of direct participation of employees was relative low when the employees were directly educated about the quality standards. This was on the other hand very low to the companies, which involved management to implement the cost. (Ingason, 2015).

The importance of quality improvement projects in order to successfully improve the patient satisfaction scores form the institutional benchmark. It was found after the study that the improved safety, personalized care to maternity unit would improve the quality and hence improve the satisfaction score of the nurses in the hospital (Stausmire and Ulrich, 2015).

Finally, to demonstrate the quality has a crucial factor in the government sector as well. A study was conducted on 27 municipalities of West Java Province in Bali, Indonesia. The objective was to achieve clean , transparent and responsive government.  The information technology elements integration was needed for the government agency. These attributes were developed with the use of Internet websites. Data from the Multi years usage showed the quality of the service drastically improved and impacted in the success of the public sector. (Ritchi, Wahyudi and Susanto , 2015).

**SCOPE**

The ability to deliver on required quality metrics in any project is defined generally by three key constraints: time, scope and cost. The Iron triangle, as it is popularly called depicts the interrelationship between these three limited resources and how they impact the success of projects. This is shown in Figure 1: A change in scope will result in a corresponding change in the other two and vice versa.

SCOPE

TIME

COST

QUALITY

In clear terms, the scope encompasses both what will be included in and excluded from a project’s body of work and is therefore a key determinant of it’s overall project success or failure (Fageha & Aibinu, 2013).  According to Tsiga, Emes & Smith (2017), there are several other critical success factors that contribute to the success of a project.

The pivotal role of a well-defined scope to the success of any project cannot be over-emphasized. To appreciate this nebulous concept, one must first possess a firm grasp of project requirements. According to Raynor, G. (2020) “Project requirements are conditions or tasks that must be completed to ensure the success or completion of the project. They provide a clear picture of the work that needs to be done. They're meant to align the project's resources with the objectives of the organization”. A few of the benefits of effectively gathering such requirements are cost savings, efficient change management, better stakeholder communication and higher project success rates.

When gathered and compiled, these requirements form the much-needed boundary conditions for the project at hand. Therefore, how requirements are gathered is crucial to clearly defining the project scope and subsequently, the overall success of the project.

The case study below outlines the impact of scope, as a component of the triple constraint, on the execution of one of the world’s most monumental and memorable projects.

Case Study: The Channel Tunnel:

The channel tunnel is a program that underscores the crucial role that a well-defined scope plays in any successful project. This undertaking was both audacious and herculean at the same time. The project involved connecting the French and British coast by tunneling from both ends with a plan to meet in the middle. The distance to be covered was estimated at about 153 km. To pull off this engineering feat, copious amounts of concrete slabs sufficient enough to build 3 Empire state buildings were used. The scope entailed two main rail tunnels having the width of a four-lane highway. This would include 245 cross passages to be used as crucial escape routes during emergencies. On completion, railway tracks would be built to help enable high speed trains ferry both man and materials and thus boost trade relationships across both nations.

Besides its notoriety as an engineering masterpiece, the channel tunnel project has come to symbolize the ill effects of scope creep along with cost overruns running at about 60% over original project estimates. Funding for this project was sourced from private investors with no possibility of government bailout. Hourly estimated project costs came down to about 40,000 GBP/hour, so time was of the essence. Unforeseen delays due to scope changes/creep were the main culprit for these cost overruns.

Firstly, because no construction of this scale had been done prior, the biggest challenge going in was clearly anticipating and defining the project scope. Scholars have described the project as one of the greatest engineering wonders of the world. Organizational process assets are pieces of knowledge gleaned from similar preceding projects, which form key inputs on subsequent ones. These pieces of knowledge are known to significantly improve the likelihood of success and reduce known sources of waste. Because this undertaking was unprecedented at the time, coming up with a detailed scope that considered and mitigated potential risks was near impossible. For example a total of 12 Tunnel Boring Machines (TBMs) were used to tunnel, 6 on each side. The French side utilized waterproof TBMs while the British did not. This simple difference made a huge difference as water leaks through fractured rock formation severely impaired the progress of the British.

