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Research Paper

Exploring Project Success Factors in Developing Countries: Focus on Morocco

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Abstract

Although project management (PM) literature has addressed project success, attention has not been paid to statistically testing the relationship between various critical success factors (CSFs) and project success in developing countries. Determining the most relevant factors can optimize efforts and boost the project success dimension in this specific environment that struggles to achieve the desired development objectives. Therefore, the aim of this paper is to statistically prove the relationship between project success and an extant range of selected CSFs that englobe PM variables, organization structure, project manager competencies, communication, top management, risk management, and prioritize them to provide valuable information to project managers and enhance the likelihood of project success. The data were collected by means of a survey addressed to project managers and practitioners from Morocco in both public and private sector. Multiple stepwise regressions were conducted to uncover the relationship between each success criteria and the considered CSFs. The results show that the considered model for the first factor of project success covers 59,1% of its variance. The significant variables of this model are PM competencies and PM KPI that increase the success of the first factor by 49% and 29%, respectively. The variance of the second factor of project success is explained by 68%. The significant independent variables are communication, top management support, PM Partnership, PM KPI, and PM policy and strategy. According to the results, the variables participate in project success by 37%, 28,1%, 19,8% 29,9% and 15,5%, respectively.

Keywords *Project management, Critical success factors, critical success criteria, Project success*

INTRODUCTION

Developing economies face many challenges related to many issues, such as construction and sustainable cities due to the important population growth rate (Cohen, 2006), the introduction of new technologies, and the digitalization of services in both the private and public sector (Ndou, 2004). All these issues can be addressed efficiently by implementing suitable projects that match governments and organizations' strategies. Some authors have assimilated a project into a strategic weapon that has the power to turn strategic objectives into real products and services (Shenhar et al., 2001).

However, many previous studies in developing countries have revealed the problem of project failure in diverse activity sectors such as construction (Nguyen & Chileshe, 2015), IT (Ebad, 2016), government projects (Damoah & Akwei, 2017), development projects (Zuofa & Ochieng, 2018) and so on. A study by Nzekwe et al. (2015) considered project failure as a reoccurring issue in developing countries and became interested in the non-fulfillment of construction projects in Nigeria for both public and private sectors. Their research disclosed many reasons for failure, some specific to the construction sector and others specific to project management, such as poor planning during project implementation and changes in project scope. An alternative to overcome the project failure issue is to determine the factors that impact project success and focus on them while planning and executing the project. A previous study by Mir and Pinnington (2014) emphasized the link between project success and project management performance. His research

has statistically confirmed this link in the case of UAE; however, project success variance was explained by 44,9% by PM performance. This means that 55,1% of the variance of project success in his model is not explained by PM performance but by other critical success factors.

In this study, we aim to statistically prove the link that exists between project success and different critical success factors, which will constitute the 7 explanatory/independent variables of our model, namely PM performance, top management support, communication, risk management, project manager competencies, clear project goals, and organization structure. These variables will be measured through a survey to statistically prove the relationship between project success and each variable. On the other hand, it compares the impact of each other so we can know the most relevant variable with the highest impact on project success.

LITERATURE REVIEW
Project Success Criteria

Project success is an ambiguous notion, and no consensus has been reached among academicians and practitioners about a clear and unique definition (Prabhakar, 2009). Therefore, authors consider project success as a multidimensional concept (Shenhar et al., 2001), and instead of defining success, they identify success criteria that are measures by which the success or failure of the project will be judged (Lim & Mohamed, 1999). However, success is perceived differently and depends on the point of view of the project stakeholders (Davis, 2014). Shenhar et al. (2001) deduced by examining case projects that the project success criteria depend on the project type and the period during which the assessment occurred. Westerveld (2003) defined six result areas for judgment: technical performance and the appreciation of five types of stakeholders: the client, the project personnel, the users, the contracting partners, and the rest of stakeholders. In contrast, a recent literature review concluded that meeting the organization's strategic objectives is the most important criterion (AA et al., 2018). From the precedent review, the project success will be measured by 5 components, which will constitute together the project success construct, namely the achievement of a strategic objective, project efficiency (scope, cost time), stakeholders' satisfaction, impact on the organization, and the last, preparing for the future.

