

# effectiveness of project management implementation on the successful completion of projects in construction in tanzania

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**Abstract** - Despite the importance of project management in the success of a project, little is known about its influence on the success of other projects. There is a wide variety of project management training and literature available, but these methods do not deliver consistent results. There is a need to understand the role that project management techniques play in the success of projects. This paper aims to provide a comprehensive analysis of the current state of project management techniques and their effect on the elements of success. Although project management has been around for centuries, the theoretical foundations of these methods are still not agreed upon. The success of a project depends on its management and the end-product, which represents the boundary of which polarizing reactions can be generated. Project success can be influenced by various factors outside of project management's control. The study analyzed the data collected from over ten nations. It revealed that most projects are successful, but they do not fully utilize the capabilities of modern project management techniques and tools. The influence of these techniques and tools on project success is dependent on the training of the involved parties and the timing of the implementation. The human factor, on the other hand, plays a significant role in determining the success of projects, as it affects the level of commitment and the quality of the end-product. The study found that project management is one of the two essential factors that can positively influence the success of a project.

**Index Terms**—Project management, project success, tools and techniques, success factors and criteria.

## INTRODUCTION

Since projects have been around since ancient times, it is assumed that the theories about project management have matured into solid frameworks. However, according to Koskela and colleagues, there is currently no measurable benefit from implementing best practices in project management due to the lack of a theoretical foundation and the narrow and implicit assumption that the concept is based on a static and narrow theory. The conventional approach to project management can lead to failure, as it can cause the projects to fail. Due to the lack of a clear definition of what project management is and how it can affect the success of a project, the debate about its contribution to project success continues to remain unanswered.

Although there is a general agreement about the importance of project management in achieving success, there are still major disagreements between practitioners, researchers, and scholars. This suggests that a lot of ground is still to be covered in the debate about its impact on project success.

## WHAT IS A PROJECT?

A project is defined by the BS 10006:1997 as a process that involves a set of controlled activities that are designed to achieve an objective that is consistent with certain requirements. Projects have specific rules and characteristics that are different from operational work. Contemporary literature provides numerous definitions and findings related to projects, which highlight the unique characteristics of each type. These are temporary organizations that are established to achieve certain goals. After the project is finished, the teams that worked on it are often assigned to other projects. One of the main disadvantages of temporary organizations is that the teams are only expected to perform their duties for a certain amount of time. According to Shenhar, projects are typically not successful because the managers use the same techniques and tools for each project. Due to the unique characteristics of projects, it is often difficult to implement a standard management methodology that can effectively manage them. This is because the different goals and objectives of each project require different judgment.

## MANAGEMENT OF PROJECTS

The goal of project management is to get the job done as planned and efficiently as possible. It avoids costly errors and delays and achieves external goals related to the customer's needs. Unfortunately, projects can still fail to meet their objectives or exceed their budgets. Modern project management was introduced during the Manhattan project in the early 50's, but certainly, projects have been realized before that time. It is widely believed that Henry Gantt created the bar chart in 1916. A review of the literature revealed that a Swiss Engineer named Hermann Schuerch used the same tool in 1912. This led to the conclusion that project management was already widely established several years earlier than previously believed. The concept of project management is still in its infancy due to the lack of theoretical and conceptual basis. It is also believed that the methodologies used for project management dates back to approximately 2550 BCE. Projects are generally designed to respond to certain uncertainties. On the other hand, tasks associated with projects are more demanding and can be more challenging to manage. In 2000, the PMBOK Guide noted that the concept of project management only applies to most projects.

The implementation of project management techniques and tools can be very challenging due to the lack of a clear definition of what they should be used for. Most of the time, project management techniques and tools are only applicable to a specific project. It is also widely believed that project management techniques are not very effective at influencing the success of a project.

