

# THE COMPETENCE LEVEL OF PROJECT MANAGERS, AN IMPORTANT INDICATOR IN THE SUSTAINABLE DEVELOPMENT OF ORGANIZATIONS

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**Abstract:** The increasing dynamics of today's business development leads even more to the growth of the need to manage the orders and the requests of organizations through project management. The customer's needs evolve on a daily basis and the only way to progress and stay ahead of times would be to pay attention to each detail and improve constantly. The quality of the results of applying these techniques largely depends on the competence level, attitude and knowledge gained through experience of nowadays' project managers. In order to better analyze the characteristics of the ideal project manager for these times, this study was undertaken, based on a mixture of information from specialized literature, professional experience and possible forecasts. However, the ingredients of a successful project manager depend widely on the lessons learned from the fairly comprehensive history of project management, combined with the management of the triangle known as human resources, knowledge and time. This study has the mission of bringing out a critical and constructive analysis of what history has provided as a foundation for the development of these professionals, what are the demands of the markets for such roles nowadays and how these things contribute to the sustainable development of organizations.

**Keywords:** project management, knowledge, skills, software engineering, manager

## 1 INTRODUCTION

The society of this new epoque is teaching us the mysteries of adaptability, evolution and innovation in a fast pace, on a daily basis. Sometimes it feels like the world is a giant flaunt coast on the Pacific Ocean and, from time to

time, tsunamis are occurring just to let us know the dimension of vulnerability that we carry on our shoulders without realizing it. Like basic organizations and human beings, these extreme and ominous conditions gave the chance to the most warrior ones to redefine themselves like the bird of wonder did, gain new psychological

and social identities, face the looming challenges and build an unbreakable foundation out of hard work, tenacity, hope and trust. As each major incident leaves marks, stays in the power of every one to learn from facts, to extract the core and to further refine the opportunity out of uncertainty.

In a world full of changes, organizations are forced to elevate themselves continuously, as they live under the umbrella of the law of the jungle and, in order to be successful, they need to anticipate life, get trained through forge and fire, develop, test, re-test and finally... have the products and services on the market, thrilling to each consumer's reaction. Although it might look like at this point nothing can be shocking anymore, this moment is exactly the one where organizations need to analyze, refine and work for much more success. Once being on top, no guarantee can be given that the brand will stay there forever, if the engines of the organization are no longer working at 100% efficiency, if the comfort zone was reached and the motivation rate decreased within core participants.

Success is a highly appreciated factor when it comes to a company's identity and therefore, it is imperiously necessary to have a deeper insight on it, consider its composition and evaluate the ingredients for the continuous generation of it. This paper aims to provide a complete analyze on the key elements that lead organizations to victory in a sustainable development.

The DNA of an organization is composed of dreams, that were changed to ideas, that were transformed into work and perseverance, that thanks to people (in this case employees) became reality. Since earlier times, without human resources machines couldn't be invented, programmed or operated, which puts into a favorable light the necessity of qualified people for enthralling results. In the last century, the accent on education and training became much more intense during hiring processes, which encouraged governments, companies and regular people to invest more time, effort and

finance to the self-development. As a consequence, the need of competent professionals is increasing day by day, along with the expansion of requirements of each job. Due to the ever-changing requirements of customers, market, competition, society and climate, the trend of organizing orders' execution into teams and projects raised and therefore it becomes a project manager's responsibility and mission to seek the opportunities, mitigate the risks and deliver more than was expected.

In any successful project, the most important component is the people, both professionally, through the influence they can bring on the results, and personally, through instilling team spirit and belonging to it. The project manager plays the most important role because he/she is the interface of the client's needs, translated into the path to satisfy them, following a well-defined plan with a predetermined budget and a clear number of resources. Although the temptation is to consider that the projects can work without such a coordinator, upon a thorough analysis it can be shown that the time consumed by it does not destroy the execution time of the project, but reduces the minimum required duration by assessing the risks and preventing them accordingly.

Looking forward to the future of project management, this paper aims to provide an analysis of the key skills that will be in great demand, according to the direction of actual trends that lead to more automation, digitalization, human interaction, collaboration, efficiency and effectiveness. There's no new day that will come with a user manual to help you prepare for what will come next, but according to history, that's also compared an analyzed in this paper work, a good foundation of skills can be established in order to help the professionals to quickly adapt to what is coming next.