Critical Success Factors

In the previous paragraph, we discussed the fact that project success is a multidimensional variable; therefore, to measure it, we need to identify conditions against which success is assessed. These conditions are called project success criteria and constitute the dependent variable in our model, which is the project success construct. In this subsection, we discuss critical success factors that constitute in our model the independent variables that explain the project success construct. In the literature, critical success factors are defined as those few things that must go well to ensure success for a manager or an organization (Boynton & Zmud, 1984). Critical success factors are those few things that must go well to ensure success for a manager or an organization (Boynton & Zmud, 1984) In the 80th, Pinto and Slevin (1987) mentioned 10 critical factors for successful project implementation. These factors are classified by the authors into four groups: factors related to the project, factors related to the project manager and team members, factors related to the organization, and external environmental factors (Belassi & Tukel, 1996). In the following subsection, the authors present a definition of every CSF considered in the study, its measuring methods, and the arguments beyond choosing it in this study.

Top Management Support

Top management support is the second most cited factor in the literature review conducted by Lamprou and Vagiona (2018). This factor is defined as the top or divisional management support

for the project that has been conveyed to all concerned parties (Pinto & Slevin, 1987). The importance of top management support in project success has been improved by many studies (Chan et al., 2004; Young & Poon, 2013; Zwikael, 2008). Therefore, we can suppose that,

H1: Top management support has a positive impact on project success.

In this study, the top management support will be considered as a single dimensional construct and its level will be measured by a Likert scale graduated from 1 to 5, with the lowest scale indicating no support and the highest scale (5) interpreted as very supportive.

Project Manager Competencies

Many authors have mentioned the role of the project manager and how their hard and soft skills influence the project (Dvir et al., 2006). It has been recognized that project manager leadership skills have a great role to play in project success (Anantatmula, 2010) and project efficiency as well (Turner & Müller, 2005). Previous research has deduced the importance of leadership skills (Alvarenga et al., 2019; Brill et al., 2006) as technical skills (Chipulu et al., 2012). Therefore, we can make the following hypothesis:

H2: Project manager competencies have a positive impact on project success.

Project manager competencies will be measured through four items: Project manager technical skills, Project manager PM skills, Project manager leadership skills, and Project manager interpersonal skills. To understand this issue, the current issue will measure each item by a Likert scale graduated from 1 to 5; with 1 mean feeble to 5 which mean solid.

Risk Management

According to the PMBOK 6th edition (Project Management Institute, 2017), risk management is one of the ten knowledge areas needed for managing project success. This statement is aligned with other studies, such as Lamprou and Vagiona (2018) and Ali et al. (2018). On the other hand, researchers from Malaysia have concluded that risk management is essential to project-oriented activities and positively impacts project performance. In the literature review conducted by Lamprou and Vagiona (2018), the risk management frequency of reference is high.

The risk management framework integrated four stages: risk identification, risk assessment, risk response, and risk monitoring. Therefore, risk management will be considered in this study and will be measured by four items: risk identification, risk management planning, implementation of risk responses, and updating the risk situation throughout the project. A Likert scale graduated from 1 to 5, where 1 means feeble and 5 means strong, will be considered a measure of each item. As a result of the previous discussion, the following hypothesis can be made:

H3: Structured risk management positively impacts project success

PM Performance

The role of project management in project success is widely developed in the literature, and many authors emphasize the fact that project management impacts the achievement of project objectives such as time, cost, scope, and quality (Anantatmula, 2010; Besner & Hobbs, 2006; Munns & Bjeirmi, 1996). For developing countries, Abbasi and Al Mharmah (2000) concluded that PM is an efficient approach that would help developing countries in upgrading their management capabilities and enable them to efficiently complete projects and attain development goals.

Empirical research in the case of UAE has empirically proved the role of PM performance in project success (Mir & Pinnington, 2014). As a result, the following hypothesis can be made:

H4: Project management performance has a positive impact on all project success criteria.