Secondly, unforeseen formation leaks resulted in the seawater seeping into the tunnel. This set the project back a few weeks, costing them thousands of pounds by the hour with fears of flooding or a potential collapse. The total cost of these delays ran into tens of millions of GBP by the time the sources of leaks were found and plugged. An extensive survey was completed prior to the start of tunneling. Despite this, the surveys were not capable of revealing frailties in the rock formation. Miles into boring through the chosen pathway, the British team encountered fractured rock formation, which were later discovered to be the root cause of the tunnel leaks. All these, translated into a broadened scope and increase cost as described by the Iron Triangle.

Thirdly, the tunneling on both ends required the use of large amounts of concrete casing. This needed a very tightly run supply chain of those working in the tunnel and those who were prefabricating and transporting the slab to the coast. Due to storage limitation along the English coast, concrete slabs had to be shipped from a distance to the construction site in smaller quantities based on demand. This was mandated by the fact that the English coast was predominantly made up of rocky cliffs, which severely restricted storage space. The French on the other hand, had the geographical advantage of being able to store their concrete slabs close to the construction site. This was because of the open sandy beaches along their seashore. As a result of the high pace of British drilling, the risk of a concrete shortfall due to a lack of storage became an issue. To address this, tunneling debris was used to reclaim land along the English shore to use for storage. This also extended scope.

Overall, tunneling spanned 4 years from 1987 - 1991. The adverse effect of scope creep in this case study is indicative of how important it is for overall project success. The Channel Tunnel project gulped 20% more time than was initially allotted because of the several unforeseen delays that were not taken into account during project scoping. According to Al Suliman (2019), delays are inevitable in projects. However, effectively managing such delays such that they do not become full-blown issues is the goal of a successful project.

In conclusion, many projects start with good ideas and creativity. However, without a clear understanding of its scope ab-initio, waste and overruns are inevitable (Mirza, Pourzolfaghar & Shanazari, 2013). Ewin, Luck, Chugh & Jarvis (2017) believe that the implementation of design thinking in projects today is what will drastically reduce the occurrence of failed projects.

Countless engineering feats and edifices have been erected since and to ensure the success of such projects, it is essential that the learning and expertise of key project players are documented, preserved and transferred to the future generation of project managers and scope enforcers.

**STAKEHOLDERS**

Stakeholders are critical part of a successful project. Effective stakeholder management makes sure the project started safe without missing any critical components example: a key customer demographic. Managing stakeholder involves:

1. Identifying & Acknowledge stakeholders,
2. Determine stakeholder impact & interest in the project,
3. Establish a communication plan and
4. Engage the stakeholder.

When organizations decide on a project, often stakeholder management is seen as a risk management process. Stakeholders doesn’t mean only customers, they are a widespread demographic. Considering inputs from every stakeholder should be an active part of the project in all phases of development. Effective stakeholder management helps define an effective scope for the project. Mistakes in understanding stakeholders often end up as missing requirements.

The project length and sustenance depend on stakeholders and evolution of their requirements. The critical advantage that a business can get is that, in the process of stakeholder management demand might lead to innovation and completely new categories of development. In a battle between quality and quantity, efficient stakeholder management helps balance both quality and quantity.

Stakeholder management needs to be part of every phase through development, testing and review. So that during the product review process, the Change Control Board could approve of the changes and new additions can be added to the product backlog and to release backlog.

Though we would want to identify as many possible stakeholders as possible in Initiation Phase, which business would not want to increase stakeholder’s capacity? The issues in identifying stakeholders in controlling phase is, the target, the deliverables and the costs might need to change. That is an overhead for any organization which always tries to keep costs lower and would affect the shareholders who invest money into the company, believing that targets would be met and profits would be made. Hence keeping that to minimum-to-none would be the most important task of the development team.