**PROJECT SUCCESS**

One of the main goals of project management is achieving consistency in the success of the project. Unfortunately, the lack of a defined definition of success can also complicate the process. According to a study conducted by Bjeirmi and Munns in 1996, project managers directly affect the success of projects by their experience. However, other factors such as the quality of the work and the cost of the project can also affect its success. Measuring and reporting the success of projects are often regarded as traps that are only used to make a quick and misleading assessment. In 2006, Dvir and colleagues noted that these measures are often not objective and could be misleading. A study conducted by Baccarini in 1999 revealed that even though all of the constraints of a project have been met, it might not be able to meet the requirements of its sponsor. This finding led to the conclusion, that product success and project management success are the only factors that can create project success. Project success is typically regarded as a single measure, with either the project being successful or not. In 1999, Mohamed and Lim presented a macro and micro perspective that focuses on different aspects of project success. The micro perspective focuses on the project's management success, while the macro perspective considers the long-term customer satisfaction. This concept is an analogue of the De Wits distinction between project management success and success. According to De Wit (1988), project success is computed based on the objectives of the project.

TABLE I: LITERATURE SUMMARY OF PROJECT SUCCESS CRITERIA.PARTIALLY (ADAPTED OF WESTHUIZEN, D. AND FITZGERALD E., 2005)

PROJECT SUCCESS CRITERIA	Booch 1996	Wateridge 1998	Baccarini 1999	Kerzner 2002	Thomsett 2002	Marchewka 2003
Quality of Project management process			X	X		X
Within time	X	X	X	X	X	X
Within budget	X	X	X	X	X	X
Specified quality	X	X	X	X	X	X
Specified service quality		X	X	X		
Specified service quality						
Specified service quality		X	X	X	X	X
User satisfaction	X	X	X	X	X	X
Net benefits		X	X		X	X

The traditional performance measures are used to measure project management success. In 2006, Srivannaboon and Milosevic noted that the link between the project management and the final product is the new dimension in achieving project success. This approach may not be focused on managing projects successfully. Instead, it aims to deliver business outcomes. Other researchers also noted that the success of a project should be measured from the perspectives of various individuals, such as the end-user, contractor, and owner.

It is widely believed that various factors can affect a project's success. However, according to Liu, it is not always possible to measure the success of a project based on its individual success measures. This suggests that the concept of project success can be difficult to establish. In 2005, Kam and Miller noted that if the end product of a project doesn't meet the expectations of its customers, it might not be successful. Although the project was managed successfully, it might not have been able to deliver the promised outcome. The authors of this paper then highlighted the contradiction in their statement, stating that the operation was successful, but the patient

died. Project success, in simple terms, consists of product and project management success.

**REVIEW OF CONTEMPORARY PROJECT MANAGEMENT TOOLS AND TECHNIQUES**

There is no standard definition of success of a project or project management, as Dvir et al noted in their study. There are also no universal factors that can be used to evaluate the success of a project. This makes it difficult for contemporary researchers to justify the positive effects of project management on a project's success. In project management, the importance of the proper application of techniques and tools is acknowledged. Since there are so many different types of tools and techniques, it is very important that the right

one is used at the right time. According to Zeitoun (1998), the influence of various techniques and tools on a project's success depends on the training of the participants and the implementation process. This suggests that success factors that are influenced by human factors do not directly relate to the techniques and tools of hard project management. Other researchers, such as Nguyen, Opfer, Samson, and Scott-Young, also confirmed these findings. In a study conducted by Thamhain in 1999, only 50% of project management professionals are familiar with the various techniques and tools used in project management. Only 28% of them are actually using them effectively. A study conducted by Sayers & Al-Hajj in 2014 revealed that about 42% of UAE professionals do not utilize the Work Breakdown Structure in their projects. On the other hand, 48% of them do not feature an organised breakdown structure. Despite this, the projects that were evaluated by the researchers still managed to achieve a success rate of around 66%.

The findings of these studies are surprising, as they suggest that the various techniques and tools utilized in project management do not directly affect a project's success, though several studies also suggest that timely and properly implemented techniques can lead to success. The selection of the right tools and techniques for a particular phase of a project is a sensitive process that involves making a decision based on the requirements of the project. Using the wrong techniques and tools can lead to a project's failure. The project manager is responsible for the success of a project. In order to align the project's execution strategy with the company's primary strategy, the project manager is required to have the necessary training. In 2003, Turner and Miller noted that the term "project manager" should only be used for individuals with the necessary credentials to gain the confidence of their clients and the approval of their principals. Despite the importance of competence, other studies also suggest that it does not guarantee a project's success. The studies that analyzed the various aspects of project success were partially aligned with the macro and micro perspectives of Mohamed and Lim. They noted that the success of a project depends on the overall management and the competence of its project manager. Dvir and colleagues stated that planning a project is useless, as it is impossible to plan every activity in its entirety. In order to ensure that the project is successful, project management must keep in mind that external and internal factors can affect the project's success. One of the most important factors that project managers must consider when it comes to success is their competence. According to Miller and Turner, the quality of training provided by the project management industry is a predecessor to the success factors of projects.