In this research, the PMPA model will be used as a means to measure PM Performance. The arguments behind this choice lay on the fact that the validity of the PMPA model has been tested in the case of a developing country, Pakistan (Qureshi et al., 2009), and this model has also been used to explore the relationship between project success and PM performance in the case of the UAE (Mir & Pinnington, 2014). The PM Performance Assessment Model proposed by David James (2003) evaluated PM performance according to 5 enablers plus a criterion of results. The 6 independent variables that represent project management are PM Leadership and Culture, PM Staff, PM Policy and Strategy, PM Partnerships and Resources, Project Lifecycle Management Processes, and PM Key Performance Indicators (KPI).

Project Communication

Pinto and Slevin (1987) mentioned communication as one of the CSFs needed for successful project implementation. Otherwise, a study by Ziek and Anderson (2015) have highlighted the fact that communication is considered in one hand as a project management skill and in the other hand as success factor. In the literature review conducted by Lamprou and Vagiona (2018) found communication was in the third level on the frequency of reference. Therefore, we can formulate the following hypothesis:

H5: Communication has a positive impact on all project success criteria.

Clear Project Goals

The first critical success factor that appeared the most in the literature review. The explicitness of the project mission and the lack of ambiguity in defining project goals were the first CSF cited by Pinto and Slevin (1987). Project objectives should be specific, measurable, and operational to empower project success, as mentioned by Somers and Nelson (2001) when examining CSFs for ERP implementation. Therefore, we can suppose that:

H6: Clear project goals have a positive impact on all project success criteria.
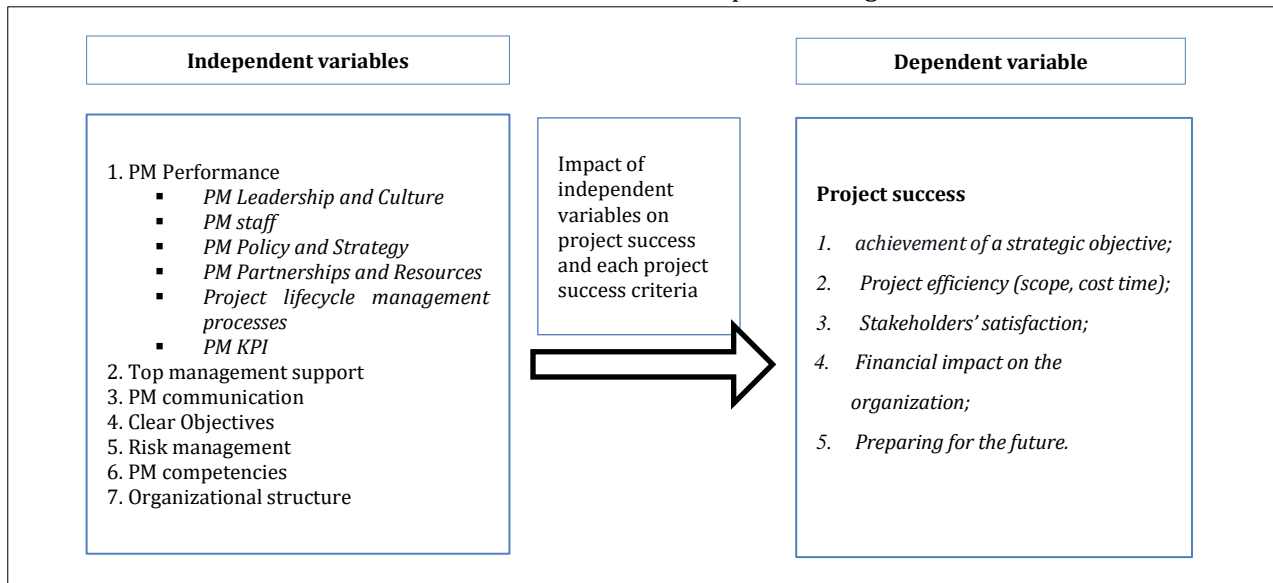
Organizational Structure

Organizational structure is a critical success factor cited in the literature (Lamprou & Vagiona, 2018). Three major organizational structures are known: functional and projected. A previous study indicates that matrix structure increases project success over functional structure (Kuprenas, 2003). Therefore, we can suppose that

H7: Functional organization structure has a negative impact on all project success criteria.
H8: Matrix and projected organizational structure have a positive impact on all project success criteria.