The issue with identifying stakeholders at random is, it would not help streamline communication, absence of standard documents and if you ever want to review what you have done randomness doesn’t help. Hence standard documents are helpful in identifying stakeholders. The primary documents used to identify stakeholders are:

1) Project Charter

2) Procurement Documents and

3) Initiation Document.

While project charter document is the result of the Initiation Phase, procurement documents are contract documents that are agreed upon using project charter and Initiation Document is a more detailed version of the Project Charter. The job of these documents is to justify the following:

1) Definition of the project,

2) Identifying stakeholders,

3) Defining scope based on stakeholders,

4) Define responsibilities of individuals on the project team and

5) Secure funding for the project.

While some people use Project Charter to identify stake holders, a project initiation document is a more detailed version. During the Controlling Phase we can take the help of vendors and procurement documents we issue to our sellers to help identify additional stakeholders. These documents could be considered as primary source of identifying stakeholders.

As a secondary source we could use the EEF (Enterprise Environmental Factors) documents. EEF’s are the conditions that affect the project and are not under the immediate control of the project management team. For example: If we have a procurement order we need to identify the procurement head as the stakeholder. We would also need to look into governments and agencies such as environmental agencies because if we are working in a protected neighborhood or habitat the agencies approval would be necessary making them stakeholders in the project.

The third and the final source of identifying stakeholders could be Organizational Assessments. A set of documents which identify the issues that happened in earlier projects and the lessons learned from them. For example: the project manager might have missed identifying a stakeholder after the controlling phase. Then they would not have been able to add that user or organization as a stakeholder. Such use cases go into the assessment documents.

These three sources are factors that help identifying stakeholders. The better the amount of time and money invested in this process the better the results. Other than these sources we could use experts in an organization to identify stakeholders and people who have worked for long years in the same organization. This is a tedious task & it can be solved using technologies such as: Big Data analytics which can be used to gather the results of the project the company is working on and similar projects elsewhere.

After identifying stakeholders, what if there are too many stakeholders? Then we “Analyze Stakeholders” (Buch & Damle, 2019), where prioritizing of stakeholders is made based on the role, the importance and the amount of power they exhibit. For example: Consider the government as the most important stake holder and the technical architect as secondary stake holder in a defense project.

Stakeholder Assessment is wherein a few parameters like: power, urgency and legitimacy are defined based on which we rank the stakeholders (Labelle & Rouffignac & Lemire & Bredillet & Barnabe, 2019). The result of the process of stake holder analysis and assessment would be a strategy to manage those stakeholders successfully.

This process of identifying and analyzing stakeholders performed by Project Manager results in the “Stakeholder Register” which has information on the process of identification, analysis and assessment of stakeholders. This facilitates teams to perform activities such as: Requirement Analysis, Risk Management and Project Planning. It also helps balance quality & quantity in the product features being built.

Controlling stakeholder engagement (Gilbert & Ron, 2019) is an integral part of project management. Recently the focus of organizations has changed from “of” stakeholders to “for”. Some advancing furthermore calling stakeholders as “stake partner”. That reflects a change in attitude of project organizations in valuing stakeholders. Organizations might not be able to solve all problems of all stakeholders, after all we are all heterogeneous (Luckmann & Farber, 2016).

**COMMUNICATION**

Communication is the act of conveying information to one or more individuals. Without communication no knowledge is transferred and there would not have been any advancement or evolution in this world. Within any industry for a project to be successful, there needs to be communication among individuals, between teams, across stakeholders and third-party resources. Communication is often overlooked factor when it comes to managing a project.

Communication is referred to as lifeblood of the project by many experts and is very important to the success of the project. When in a project the team members need to collaborate, share, collate and integrate information and knowledge to realize project goals (Zulch, 2014). The process of communication comprises of three components namely transmitter/sender, transmission medium and a receiver. The information that the sender tries to communicate must be clear and should convey all the essential information that is required, making the sender a vital part of the communication. In communication there are two phases one is initial transmission and the other is feedback. After a message is sent the feedback is also as important as the initial information. There is always a gap in communication when there is no feedback or there is a delay in feedback. This results in ineffective communication, which leads to misinterpretation of specifications, delay of tasks, hesitation in delegating responsibilities and causes the project to fail.