**LINK BETWEEN PROJECT MANAGEMENT AND PROJECT SUCCESS**

Although project management techniques and tools are not directly related to project success, they can influence it. In addition to other factors, such as the design and construction of the project, project management practices can also play a significant role in achieving success. Many researchers believe that the proper use of tools and techniques can help improve a project's success. The modern literature defines project management as a process that involves the combination of various concepts and procedures. In 2004, Besner and Hobbs noted that the difference between using generic procedures and tools and those that are applied to specific tasks is often perceived as being related to the experience of a cook. The use of the metaphor of the iron triangle emphasizes the importance of using the correct tools and techniques instead of generic procedures and concepts. Although the concept might seem outdated, the iron triangle is still considered a widely-accepted measure of project management success. The concept of product success is also related to the micro and macro-level perspectives of project success. Although product failure can happen during the course of a project, it is unlikely that the project will be considered successful if it does not produce desirable results.

TABLE II: PROJECT SUCCESS FACTORS OF LITERATURE REVIEW Source: compiled from Ashley *et al.* 1987 [47]; Nguyen *et al.* 2004 [32]; Rohaniyati 2009 [51]; Toor *et al.* 2008 [52].

RANK	ASHLEY ET AL. (1987)	NGUYEN ET AL. (2004)	ROHANIYATI (2009)	TOOR ET AL. (2008)
1	Organisational planning effort	Competent project manager	Project manager's capabilities and experience	Effective project planning and control
2	Project manager goal commitment	Having adequate funding until project completion	Clarity of project scope and work definition	Sufficient resources
3	Team motivation and goal orientation	Multidisciplinary/competent project team	Organisational Planning	Clear and detailed written contract
4	Scope and work definition	The commitment to project	The use of a control systems	Clearly defined goals and priorities of all stakeholders
5	Project manager capability and experience	Availability of resources	Project manager's goal commitment	Competent project manager
6	Control system	Top management support	Project team motivation and goal orientation	Adequate communication among related parties
7	Safety	Awarding bids to the right designer/contractor	Safety precaution and applied procedures	Competent team members

**RESEARCH METHODOLOGY**

The objective of this study was to collect facts about the project management process and its effect on project success. The findings of the literature review support the idea that project management can influence project success. It is therefore recommended that studies on a global scale are conducted to identify the various factors that can influence a project's success. The quantitative data collected from the survey was gathered through a web-based questionnaire, which was sent to 142 project managers. The participants were chosen based on their geographical location, employment status, and background. The quality of the data was achieved by having more than 75% individuals occupying managerial positions. The questionnaire was composed of multiple Likert scale questions and matrix ratings, which were derived from the findings of the literature review.

- Successfully delivered projects utilize tools and techniques of project management practices.
- Project failures have patterns related to methods adopted to the implementation of project management tools and techniques.
- Competent project managers have a strong command of project management tools and techniques, relevant to produce the project life cycle phase deliverables. Thus, properly trained project managers have influence on project success.

These presumptions are based on the conclusions of Miller and Turner in 2003, where they state that certification is required for high-performing project managers. Although different projects have their own success factors and criteria, the perceptions of different cultures and nationalities regarding project success are different.

**ANALYSIS OF RESULTS — PROJECT SUCCESS**

The survey results revealed that 86.3% of contractors and clients are satisfied with the work that was done on their projects. It also showed that project managers are more likely to feel that their satisfaction is independent of the project's overall success. The findings suggest that project management's success can influence how perceived a project's success is. Although the majority of the surveyed projects were still in the execution phase, it is not clear if the success of the product affected the rating of the project's stakeholders. It is also interesting that despite the failure of traditional measures, some stakeholders still feel that their projects are still on track. For instance, 42.9% of the displeased stakeholders noted that their projects are on time, while 71.4% are within budget, and 28.6% are delivering the goods according to their terms and conditions. However, demonstrating the success of the Atkinson Iron Triangle does not necessarily prove that the project is successful.