According to a previous literature review, project success is considered a construct variable with 5 dimensions. As explained in this section, the current study will have seven independent variables, namely PM Performance, Top Management Support, PM Communication, Clear Objectives, Risk Management, PM Competencies, and Organizational Structure. Multiple regression analysis was used to test the hypothesis and explore the link between dependent and independent

variables. In meticulous detail, the research framework depicted in Figure 1 is described.

Independent variables		Dependent variable

1. PM Performance
    ▪ *PM Leadership and Culture*
    ▪ *PM staff*
    ▪ *PM Policy and Strategy*
    ▪ *PM Partnerships and Resources*
    ▪ *Project lifecycle management processes*
    ▪ *PM KPI*
2. Top management support
3. PM communication
4. Clear Objectives
5. Risk management
6. PM competencies
7. Organizational structure
	Impact of independent variables on project success and each project success criteria ⟹	**Project success**
		
		1. *achievement of a strategic objective;*
		2. *Project efficiency (scope, cost time);*
		3. *Stakeholders' satisfaction;*
		4. *Financial impact on the organization;*
		5. *Preparing for the future.*

Figure 1. Research Framework

RESEARCH METHOD
Data Collection

Regrettably, there is an absence of extant data regarding CSFs and project success in Morocco. Consequently, the researchers conducted a survey to acquire data, with the aim of exploring results and testing hypothesis. An online questionnaire was sent to groups of project management professionals, including project managers, PMO team, program managers, and portfolio managers working in both public and private Moroccan organizations as well as multinationals. The answer rate is 27.33%, and from 300 professionals contacted, 91 participants answered during a period of 45 days. The survey data have been treated using SPSS statistical software in its 26th version.

The survey is divided into three sections. The first section provides general information about the organization, such as industry type, type of ownership (private or public), type of structure, size, and other useful information about respondent professional experience and position in the organization. The second section consists of measuring project management performance using Likert scale questions on a scale from 1 (the lowest degree to 5 the performing degree. The third section consists of collecting data about success criteria and some critical success factors in a recent project within the organization using the Likert scale. At the end of this section, two open questions about the factors that most influence the success or failure of a project are being asked respondents.

Sampling Method

The sampling method used in this survey is a non- probabilistic method, called purposive or judgmental sampling, which consists of selecting cases that will best allow the researchers to test the research hypothesis (Saunders et al., 2007). Therefore, an on-line questionnaire has been sent to groups of project management professionals including project managers, PMO team, program managers and portfolio managers working in both public and private Moroccan organizations and multinationals branches in Morocco. The answer rate is 27.33%, and from 300 professionals contacted, only 91 answered the questionnaire in the case of Morocco and during a period of 45

days.

Internal and External Validity

To ensure external validity, questions in the survey were deduced from previous models in the literature and empirical research (Bryde, 2003; Qureshi et al., 2009; Serrador & Turner, 2015). Furthermore, for internal validity, a pilot study was conducted to test the questionnaire and collect data related to the project management situation in Morocco. At the end of this pretest, some questions have been modified.

Study sample

The study sample contains 91 respondents, 70 of them project managers, 9 program managers, 8 portfolio managers, and 4 working in a project team. The participants are from different backgrounds: public sector, private sector, and multinational. 46% of the participants have an experience between 5 and 10 years and percentage have an experience above 10 years, which means that 86% of the sample practiced project management for more than 5 years (See Table 1).

Table 1. Respondent Profile

Respondent profile	Number
Project manager	**70**
Less than 5 years	12
Between 5 and 10 years	33
More than 10 years	25
Potrfotlio manager	**8**
Between 5 and 10 years	5
More than 10 years	3
Program manager	**9**
Between 5 and 10 years	3
More than 10 years	6
Project team	**4**
Less than 5 years	2
Between 5 and 10 years	1
More than 10 years	1
Total	**91**

Segmentation of the sample by industry shows a high presence of the IT sector in the sample, followed by finance, banking, and services. The dominant organizational structure for organizations in the sample is the functional structure. The majority of organizations in the sample (62%) have a large structure with more than 500 employees.