Communication Plan should outline certain functions, which are, line of communication, scope and format, schedule, document control, disaster recovery and method of communication. This plan should be discussed and documented in detail by every party involved in the planning and most importantly signed by the person with the highest authority before the start of the project to cut the confusion down the road. This becomes the first cause for a gap in communication and results in derailing of a project. Another important aspect of Communication plan is lines of communication. There are two lines of communication, formal and informal communication (Zulch, 2014). The flow formal communication can be condensed to three directions vertical, horizontal and diagonal. Formal communication can be regular meetings like scrum or documents describing requirements and designs, flow diagrams, status reports. All documents must be transparent, detailed and should be available in a common location like a cloud service such as Confluence for all the people involved in the project. Thus, transparency is vital for the success of a project in any organization in the modern world. With critical information available to all people, every individual is wary of the status of the project and will strive to be responsible in completing their task (Nedbal, Auinger, & Hochmeier, 2013). Informal communication comprises of messaging and informal meetings between team members. This type of communication usually is to gain ideas to complete the task. Below is a case study on Communication Failures from the course textbook which discusses about the importance of effective communication in project management and in a manager.

The case study briefly describes a scenario where a wrong individual is chosen for the position of manager based on his technical knowledge and expertise. Here, a person Herb with experience in manufacturing R&D and a Ph.D. in the same field has been selected as a manager by the company, the various types of gaps in communication that occurs between him and his team causing dysfunction and distress among him and his team members (Kerzner, H., 2013). Therefore, based on the scenarios given, his qualifications and experience gained working in R&D and manufacturing more than qualifies him for the job that requires knowledge in the respective field. But what Herb lacks are the communication skills needed to effectively carry out the responsibilities of a project manager. Hence, before making decisions based only on his qualifications, we must also consider his soft skills (Ionel. S. P, 2018). Thus, the case study implies that the project manager is the linchpin for any project because without ineffectiveness of the project manager will cause the project to derail. The project manager acts as an interface between the team and higher management and sometime across third party resources. According to the PMBOK, a Project Managers function is comprised of 75 – 90% communication.

Communication levels are another component that must be considered when designing project communication plan. These are Internal Communication and External communication (Zulch, 2014). Internal communication is the type of communication that takes place between project team where the scope is usually within the organization that includes the meetings, status reports and such. External communication takes place between two different companies where the reason is usually for gathering resources or getting feedback from customers.

Communication within a company can be measured and evaluated by looking at the history of the methodologies used and calculating the gain, time and cost efficiency of those projects. In all industries, calculating internal communication and the success rate of the managers in the previous projects are the best way to propose a communication plan (Mihaela, & Dumitrascu 2013). A study was conducted to measure the effectiveness of communication in 2018. This article aims to introduce a concept of measuring the effectiveness of communication by taking various aspects into consideration for evaluation. Here a questionnaire is developed and presented to various personnel and companies. The response to the questions were evaluated against table benchmark and finally coming up with a graphical representation of the effectiveness of communication (Karolina Muszyńska, 2018).

Communication is a key entity in project management, there are also times when it is too much. This occurs when there are too many meetings held with many people involved for no reason causing consumption of valuable time and resources without doing any actual work (Russell-Simmons, H. N, et al, 2016). Therefore, we must find a balance between the time, cost, scope and quality by including communication as it plays an important role of connecting the other factors and resulting in successful completion of a project. But when staring a company all these factors will not be present. Therefore, to be successful in project the project management team must adhere to the best practices and try to improve transparency and feedback among the team.

**CONCLUSION**

Project Management comprises a number of activities each dependent on the other executing successfully. The dependency that these activities have on each other is a necessary condition to be satisfied for the project to be called a success. Hence the amount of detail, time, effort and cost spent on the project should be managed efficiently. To help with the same several management techniques have been proposed and implemented, each with its own advantages and issues. Rarely do we have a project with optimal or overflow of funds. Hence for an organization to obtain the required sale amount or to make a profit, the efficiency of each project module is critical. This paper analyzed critical aspects of a successful project: Time, Cost, Quality, Scope, Stakeholders and Communication. Laying out a detailed explanation stating the importance of each one of them and their contributions to the success of a project.