The survey results show that the majority of the displeased stakeholders are not associated with a client organization. On the other hand, almost half of the respondents are contractors. Despite the findings, the project management literature still indicates that the primary success measure is not always accurate when assessing a project's success. Additional parameters should be considered when assessing a project's success. The results of the survey revealed that most of the respondents' projects are on time, are within budget, and are exceeding quality requirements.

The survey results also indicated that about two-thirds of the projects that were surveyed were able to achieve stakeholder satisfaction and successfully meet the project management success criteria. However, when it came to project completion, only 47.8% of the survey respondents expected the project to be finished successfully, and only 19.6% believed that the outcome was achievable. The importance of having adequate funding until the project is completed was also considered by the respondents as a significant factor that influences a project's success. However, it is possible that the rating might have been influenced by industry or market fluctuations. This finding suggests that even global shifts can have an effect on a project's success.

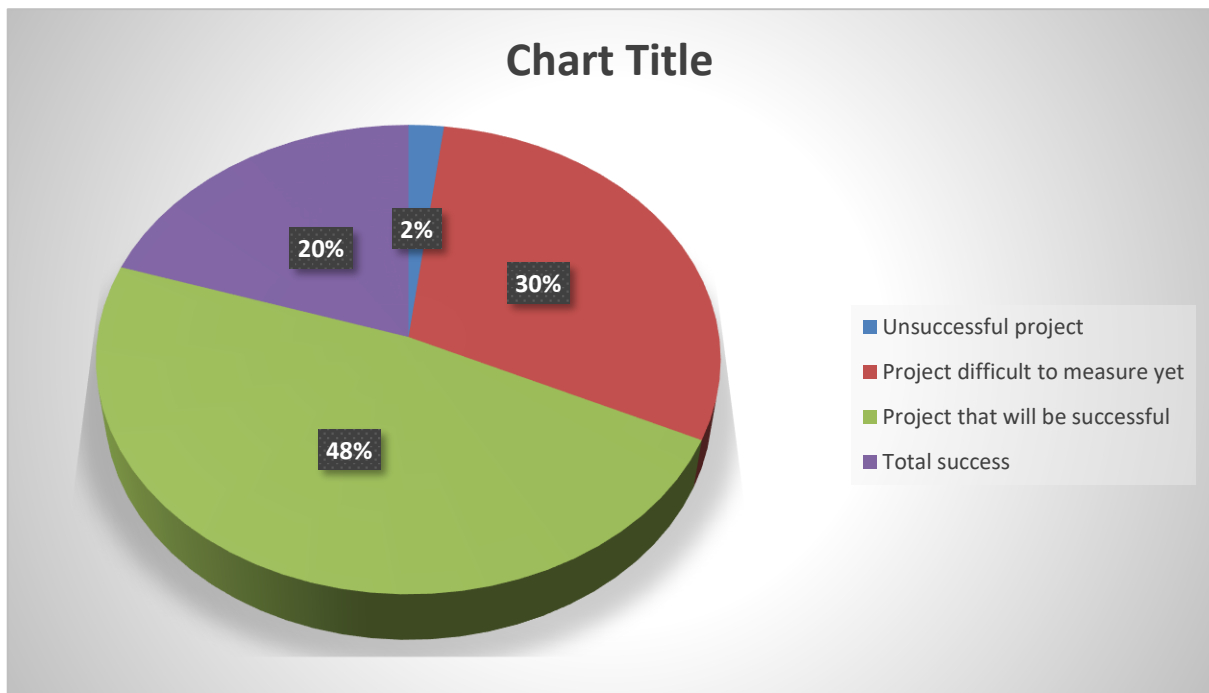


Fig. 1. Project success status.

*i. Beyond Stakeholder Satisfaction*

According to the second graph, over 20% of the respondents stated that they had excellent quality, with most of these coming from Asia. Although Ashley and colleagues claimed that success only comes with delivering "results that are much better than expected," this does not align with the concepts of project management and quality management. In 2006, Wang noted that the importance of relationships is a measurement of project success. In 1997, Shenhar and colleagues also ranked the satisfaction of their stakeholders before the cost, quality, and time of the project. This practice may not be endorsed by some professional organizations, and is referred to as "gold plating."