FINDINGS AND DISCUSSION
Reliability

A Cronbach index analysis was conducted by the researchers to ensure the consistency of construct variables in the survey, which are project success criteria, project management performance, project management competencies, and risk management. All items have a Cronbach's Alpha Index based superior to 0.7 (See Table 2). This value is acceptable for academic studies (Cronbach, 1951).

Table 2. Cronbach's Alpha Index Results

Construct variables	Measures	Items	Cronbach's alpha index	Cronbach's alpha index standardized items
Project management performance	Culture and leadership	7	0,823	0,83
	PM Staff	6	0,843	0,846
	PM Policy and Strategy	11	0,939	0,941
	PM Partnerships and Resources	5	0,885	0,892
	Project lifecycle management processes	10	0,953	0,953
	PM KPI's	8	0,948	0,949
Project success criteria	Project efficiency	4	0,722	0,798
	Meeting strategic objectives		Not a construct variable	
	Perception of the stakeholders' satisfaction	6	0,899	0,9
	Impact on business	2	0,701	0,702
	Preparing for the future	4	0,885	0,885
CSF	Project manager competencies	4	0,918	0,916
	Risk management	4	0,943	0,942

Source: Calculated by the authors using SPSS version 26

Inferential Statistics

Correlations and Regressions

1. Correlations

The study sample contains 91 participants. In such cases, the central limit theorem can be applied (Saunders et al., 2009). As a result, we can apply parametric tests and regression analysis. First, we calculate the correlation matrix using the Pearson coefficient (See Table 3).

Table 3. Correlation Matrix

Variables	Project success dimensions				
	Project efficiency	Preparing for the future	Perception of the stakeholders' satisfaction	Impact on business	Achievement of the strategic objective
Project efficiency	1				
Preparing for the future	0,637**	1			
Perception of the stakeholders' satisfaction	0,668**	0,675**	1		
Impact on business	0,5**	0,731**	0,527**	1	

Achievement of the strategic objective	0,539**	0,683**	0,638**	0,633**	1
Culture and leadership	0,445**	0,545**	0,496**	0,524**	0,472**
PM Staff	0,156	0,283**	0,357**	0,286**	0,229**
PM Policy and Strategy	0,346**	0,496**	0,478**	0,559**	0,416**
PM Partnerships and Resources	0,408**	0,462**	**0,590****	0,345**	**0,547****
Project lifecycle management processes	0,449**	**0,520****	**0,550****	**0,500***	**0,518****
PM KPI's	**0,623****	**0,654****	**0,730****	**0,611****	**0,555****
Project Manager Competencies	**0,593****	**0,698****	**0,676****	**0,648****	**0,608****
Communication	**0,646****	**0,632****	**0,684****	**0,611****	**0,548****
Risk management	0,418**	0,476**	**0,525****	0,417**	**0,557****
Top management support	0,377**	0,485**	**0,620****	0,394**	0,400**
Clear objectives	0,456**	0,486**	**0,576****	**0,567****	**0,623****

Source: Calculated by the authors using SPSS version 26

From analyzing the correlation matrix, in table 3, the following points can be deduced:
- First, the criterion project efficiency is correlated with the other components of project success. The highest value of the correlation coefficients is with the criteria "preparing for the future "which is (0.637) and the lowest value is with the criteria impact on business (0.5). This fact supports H4.
- The second preparing for the future is positively correlated with the following independent variables: project manager competencies (0.698), KPIs (0.654), communication (0.632), and PLC (0.520). Which supports H2, H5, and H4.
- The 3rd criterion, perception of stakeholders' satisfaction, is correlated positively with the 8 independent variables, with the highest value being PMKPI's (0.730). This supports H4.
- The 4th criterion Achievement of strategic objectives, is positively correlated with the 6 independent variables: clear objectives (0.623), project manager competencies (0.608), risk management (0.557), PM KPIs (0.555), communication (0.548), and project life cycle (0.518). Which supports H6, H2, H3, H4, and H5.
- The last criterion, Impact on business, has a significant positive correlation with 3 independent variables: PM KPIs (0.611), PM competencies (0.648), and communication (0.611). This supports hypothesis: H4, H2, and H5.

The results of the linear and multiple regression are described below.

