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A Review on the Measurement of Project Success

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Abstract

The aim of this research was to find project success measurement criteria in Pakistan.The study selected 22 open access Scopus indexed published articles and analyzed most recently used success measurement criteria in thisarea. This study has found that along with traditional criteria of measuring success firms are now also using new criteria for evaluation. However, Iron Triangle being most traditional measure is still dominating.The policy makers, firms and future researchers can include new criteria for project success measurement.By studying measurement criteria of project success this research found consistent results with other researchhaving similargoals.

Key Words: Project Success, Perception of Project Success, Project Success Measurement, Project Success Measurement criteria, Project Management Success, Pakistan

Introduction

In the past few decades, Project Management has emerged as an important field all around the world. The underlying importance of project management has not only been accepted in academic literature but also in the practical field. The main agenda behind introducing project management was to enhance the probability of successful delivery of goods and services to the project customers/stakeholders with the help of systematic implementation of project

management techniques(Castro et al., 2019). Although project field has diverse aspects as there are so many facets i.e. planning, execution, risk management, team dynamics, critical success factor, strategy, leadership, communication, adaptability and more (Al-Shaaby & Almessabi, 2018; Castro et al., 2019; Davis, 2017; Fareed et al., 2021; Kolasa et al., 2020; Wafa et al., 2022) however, research gaps prevail as it is an independent discipline where theoretical developments are still underway(Davis, 2016; Sauer & Reich, 2007). According to (Bannerman, 2008) the project literature is divided into three streams. One stream emphasizing on project success factor, second is working on finding contingency variables, and third is working on defining project success criteria. However, literature is not equally distributed across these streams as more work is available on project success factors, and contingency variables while project success criteria is studied less. Therefore, one of the major challenges for the researchers in the project management field is how to quantify or measure project success criteria? (Al-Shaaby & Almessabi, 2018; Castro et al., 2019; Davis, 2014; Shokri-Ghasabeh & Kavousi-Chabok, 2009).

Projects can be defined as attainment of set goals that are specific, having time lapse comprising of a beginning and an end(Lester, 2006). Additionally, all the activities that are carried out within a project utilizes resources in a cost effective manner (Chakrabortty et al., 2017; De Wit, 1988). This concept of being specific, having time lapse and cost restriction is termed as triple constraint criteria. (De Wit, 1988) provided more elaboration of triple constraint criteria. As according to him project is a means to an end, the criteria of project success can be distributed into two components, i.e., i) “means” to conduct project activities, ii) “end” for which project has been conducted.(Baccarini, 1999)has named these two dimensions as project management success and project product success. Project management success states that the successful completion of a project is based on completing a project according to cost, time and quality standards fixed by the organization (triple constraints). Whereas project product success includes attainment of the goals of project set by and for the stakeholders. Now the real problem arises, as if one would agree that conducting project activities successfully will determine the project success (regardless of outcomes achieved), other will say that attaining project outcomes would result in project success (ignoring whether the means were carried out successfully or not).

Although, in the past the project success criteria were limited to triple constraint phenomenon (i.e., time, cost and quality) also known as Iron Triangle (Castro et al., 2019)however, accuracy of such measurements is greatly affected by complexity underlying in the project environment. So, with the changing nature of business environment and in the project management discipline these criteria are evolving and changing according to the demands of multiple stakeholders and organizational requirements(Castro et al., 2019; Davis, 2014, 2016, 2017). As defining project success in terms of time, cost and quality has been very modest (Müller & Turner, 2007), outdated(Gomes & Romão, 2016), and sometime misleading. Conversely, it has been argued that the Iron Triangle approach to measure success is still relevant because these

criteria are related to project performance which ultimately contributes to project success(Baccarini & Collins, 2004; Collins & Baccarini, 2004). However, project success goes beyond these criteria and some other criteria must also be considered such as stakeholders interest fulfilment, project end-user satisfaction, strategic objectives of the firm and overall business success, quality, and environmental impact(Al-Shaaby & Almessabi, 2018; Davis, 2014, 2016, 2017; Ika, 2009; Serrador & Pinto, 2015; Shokri-Ghasabeh & Kavousi-Chabok, 2009). Other scholars have claimed that marketability, completion of project and profitability which are also known as long term goals are also applicable to project success measurement criteria(Macht et al., 2019).

Project success is one of the major outcomes of project management which is widely studied in literature since 1960 but consensus on a single measure of project success or failure is still missing(Al-Shaaby & Almessabi, 2018; Castro et al., 2019). One of the most studied project aspects is termed as project success factors also known as critical success factors (CSFs) about which clarification needs to be made as CSFs are the factors in the project environment which contributes to smooth implementation of the project(Joslin & Müller, 2015; Kerzner, 1987). Conversely, the CSFs are not the success indicators rather they are those dynamics that have influence on project success. Therefore, the focus of this study would be more on project success measurement criteria rather than CSFs.

Research Gap

Now a days Organizations are using project and project management techniques to conduct their objectives more effectively therefore, project success is also gaining importance. As the research literature (Al-Shaaby & Almessabi, 2018; Davis, 2014, 2016, 2017; Ika, 2009; Serrador & Pinto, 2015; Shokri-Ghasabeh & Kavousi-Chabok, 2009)lacks consensus about the project success measurement criteria and previously widely adopted criteria like iron triangle are becoming outdated(Gomes & Romão, 2016). Therefore, there is a compelling need to investigate current trends emerging in the field of project management regarding how project success is defined and measured. Furthermore, as the research in project field is also developing especially in Pakistan(Fareed et al., 2021; Wafa et al., 2022) for that reason, this piece of research will focus on the most recent trends of defining and measuring project success in both qualitative and empirical organizational studies in Pakistan.