Project managers are not expected to deliver extras to their customers. They are only expected to deliver what is needed to meet the project's objectives. This response suggests that some stakeholders in Asia are trying to foster relationships by exceeding their contractual obligations. Despite this, 47.1% of the respondents still deliver their projects according to their terms and conditions. (see Fig. 2).

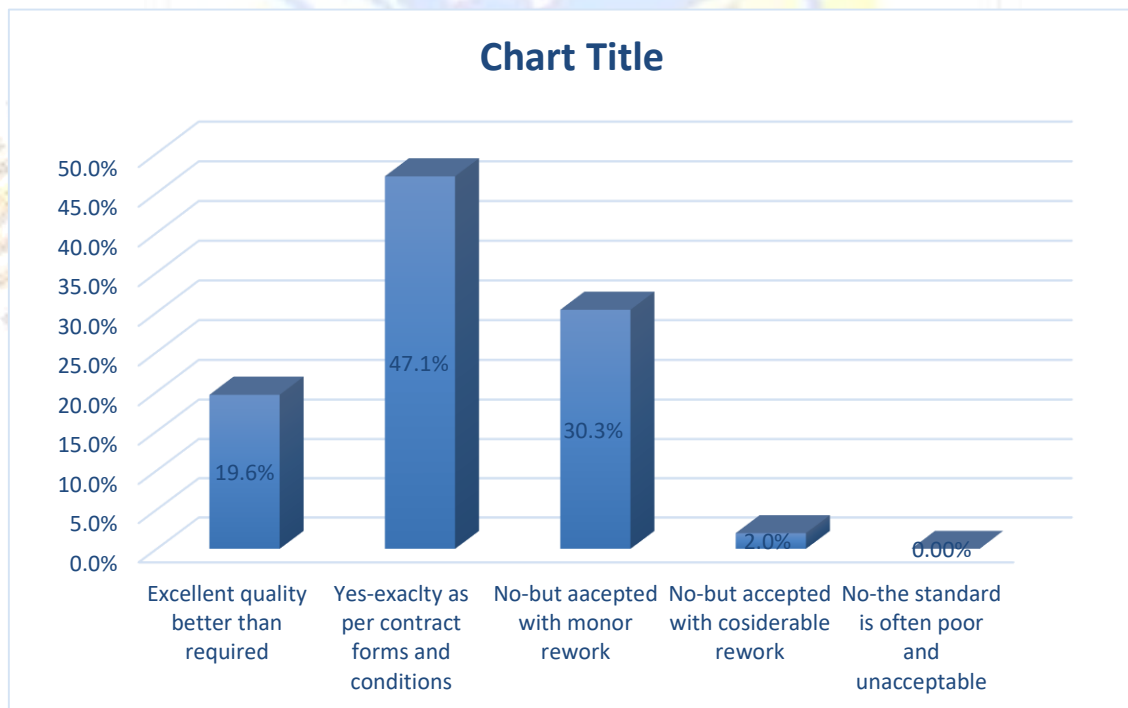


Fig. 2. Project quality standards compliance.

ii. *Project Manager Competence*

According to Fig. 3, project managers' competence is the most important attribute they need to have in order to lead a successful project. This contradicts what Muller and Turner (2005) said, that there is no correlation between the competence and leadership style of a project manager and project success.