The end of this article studies the impact of project managers' actual competences and of the predictable ones in the sustainable

development of organizations, proving that each successful company builds its base on professionals with the right skills, motivation, talent and attitude. No robot or software will be able to deliver better results in an ever-changing climate, rather than the individuals that foresee the opportunities, use the right tools and make the best out of them.

## 2 A CRITICAL AND CONSTRUCTIVE ANALYSIS OF THE HISTORY OF PROJECT MANAGEMENT IN THE DEVELOPMENT OF PROFESSIONALS

The Project Management discipline has become an essential discipline in the context of an accelerated development of work environments, being in constant change and being increasingly oriented towards results. As a consequence, it offers a series of advantages and disadvantages, as follows (Nelson, 2012):

- The Advantages of Project Management
  - A much more efficient use of time and personnel resources;
  - Improving relations with customers and partners;
  - Orientation towards concrete results;
  - Establishing a timeline for carrying out activities;
  - Acceleration of the pace of development of the organization;
  - Employee motivation;
  - Increasing communication between project stakeholders;
  - Better establishment of employee roles and tasks;
  - Significant reduction of risks through a good estimation and management of them.
- The Disadvantages of Project Management
  - Emphasizing the complexity of the organization;

- Increasing costs for various activities (for example by adding hours needed for planning and documentation);
- Increasing the risk of deviations from company regulations, due to autonomy in different categories of activities;
- The existence of chances of errors in the organization, due to the subjective nature of the planning stage in accordance with the experience of the project manager;
- The probability of inefficiency in the use of staff depending on the timing between the end date of one project and the start date of another.

Regardless of industry, organizations rely on project managers to keep processes on track, ensure teams work together cohesively, and most importantly, drive projects to completion with success. In order to face such challenges, the project managers need to be fully equipped with the right mixture of:

- General capabilities
  - Planning and estimation
  - Forecasting
  - Time management
  - People management
  - Risk management
  - Quality Management
  - Knowledge Management
- Interpersonal Abilities
  - Communication
  - Motivation
  - Collaboration
  - Team engagement
  - Team management

From a holistically point of view, although you have an „army” of fully trained and capable people, you will still not reach the destination if you don't have the proper coordinators to lead the way until the objective. The leaders of today

are the ones that have the mission to transform company's strategy into tangible results, without altering in any way the values and ideas of the team members, stimulating constantly the creativity, raising motivation and maintaining a proper work environment, where stakeholders would feel appreciated, valuable and safe.

While the whole world of project management is still focusing on the Waterfall method vs. Agile methodology debate, the best project managers are struggling to combine traditional approaches to actual trends, boots-on-the-ground project experience and innovation. There's no certain recipe for the right percentages of genuine talent, education, certifications and hands-on experience to raise the knowledge level of a professional. It's all based on the response rate to changes that occur in projects every day and to the lessons learned from all these kinds of situations. It's a self-taught approach that at the end differentiates the ones with best competences to the others, translating these numbers into better salaries, better work-life balance and optimal results.

The modern project management society debuted with the case of the United Kingdom's Polaris program, that was the first system built as a submarine and used as a nuclear weapon. This project was made of tasks like researching, development and testing with high degrees of uniqueness, uncertainty and novelty, that had to be managed together with all the contracts and derived from activities like team management, stakeholder management, time management, knowledge management and so on. As the work was very complex and the stakeholders knew that this will be a long-term project, they started documenting the work by writing every test result, calculation or evidence on paper. Day by day it was becoming an ever-growing problem handling that much documentation on paper because it was hard to find the information that you were searching for. On a macro level, this project was characterized by a high level of

uncertainty, since delivery or execution times couldn't be estimated and this applied to costs, as well. Because of this, people involved in the project started to estimate the possible deadline using mathematical formulas based on three optimistic, pessimistic and most likely scenarios. This method was called the Program Evaluation and Review Technique (PERT). It was later improved and added cost as variable, using the same three scenarios approach.