**REFERENCES**

Acquier, A., Gand, S., & Szpirglas, M. (2008). From Stakeholder to Stakeholder Management in Crisis Episodes: A Case Study in a Public Transportation Company. *Journal of Contingencies & Crisis Management*, 16(2), 101–114. Retrieved from: http://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=1&sid=18db2628-9332-443c-9e97-7d6801a89af8%40sdc-v-sessmgr02

Adam, A., Josephson, P. B., & Lindahl, G. (2017). Aggregation of factors causing cost overruns and time delays in large public construction projects.*Engineering, Construction and Architectural Management, 24*(3), 393-406. Retrieved from <http://dx.doi.org/10.1108/ECAM-09-2015-0135>

Alsuliman, J. A. (2019). Causes of delay in Saudi public construction projects. Alexandria Engineering Journal, 58(2), 801–808. Retrieved from http://eds.a.ebscohost.com/eds/detail/detail?vid=2&sid=f93d3a9c-d44f-4dcc-ab6a-c9da97d5523c%40sessionmgr4007&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1110016819300584&db=edselp

Atfeh, M. S., Richardson-May, J., & Rainsbury, J. (2018). Day case paediatric tonsillectomy: a quality improvement project. *European Journal of Pediatrics*, *177*(11), 1603–1608. Retrieved from:

http://eds.b.ebscohost.com/eds/detail/detail?vid=57&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=132399937&db=c8h

Basar, A. (2019). A Novel Methodology for Time Planning of Resource-Constrained Software Projects with Hesitant Fuzzy Durations: A Case Study. *International Journal of Industrial Engineering*, *26*(4), 471–485. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=b52db35b-afd9-45a6-8d3f-588e498ccc96%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#db=a9h&AN=138167174>

Buch, V., & Buch, P. D. (2019). Project Portfolio Stakeholder Identification and Classification: An Empirical Study. *Journal of Management Research (09725814),* 19(3), 145–156. Retrieved from:

http://eds.b.ebscohost.com/eds/detail/detail?vid=37&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=137657770&db=buh

Chin, L. S., & Hamid, A. R. A. (2015). The Practice of Time Management on Construction Project. *Procedia Engineering*, *125*, 32–39. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=13&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877705815033238&db=edselp>

Dian LIU, Hong-wei WANG, Heng LI, WANG, J., & KHALLAF, M. (2019). Hierarchical Task Network Approach for Time and Budget Constrained Construction Project Planning. *Technological & Economic Development of Economy*, 25(3), 472–495. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=9&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=136392479&db=buh>

Ewin, N., Luck, J., Chugh, R., & Jarvis, J. (2017). Rethinking Project Management Education: A Humanistic Approach based on Design Thinking. Procedia Computer Science, 121, 503–510. Retrieved from:

<http://eds.b.ebscohost.com/eds/detail/detail?vid=2&sid=49383f6f-7707-4e17-9d95-70fd85e85bf4%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877050917322603&db=edselp>

Fageha, M. K., & Aibinu, A. A. (2013). Managing Project Scope Definition to Improve Stakeholders’ Participation and Enhance Project Outcome. *Procedia - Social and Behavioral Sciences*, 74, 154–164. Retrieved from:

<http://eds.b.ebscohost.com/eds/detail/detail?vid=29&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877042813004679&db=edselp>

Gilbert Silvius, & Ron Schipper. (2019). Planning Project Stakeholder Engagement from a Sustainable Development Perspective. Administrative Sciences, (2), 46. Retrieved from: http://eds.b.ebscohost.com/eds/detail/detail?vid=32&sid=8b8b5728-545e-47c6-9520-469dfb3faee0%40sessionmgr4008&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=edsdoj.15b681f