2. Simple Linear Regression
When considering each success dimension alone, the results showed that each project success dimension is sensitive to a different number of independent variables; however, the variables PM KPI, project manager competencies, and communication are the most present as explanatory variables in the five project success dimensions. Which supports H4, H2, and H5. (See Table 4). The variable clear project objectives could be considered as an explanatory

variable for three project success dimensions: achievement of strategic objectives, impact on business, and perception of stakeholders' satisfaction (See Table 4).

Table 4. Simple Linear Regression

Dependent variables	R^2	Adjusted R^2	Std error of the deviation	Fisher	Sig	Independent variables
Culture and leadership	0,198	0,189	0,9	21,998	0	
PM Staff	0,024	0,013	0,993	2,226	0,001	
PM Policy and Strategy	0,12	0,11	0,943	12,13	0	
PM Partnerships and Resources	0,167	0,157	0,918	17,794	0	
Project lifecycle management processes	0,201	0,192	0,899	22,945	0	Project efficiency
PM KPI's	0,388	0,381	0,787	56,319	0	
Project manager competencies	0,352	0,345	0,809	48,383	0	
Communication	0,417	**0,41**	**0,777**	63,595	0	
Risk management	0,175	0,165	0,931	14,769	0	
Top management support	0,142	0,133	0,931	14,769	0	
Clear objectives	0,208	0,199	0,896	22,842	0	
Culture and leadership	0,297	0,289	0,843	37,641	0	
PM Staff	0,08	0,07	0,964	7,772	0,006	
PM Policy and Strategy	0,246	0,237	0,873	28,993	0	
PM Partnerships and Resources	0,214	0,205	0,892	24,215	0	
Project lifecycle management processes	0,271	0,263	0,859	33,044	0	Preparing for the future
PM KPI's	0,427	0,421	0,761	66,3777	0	
Project manager competencies	0,487	0,481	0,72	84,374	0	
Communication	0,4	**0,393**	**0,779**	59,335	0	
Risk management	0,226	0,218	0,884	26,046	0	
Top management support	0,236	0,227	0,879	27,429	0	
Clear objectives	0,236	0,227	0,877	26,878	0	
Culture and leadership	0,246	0,237	0,873	28,963	0	
PM Staff	0,127	0,117	0,939	12,979	0,001	
PM Policy and Strategy	0,228	0,22	0,883	26,315	0	Perception of the stakeholders satisfaction
PPM Partnerships and Resources	0,348	0,34	0,812	47,459	0	
Project lifecycle management processes	0,303	0,295	0,84	38,697	0	
PM KPI's	0,495	0,489	0,715	87,122	0	

Project manager competencies	0,458	0,452	0,741	75,093	0	
Communication	0,468	**0,462**	**0,733**	78,434	0	
Risk management	0,267	0,268	0,856	33,905	0	
Top management support	0,385	0,378	0,789	55,601	0	
Clear objectives	0,332	0,324	0,818	43,248	0	
Culture and leadership	0,275	0,267	1,062	33,708	0	
PM Staff	0,082	0,071	1,195	7,908	0	
PM Policy and Strategy	0,312	0,305	1,034	40,432	0	Impact on business
PM Partnerships and Resources	0,125	0,115	1,166	12,737	0	
Project lifecycle management processes	0,25	0,242	1,08	29,706	0	
PM KPI's	0,373	0,366	0,988	52,936	0	
Project manager competencies	0,42	0,414	0,95	64,469	0	
Communication	0,373	**0,366**	0,987	53,014	0	
Risk management	0,174	0,164	1,134	18,71	0	
Top management support	0,156	0,146	1,146	16,395	0	
Clear objectives	0,322	0,314	1,006	41,272	0	
Culture and leadership	0,233	0,214	1,015	25,483	0	
PM Staff	0,053	0,042	1,12	4,939	0,029	
PM Policy and Strategy	0,173	0,164	1,046	18,653	0	Achievement of the strategic objective
PM Partnerships and Resources	0,299	0,291	0,964	37,922	0	
Project lifecycle management processes	0,268	0,26	0,984	32,665	0	
PM KPI's	0,308	0,301	0,957	39,705	0	
Project manager competencies	0,369	0,362	0,914	52,084	0	
Communication	0,3	**0,292**	0,963	38,162	0	
Risk management	0,31	0,302	0,956	39,98	0	
Top management support	0,16	0,151	1,054	16,996	0	
Clear objectives	0,388	0,381	0,91	55,226	0	