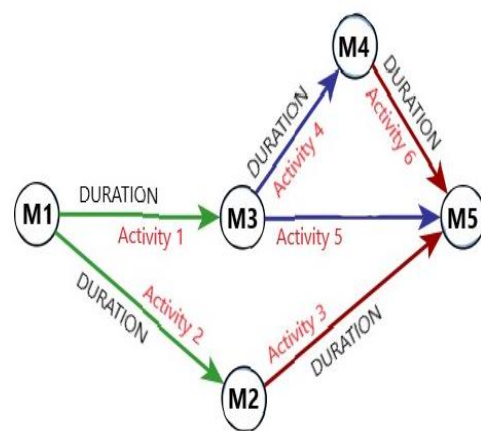


Figure 1. Example of PERT Network with 5 milestones and 6 activities

A second milestone in the project management society was considered the E.I du Pont de Nemours Company's project of constructing chemical plants in the United States of America. Unlike the Polaris project, this one was happening in the private sector and it was having certain deadlines and deliverables, which facilitated the development of the Project Planning and Scheduling methodology (PPS). It was based on realistic estimates of cost and time and therefore this approach was later included as basis of the Critical Path Method (CPM), that was widely used within the construction industry. (Takeuchi & Nonaka, 1986)

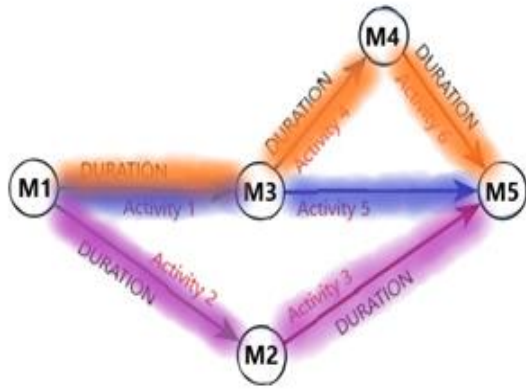


Figure 2. Critical Paths based on the shortest duration in the above example of PERT Network with 5 milestones and 6 activities

### 2.1 Human Interaction instead of Craftmanship

The first project management techniques were applied by instinct since the earliest époques, when Egyptians were building the Pyramids, when the Romans were constructing roads or when the first computers were developed. What started as common sense of handling the delivery of an expected result, later became the foundation of managing more complex projects via different specific tools and techniques, that debuted with two areas in parallel: planning and controlling. (Kozak-Holland, 2011)

The evolution of technology during this époque allowed the development of projects, as well. The growth of telecommunication industry increased the knowledge transfer and therefore the speed of communication, the automotive industry facilitated a better allocation of resources and contributed to the overall mobility. The biggest results achieved in projects during this period can be seen in the table below:

Table 1. Great Projects based on Human Interaction instead of Craftmanship

Name and year of the project	Description of the project	Competences needed in this project
The Great Pyramid of Giza (2570 BC)	It's the biggest Egyptian Pyramid ever built, one of the Seven Wonders of the Ancient World and the only one that remained intact until today.	Strength, Maths, problem-solving, critical thinking, communication
The Great Wall of China (208 BC)	It's a series of fortifications, that were built with the scope to keep under control the migration of various folks to China.	All of the above + building knowledge
The Pacific Railroad (1869)	It's the first railroad that facilitated the transit within the United States of America and it consists of 3075 km.	All of the above + engineering knowledge
The Hoover Dam (1931)	It's a gravitational-concrete arch dam that separates Nevada and Arizona in the United States of America. 5200 employees worked for it and it produces about 4 bn. KWh/year.	All of the above + human resources management

The Manhattan Project (1942)	It's the first nuclear weapon research and development project. 125 000 employees worked for it and it cost around 2 bn. \$.	All of the above + traditional management
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E.I du Pont de Nemours (1958)	of building chemical plants across the United States of America.	program management, strategy management
Apollo Programme (1960)	This project had the scope of sending and landing the first human being on the Moon.	All of the above + innovation management

## 2.2 Management as a Science

Between 1958 - 1979 the fast pace of the evolution of the information technology played a critical role also in the project management environment. The development of the first computer generation facilitated the spread of the possibility of owning one, as due to the ever-larger production, the prices were becoming more affordable and this led to more and more organizations buying technological equipment. As a consequence, Xerox manufactured the printers and a lot of software tools were developed by Oracle, Artemis, Scitor Corporation, etc. The biggest results achieved in projects during this period can be seen in the table below:

Table 2. Great Projects based on Management as a Science

Name and year of the project	Description of the project	Competences needed in this project
Polaris Program (1956)	This project had the scope of building a nuclear weapon out of a submarine for the United Kingdom.	All of the skills mentioned in Table 1 + knowledge management, research & development management
Chemical plants built by	This project had the scope	All of the above +

## 2.3 Human - Machine Collaboration

Starting with 1980, the innovation of personal computers (PC) and low-cost software tools allowed the development of efficiency and effectiveness in managing large and complex projects. (Project Management Institute, 2021) The information technology discipline became widely spread around the globe as it started to be taught in schools, universities and trained via private classes. The biggest results achieved in projects during this period can be seen in the table below:

Table 3. Great Projects based on Human - Machine Collaboration

Name and year of the project	Description of the project	Competences needed in this project
The Channel Tunnel (1989)	This international project had the scope of connecting England to France via an underwater railway tunnel. It was	All of the skills mentioned in Table 1 + public relations, marketing management

<p>The Space Shuttle Challenger (1983)</p>	<p>This project had the scope to make the second flight into space by an orbiter. The project was a failure, that resulted in deaths.</p>	<p>All of the above + risk management + quality management</p>
<p>The 15th Calgary Winter Olympic (1988)</p>	<p>This project had the scope of organizing the winter Olympic sports championship.</p>	<p>All of the above + event management</p>

### 2.4 The Beginning of a New Era

Beginning of 1990, the Internet connectivity started to influence the pace of today's business development, thanks to the opening of a never-ending horizon of knowledge, innovation and information. It has provided a friendlier way to be in contact with both workers and customers at the same time, with materials, technologies and equipment. Data collection topic got major improvements, as well, because Internet provided a smart, secure and reliable way to gather information about the project from each stakeholder and have it available for all the others at each moment, keeping the integrity of data untouched. (Project Management Institute, 2013) Furthermore, it provided an easier way for all persons that were involved in the project to know in real time the status of the project, the tasks of each employee, the percentage of completion, the delays (if any) and all other relevant topics for a sustainable organization.

The competences needed for project managers working in such a dynamic environment are part of a broad spectrum, as well. (The Evolution of Project Management) On

one side, the project managers need to have the digital and technical skills to operate the actual software tools, meant to ease the processes. On the other side, the project managers need to have the people skills in order to communicate with the stakeholders and further with the strategic committee in the organization, to delegate the respective tasks to the right people with the corresponding competences, to manage expectations on both customer and internal team side, to build trust within the team, to motivate the members, to mitigate risks and to deliver the expected results within the deadline, cost and scope agreed. (Chiu, 2010)

The Year 2000 incident known as Y2K taught us the lesson that this digital approach to everything around us will make us also vulnerable, but manageable. Solving the root cause of the problem could have been applied only locally, making networking, cybersecurity and IT resilience basis disciplines for each of today's sustainable organizations.

### 3 CONCLUSION

In a world that will continue to grow in all areas, the key competences that will differentiate professional project managers to the apprentice ones will be the continuous adjustment to change. The tendency for automation of processes and the use of project management software tools will increase during time with the scope of providing more transparency in terms of tracking KPIs about the status, cost, people and processes of a project.

The modern climate is dominated by a high level of uncertainty which makes the ability of a project manager to apply by the book traditional approaches like Agile methodology or Waterfall method a strong disadvantage because the problems that are occurring nowadays in a project are no longer standard ones, but actually a combination on multiple adverse factors. Although a project is delivered within scope, budget and time, this is not a guarantee that it

added value to the organization, as well. For a successful recipe, a highly experienced professional should apply innovative techniques together with the right percentage of out of experience lessons and literature knowledge. For a sustainable organization, a freestyle managing approach coming only from the project manager's inputs might be at risk, as well.

The agility of project management techniques decreases according to the size of an organization because when it comes to huge number of employees and a complex customer portfolio it's most likely to apply individual, original and innovative methods to keep the business growing. (Kwak, 2003) In this case, a successful recipe for the professional project managers might be constantly doing a retrospection of the state of a project, seeking for future needs and opportunities, while still delivering what was planned. Furthermore, this will come with the mission to transform the project manager role into a leadership position, that will be capable of implementing changes in the organization, while still keeping the stakeholders motivated. This approach comes with a high EQ, strong mindset and power of knowledge.

The business world is spreading its borders thanks to the evolution of Internet connectivity and quick learning skill and adaptability of people, which makes managing cross-functional teams in fully remote environment a reality for the organizations. As a consequence, project managers need to always seek for tracking tools of activities and time, without altering in any way the interpersonal skills of stakeholders.

Eventually, thanks to the Program Management Improvement and Accountability Act (PMIAA) signed by Barack Obama in 2016, the scientific proof of highly skilled project managers

will continue to grow up to a standard worldwide, influencing individuals to seek for more knowledge and therefore certificates. Although experience will always be the highest decision factor, the individuals that specialize in different areas and quantify their work in a diploma will always be valuable. In addition, sustainable organizations seek for certified professionals also as a way of increasing their prestige and therefore their corporate identity.

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