Gładysz, B., Skorupka, D., Kuchta, D., & Duchaczek, A. (2015). Project Risk time Management – A Proposed Model and a Case Study in the Construction Industry. *Procedia Computer Science*, *64*, 24. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=15&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=109494099&db=edo>

Hacker, M., & Doolen, T. (2007). Alignment at the Top: A Case Study Investigating This Critical Factor in Project Implementation. *Engineering Management Journal*, *19*(1), 38–42. Retrieved from:

<http://eds.b.ebscohost.com/eds/detail/detail?vid=47&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=24095916&db=buh>

Hatamleh, M. T., Hiyassat, M., Ghaleb, J. S., & Rateb, J. S. (2018). Factors affecting the accuracy of cost estimate: Case of jordan.*Engineering, Construction and Architectural Management, 25*(1), 113-131. Retrieved from:

<http://dx.doi.org/10.1108/ECAM-10-2016-0232>

Ingason, H. T. (2015). Best Project Management Practices in the Implementation of an ISO 9001 Quality Management System. *Procedia - Social and Behavioral Sciences*, 194, 192–200. Retrieved from:

<http://eds.a.ebscohost.com/eds/detail/detail?vid=5&sid=145faa61-3d6e-4791-9de0-d8d3ab8ca6b0%40sdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877042815036125&db=edselp>

Issa, U. H. (2013). Implementation of lean construction techniques for minimizing the risks effect on project construction time. *Alexandria Engineering Journal*, *52*(4), 697–704. Retrieved from: <https://go.openathens.net/redirector/campbellsville.edu?url=https%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Farticle%2Fpii%2FS1110016813000641%2Fpdfft%3FisDTMRedir%3Dtrue>

Jayaraman, R. (2016). Project cost control: A new method to plan and control costs in large projects.*Business Process Management Journal, 22*(6), 1247-1268. Retrieved from <http://dx.doi.org/10.1108/BPMJ-10-2014-0102>

Kiritani, K., & Ohashi, M. (2015). The Success or Failure of the Requirements Definition and Study of the Causation of the Quantity of Trust Existence Between Stakeholders. *Procedia Computer Science*, 64, 153. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=e2027a13-5948-49f5-abe7-8c97c0165558%40pdc-v-sessmgr06&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=109494017&db=edo>

Kosztyán, Z. T., & Szalkai, I. (2018). Hybrid time-quality-cost trade-off problems. *Operations Research Perspectives*, *5*, 306–318. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=59&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S2214716018300812&db=edselp>

Labelle, F., de Rouffignac, A., Lemire, P.-O., Bredillet, C., & Barnabé, S. (2019). Managing tensions and paradoxes between stakeholders in a complex project context: Case study and model proposal. *Journal of Modern Project Management*, *7*(2), 246–275. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=39&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=139236232&db=buh>

Léger, P.-M., Lyle, D., Babin, G., Charland, P., & Pellerin, R. (2013). Scope Management: A Core Information System Implementation Project Pedagogy. *International Education Studies*, 6(3), 55–65. Retrieved from: <http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=eric&AN=EJ1067751>

Lückmann, P., & Färber, K. (2016). The Impact of Cultural Differences on Project Stakeholder Engagement: A Review of Case Study Research in International Project Management. Procedia Computer Science, 100, 85–94. Retrieved from: <http://eds.b.ebscohost.com/eds/resultsadvanced?vid=28&sid=8b8b5728-545e-47c6-9520-469dfb3faee0%40sessionmgr4008&bquery=Stake+Holders+in+Project+management&bdata=JkF1dGhUeXBlPXNzbyZjbGkwPUZUJmNsdjA9WSZjbGkxPVJWJmNsdjE9WSZ0eXBlPTEmc2VhcmNoTW9kZT1BbmQ%3d>

Luger, S. J., & Ford, D. J. (2019). A Pilot Quality Improvement Project Facilitating Leadership Skills in Rural New Graduate Nurses. *Online Journal of Rural Nursing & Health Care*, *19*(1), 136–158. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=51&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=136339016&db=c8h>