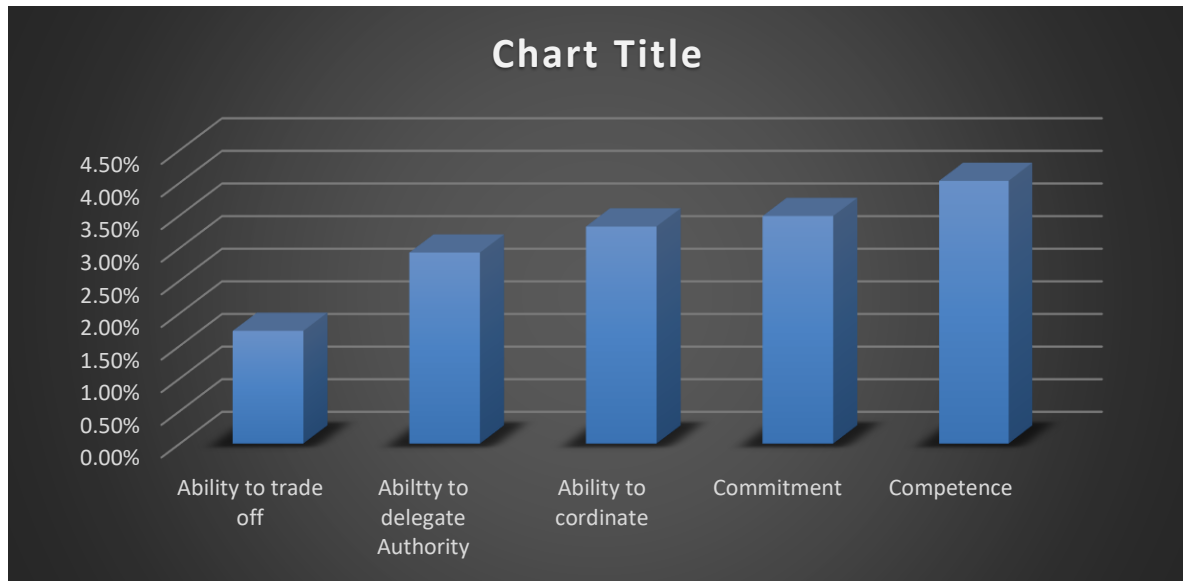


Fig. 3. Traits of project managers.

iii. *Project Management Traits*

A project manager should have the necessary training and certification to carry out their duties. According to a survey, over 60% of respondents do not have the necessary skills to manage projects. Only a small number of practitioners believe that getting the necessary certification is a requirement for project management. The results of the survey revealed that many practitioners think that gaining competence through the certification process is not necessary for project managers. About three-quarters of the respondents are project managers, and over 20% of them are senior project directors. The survey participants are from various age groups. The majority of them are between the age of 25 and 65. They have a bachelor's degree or higher, and only a third of them have experience with project management. Despite being associated with international project management organizations, most of the respondents did not have the necessary training.

The results of the survey suggest that project success is not related to the training that one receives regarding project management. Most of the respondents entered the field of project management through experience, which contradicts the notion that project managers should only be individuals with professional certificates.