Source: Calculated by the authors using SPSS version 26

3. Multiple Linear Regression

Table 5. Multiple regression project success dimensions and Factors

Independent variables	Standardized coefficients Beta	Significance	Tolerance	VIF	R^2	Adjusted R^2	DW	Fisher	Project success dimension
PM Competencies	0,491*	0	0,538	1,859	0,591	0,572	1,94	31,1	

PM KPI	0,29**	0,003	0,534	1,872					**Project**
Functional	-0,247	0,007	0,597	1,674					**success**
Matrix	-0,151	0,092	0,608	1,645					**factor 1**
Communication	0,37	0	0,561	1,784					
Top management support	0,281	0	0,738	1,355					**Project**
PM partnership	0,198	0,018	0,55	1,8	0,68	0,661	1,82	36	**success**
PM KPI	0,299	0,007	0,325	3,08					**factor 2**
PM policy and strategy	0,155	0,079	0,498	2,006					

Source: Calculated by the authors using SPSS version 26

When considering project success as a construct variable and performing regression to each one of its components (The results of PCA as a mean to reduce project success dimensions), we can deduce an improvement of project success variance explained in comparison to a previous study conducted in another context (Mir & Pinnington, 2014). The multiple regression model that explains the first project success component has an R^2= 0.572 (52.7% of the variance is explained) and for the second component of project success R^2= 0.68 (68% of the variance is explained) (Table 5). We can then deduce that the integration of other critical success factors in addition to PM performance has improved the project success variance (Table 5).

Critical Success Factors
Variables related to project management performance
The first group of CSFs considered in this study was constituted from variables related to PM performance. The variable that has the most influence on project success in this group is PM KPI in project success. When considering each success dimension alone, the results showed that each project success dimension is sensitive to a different number of independent variables; however, PM KPI was significant for each project success dimension alone. On the other hand, when considering project success as a construct variable by two components, the PM KPI is the independent variable that explains both the components, as it increases the project success for the first component by (29%) and by (30%) for the second component (Table 5). This finding revealed the importance of measuring the performance of project management and how having a significant KPI can increase the project success, similar to a previous study (Mir & Pinnington, 2014).

The subvariable PM Partnerships and Resources has a positive impact on the project success second component, which represents project stakeholder satisfaction. According to the model, this variable increases the probability of project success by (19.8%) (Table 5). The result seems logical; as more there is a win–win relationship between the project stakeholders, the more the perception of the success by different stakeholders (project success construct 2) is important. This result is different from the findings of Mir and Pinnington (2014), who concluded in their research that PM Partnerships and Resources was the lowest correlated variable with project success. In contrast, compared with the Belassi and Tukel's (1996) Framework and the study of Hyväri (2006), the variable PM Partnerships and Resources could refer to two different factors: a project-related factor, which is adequate funds and resources, and an environment-related factor, which is Subcontractors. These two factors were between the three most success/ failure critical factors that impact most project success in their related factor groups according to the results of haver research (Hyväri, 2006).

Variable related to the project manager, project team, and client

When trying to explain each project success dimension individually, the variable PM competencies had a positive regression coefficient with the five dependent variables that represented project success (Table 4). As a construct variable, PM competencies had a significant positive impact on the first project success construct as it increased project success by (49%) (Table 4). The high competencies of the project manager, which include technical competencies, project management competencies, and interpersonal skills, both participate in increasing the success of the project, especially for project success dimensions related to time efficiency, impact on business, preparation of the future, and achievement of project objectives.

The independent variable communication has a positive impact on the second component of the project success construct; an increase of 1 unit in communication can increase the probability of the second project success factor by (37%) (Table 5). This finding highlights the importance of communication throughout the project and how it affects stakeholders' satisfaction as it helps maintain trust and visibility and facilitates the resolution of conflicts among different stakeholders. The variable communication is also positively correlated with the five criteria of project success. In simple linear regression models, communication has more significant values with the dependent variables project efficiency and perception of stakeholders' satisfaction. In comparison to previous studies, Hyväri (2006) found that communication was one of the three most critical factors related to the project team, which was the same finding in the study of belushi as well.