Mirza, M. N., Pourzolfaghar, Z., & Shahnazari, M. (2013). Significance of Scope in Project Success. *Procedia Technology*, 9, 722–729. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=31&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S221201731300234X&db=edselp>

Oleksandr Skachkov, & Irina Skachkovа. (2018). Theoretical and Methodical Toolkit for Managing the Stakeholders of a Project. Сучасний Стан Наукових Досліджень Та Технологій в Промисловості, (1 (3). Retrieved from: http://eds.b.ebscohost.com/eds/detail/detail?vid=34&sid=8b8b5728-545e-47c6-9520-469dfb3faee0%40sessionmgr4008&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=edsdoj.60c17db3f41428386fb3b436037798a&db=edsdoj

Olsson, A. T., Johannesson, U., & Schweizer, R. (2018). Decision-making and cost deviation in new product development projects.*International Journal of Managing Projects in Business, 11*(4), 1066-1085. Retrieved from:

<http://dx.doi.org/10.1108/IJMPB-02-2018-0029>

Olsson, N. O. E. (2015). Implementation of Pre-defined Potential Scope Reductions in Projects. *Procedia Computer Science*, 64, 387–394. Retrieved from <http://eds.a.ebscohost.com/eds/detail/detail?vid=6&sid=dfead7b1-3d4a-4784-9c32-890c59ce0fe9%40sessionmgr4008&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877050915026381&db=edselp>

Ortiz-Marcos, I., Uruburu, C. A., Cobo, B. J. R., & Prieto, R. T. (2013). Strengthening Communication Skills in an Innovative Context of Engineering Project Management Learning. *Procedia - Social and Behavioral Sciences*, 74, 233–243. Retrieved from: [http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=741d4fa3-ace9-4157-9eb6-fd644dfd3b7b%40pdc- vsessmgr03&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877042813004424&db=edselp](http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=741d4fa3-ace9-4157-9eb6-fd644dfd3b7b%40pdc-%20vsessmgr03&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877042813004424&db=edselp)

Pitsis, A., Clegg, S., Freeder, D., Sankaran, S., & Burdon, S. (2018). Megaprojects redefined – complexity vs cost and social imperatives.*International Journal of Managing Projects in Business, 11*(1), 7-34. Retrieved from:

<http://dx.doi.org/10.1108/IJMPB-07-2017-0080>

Pop Alexandra Mihaela, & Dumitrascu Danut. (2013). The Measurement and Evaluation of the Internal Communication Process in Project Management. *Annals of the University of Oradea: Economic Science*, (1), 1563. Retrieved from <http://eds.a.ebscohost.com/eds/detail/detail?vid=0&sid=85387dd8-3e52-46dd-8e0b-393aa6a3aa75%40sessionmgr4007&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=edsdoj.28eadff0940d47fbbbfd77f82b208be7&db=edsdoj>

Radujković, M., & Sjekavica, M. (2017). Project Management Success Factors. *Procedia Engineering*, 196, 607–615. Retrieved from: <http://eds.a.ebscohost.com/eds/detail/detail?vid=11&sid=e73a75ee-9a00-44c8-9e50-49d50005bdae%40sdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877705817331740&db=edselp>

Radujković, M., & Sjekavica, M. (2017). Project Management Success Factors. *Procedia Engineering*, 196, 607–615. Retrieved from: <http://eds.a.ebscohost.com/eds/detail/detail?vid=11&sid=e73a75ee-9a00-44c8-9e50-49d50005bdae%40sdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877705817331740&db=edselp>

Rezvani, A., & Khosravi, P. (2018). A Comprehensive ASSESSMENT OF PROJECT SUCCESS Within Various LARGE PROJECTS. *Journal of Modern Project Management*, 114–122. Retrieved from:

<http://eds.b.ebscohost.com/eds/detail/detail?vid=49&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=130038447&db=buh>