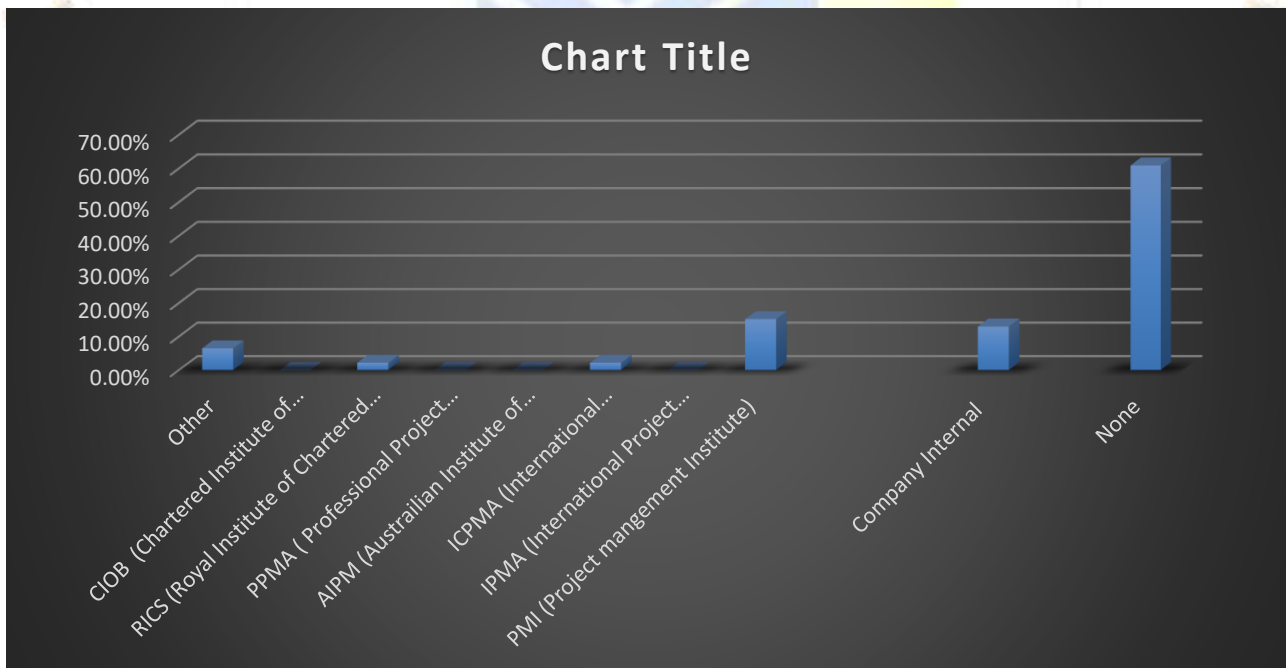


Fig. 4. Professional affiliations.

iv. *Utilisation of Tools and Techniques*

The results of the literature review indicated that the various factors that influence a project's success are similar to those that influence the ranking of this survey. The results of the survey revealed that the most effective project management techniques were rated 4.78 out of 5. However, the respondents ranked a competent project manager as one of the eight success factors. This finding contradicts the assertions made by Dvir et al. in 1998 and Liu in 1999. They claimed that individual projects have different success factors.

Almost all of the surveyed project managers are currently in the execution, monitoring, and control phase. This means that their responses to the various techniques and tools used in the project were limited. Despite this, 9.6% of the respondents rate the effectiveness of project planning as very important, while 19.5% claim that they rarely use Earned Value Analysis. In addition, 16.7% of the respondents do not use a work breakdown structure. This finding suggests that the importance of project control and planning is not as great as it seems. The percentage of professionals who rate the effectiveness of these two techniques as very important is a contradiction. The respondents also rank clear objectives and their scope only on the sixth rank of the success factors. This suggests that despite the increasing importance of project planning and control, many professionals do not fully appreciate the multiple tools and techniques that are used in the project management process. This suggests that they do not have the necessary training to use them.

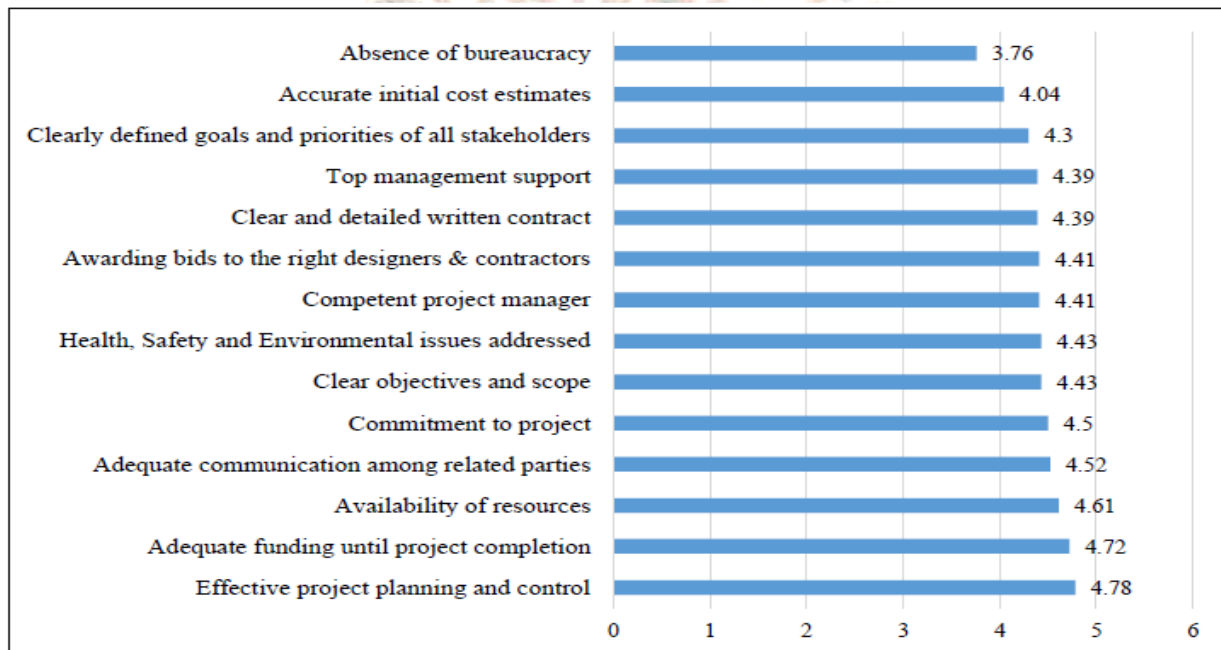


Fig. 5. Project success factors from data.