Variables related to the organization

The first project success construct component was sensitive to the organizational structure: Being in a functional structure decreases the probability of project success by (24%) (Table 4). This can be explained by the delay in decision making and the low power of the project manager in this structure; he is a simple coordinator who is not totally dedicated to the project.

The matrix organization structure also has a negative impact on project success. According to the model, it decreases project success by (15%) however this value is less than the negative effect of the functional structure (Table 5). This finding can be explained by the fact that the matrix organization structure affords more advantages to the project management and gives more power to the project manager than the functional structure. However, this structure presents some disadvantages, especially in its weak form where the project manager has weak authority. The dual reporting in this structure can also negatively impact the project success. The projected structure was not significant in this model, although it had a positive impact on project success theory as in practice.

Another independent variable related to the organization is top management support. This variable has a significant impact on the second component of the project success construct as it can increase project success by (28%.) This finding supports the theory that the support of the top management is a key factor that determines the success of projects.

CONCLUSIONS

Although the relationship between PM performance and project success has been explored previously in the literature (Mir & Pinnington, 2014), PM performance is not the only variable that explains project success. In addition, the significance of PM performance may change if we introduce other explanatory variables. The novelty of the study lay in integrating seven explanatory variables related to different groups, which are variables related to project manager, project team (project manager competencies, communication), variables related to organization (Top management support and organization structure), and three other variables that present PM performance, risk management, and the clarity of project objective. The study statistically tested

the link between the cites CSFs and project success dimensions and presented statistical evidence about the most significant factors in the case of a developing country, Morocco. The results concluded that 4 variables from 7 impact project success the most: top management support, PM competencies, project management performance (with its 3 components; PM KPI, PM Partnerships and Resources, PM strategy and policies), PM competencies, and communication. These findings support hypothesis H1, H2, H4, and H5, respectively. The model adopted explained 66% of the PM variance

According to the results, the functional and matrix structures have a negative impact on project success, although the matrix structure has a less negative impact. The projected structure seems to be insignificant in our models. These results validate hypothesis H7 and reject hypothesis H8. For professionals, these results will be valuable for project management practitioners and institutions in Morocco and similar developing countries as focusing on the positive CSFs revealed by the study and avoiding being in functional organizational structure will reduce the rate of project success.

For academicians, the current study provided a model of project success. In addition, it proved the validity of the PMPA model in the context of Morocco and presented a verification of this model in a different context (Mir & Pinnington, 2014; Qureshi et al., 2009). The study inferred that PM performance is an important explanatory variable even in the presence of other CSFs and when testing the model in a different context. This fact highlights the weightiness of this variable in project success is less sensitive to cultural differences. In other ways, project management discipline and practices are standardized by core knowledge referentials, which disseminate an international project management culture that replaces the local culture.

Therefore, project managers and practitioners need to be aware of this result and focus on the most important variables that can lead to the success of their project, such as improving different competencies of the project manager, having the necessary top management support, and communicating effectively throughout the project without forgetting the most important factor, which is having accurate project management KPI.

LIMITATION & FURTHER RESEARCH

As with every research project, this study has some limitations; indeed, the questionnaire was filled by one respondent who had to answer questions related to different domains such as the assessment of PM performance within its organization, the perceived project success from different stakeholders, the skills of the project manager, and the level of top management support. This type of answers could be biased due to self-reporting, which presents a limitation for this study. To avoid such problems in future studies, it is recommended to consider more than one person within the organization. In addition, it would be better to consider a person for each position, such as project owner, project sponsor, project client, and different stakeholders, so that the right person will answer each group of questions. In this study, this problem could not be avoided, as we had just one contact with the organization to fulfill the study.

Another study limitation is related to the variable matrix organization structure, which encloses three types: weak, balanced, and strong. However, the structure question does not specify which type of matrix structure is adopted by the organization. Therefore, to have more insights and to explore this variable further, it would be preferable in future studies to have more detailed questions about the matrix structure.

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