Sameh, M. E., & Al-Haj, R. (2017). A new framework for time-cost trade-off considering float loss impact.*Journal of Financial Management of Property and Construction, 22*(1), 20-36. Retrieved from <http://dx.doi.org/10.1108/JFMPC-02-2016-0007>

Sawan, R., Low, J. F., & Schiffauerova, A. (2018). Quality cost of material procurement in construction projects.*Engineering, Construction and Architectural Management, 25*(8), 974-988. Retrieved from:

<http://dx.doi.org/10.1108/ECAM-04-2017-0068>

Seabra, C., & Almeida, A. M. (2015). Project Management on Multimedia Projects: Preliminary Results on Communication, Interaction and Team Work Dynamics. *Procedia Computer Science*, 64, 816–823. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=7&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877050915027684&db=edselp>

Seyed Hossein Iranmanesh, Majid Shakhsi-Niaei, & Mohammad Amin Durandish Yazdi. (2017). A Decision Support System for Stakeholder Management during Different Project Phases considering Stakeholders’ Personality Types and Available Resources (The Case of Behsama Web-Based Information System). *Journal of Information Technology Management*, (4), 679. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=41&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=edsdoj.bafbf5dcca7b42f68aa3885414f94a49&db=edsdoj>

Solís-Carcaño, R. G., Corona-Suárez, G. A., & García-Ibarra, A. J. (2015). The Use of Project Time Management Processes and the Schedule Performance of Construction Projects in Mexico. *Journal of Construction Engineering*, *2015*, 1. Retrieved from: <http://downloads.hindawi.com/archive/2015/868479.pdf>

Stausmire, J. M., & Ulrich, C. (2015). Making It Meaningful: Finding Quality Improvement Projects Worthy of Your Time, Effort, and Expertise...second of a 4-part quality improvement. *Critical Care Nurse*, *35*(6), 57–62. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=55&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=111089999&db=c8h>

Tih-Ju, C., An-Pi, C., Chao-Lung, H., & Jyh-Dong, L. (2014). Intelligent Green Buildings Project Scope Definition Using Project Definition Rating Index (PDRI). *Procedia Economics and Finance*, 18, 17–24. Retrieved from: <http://eds.a.ebscohost.com/eds/detail/detail?vid=4&sid=dfead7b1-3d4a-4784-9c32-890c59ce0fe9%40sessionmgr4008&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S2212567114009083&db=edselp>

Tran, D. H., & Long, L. D. (2018). Project scheduling with time, cost and risk trade-off using adaptive multiple objective differential evolution.*Engineering, Construction and Architectural Management, 25*(5), 623-638. Retrieved from <http://dx.doi.org/10.1108/ECAM-05-2017-0085>

Tsiga, Z., Emes, M., & Smith, A. (2017). Critical success factors for projects in the petroleum industry. *Procedia Computer Science*, *121*, 224–231. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=33&sid=dfc99471-0baa-47d5-a7bf-3b3aff062219%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877050917322226&db=edselp>

Wambeke, B. W., Hsiang, S. M., & Liu, M. (2011). Causes of Variation in Construction Project Task Starting Times and Duration. *Journal of Construction Engineering & Management*, *137*(9), 663–677. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=4&sid=a15b0542-eeb9-4422-a68f-5f1008cc68e3%40sessionmgr103&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=65302870&db=buh>

Zulch, B. (2014). Communication: The Foundation of Project Management. *Procedia Technology*, 16, 1000–1009. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=9ad0845b-f0f8-4cee-8cff-489291d931e2%40pdc-v-sessmgr04&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S2212017314002813&db=edselp>

Zulch, B. (2014). Leadership Communication in Project Management. *Procedia - Social and Behavioral Sciences*, 119, 172–181. Retrieved from: <http://eds.b.ebscohost.com/eds/detail/detail?vid=0&sid=234b150a-188a-4e19-a2ab-13f32315dac3%40pdc-v-sessmgr02&bdata=JkF1dGhUeXBlPXNzbw%3d%3d#AN=S1877042814021120&db=edselp>