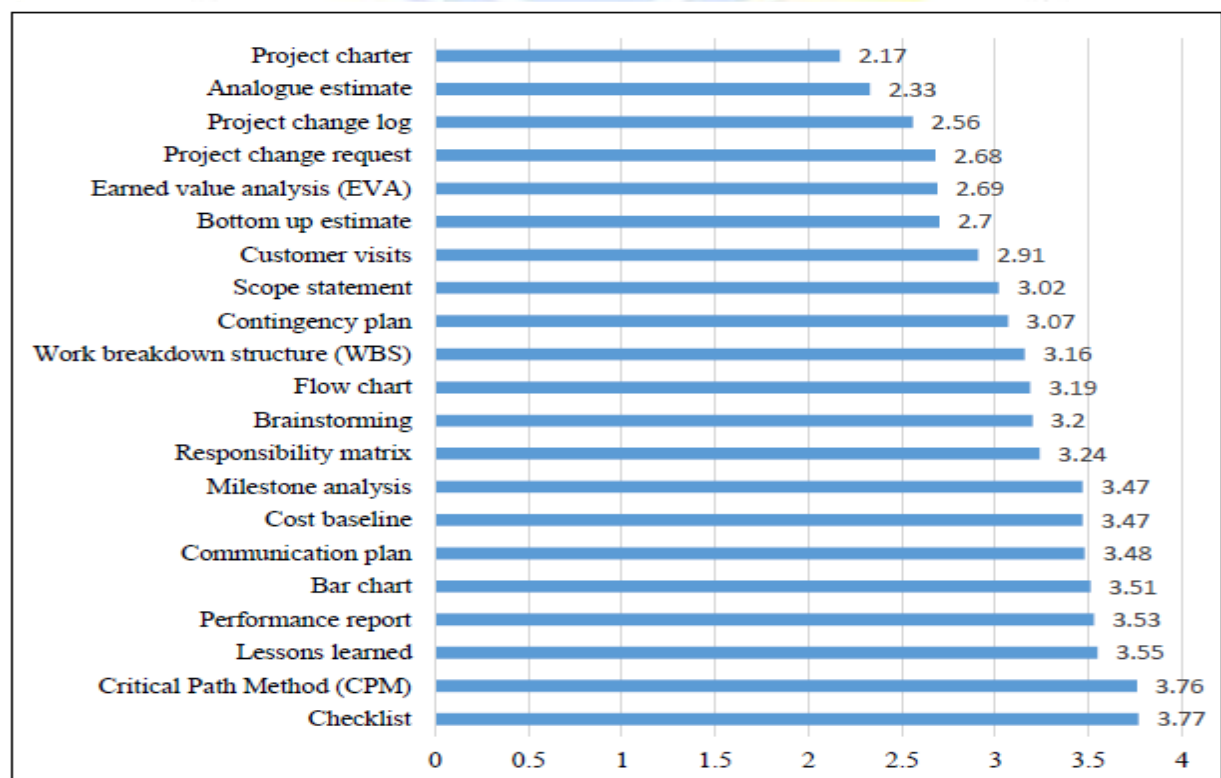


Fig. 6. Use of project management tools and techniques.

## CONCLUSION

There's a correlation between successful project management and the success of the project itself. Although the traditional methods of measuring project success can be used to determine its success, they do not guarantee that the stakeholders are satisfied. Project success is perceived regardless of the various factors that affect it. The results of a survey do not reflect the success of a project if it is not managed properly. This is why it is important that project management techniques and tools are utilized to measure its success. There are a variety of project success measures that are applicable to every construction project. Information about these projects comes from across ten different countries. The literature presents a variety of project success measures that are applicable to every construction project. Despite the lack of evidence supporting the use of project management techniques and tools perfectly, most project managers follow project management procedures. Successful project management techniques and practices are commonly used in construction projects, which positively affects their success.

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