Objective of the study

The aim of this study is to find that how project success is measured in Pakistan.

Methodology

The aim of this study was to figure out Project Success Measurement Criteria in Pakistan, therefore systematic literature review technique was used. Literature review was based on last 5 years' research articles (both qualitative and empirical) published in English

language;unrestricted access journals recognized by Scopus index (SCI). The rationale behind choosing SCI source was that it covers extensive range of sources including journals, books and non-conference proceedings and quantity of publications, while web of science (WOS) covers less sources and focuses on quality of publication(Pranckutė, 2021). Additionally, the articles in SCI are more up to date as compared to WOS because in SCI latest information is added much quickly than WOS (Singh et al., 2021). Consequently, articles in other than in English language were not included. Journals that were closed access or articles from journals that had inactive status were also not included. Only SCI based journals were considered for this piece of research. The articles were based on research in Pakistani Context. The papers had Project Success Measurement criteria only.

The screening process of articles was based on multiple steps. In the first step, key words were found and searched. Following key words were found and used, “Project Management Success”, “Project Success Criteria”, “Project Success Measurement Criteria” “Project Success” “and” “Pakistan”. In the second step, SCI journal list was downloaded from their official website. It the third step, the words found in first step were searched in Google Scholar. Time period was set as (2018-2023). In the fourth step, the articles that had unrestricted access were accessed and journal names along with their ISSN numbers were searched in SCI list that was obtained in second step. If the journal name was in the SCI list, its status of being active or inactive was checked. Those articles whose journals went inactive within SCI were discarded. When this entire process of screening was completed, there were a total of 28 articles for the further process. In the fifth step, 28 articles were assessed manually by careful reading, and it was found that six articles were discussing project success in general term and no criteria were used. As a result, those six articles were dropped from the final analysis.

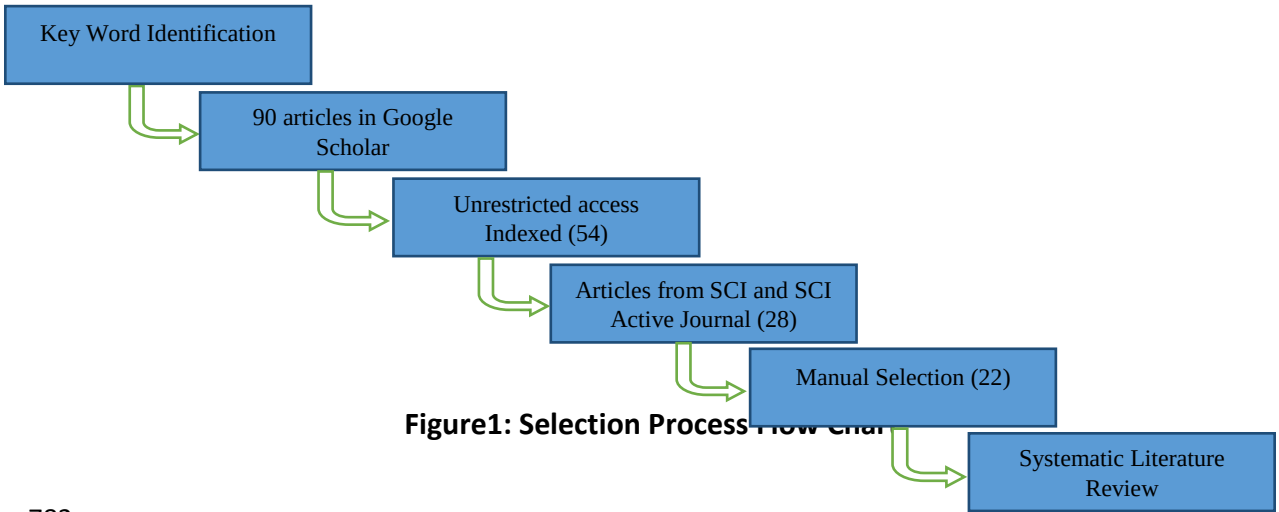

Figure1: Selection Process Flow Chart

The final analysis was based on a thorough review of remaining twenty-two articles. Firstly, article Title, Journal name, Journal Impact Score in SCI, publisher, and number of articles in a particular Journal were added to Table1. Secondly, in Table2, the Authors name along with year, Antecedents/Intervening/Contingency variable list, Project Success Measurement Criteria, nature of study (Qualitative/Empirical), Context of study, Theory and Methods used, along with perspective (participant of study), and future Gap were included.

Discussion and Presentation of Findings:

Project managers exert all their effort to achieve project success. Projects can help organization by the careful use of cost reduction efforts, value creation, creating competitive advantage, product developments, procedural improvement and, hence reaching organizational benefits. This study aims to provide guidance to project managers in Pakistan about how they can set standards for project success measurement to remain competitive in today's dynamic environment.

Traditionally, project success was defined in terms of Iron Triangle (time, cost, and quality) (Chakrabortty et al., 2017; De Wit, 1988; Lester, 2006). However, with the passage of time continuous changes in nature of business environment and in the Project Management discipline has brought changes in project success measurement criteria as well(Castro et al., 2019; Davis, 2014, 2016, 2017; Irfan & Hassan, 2019). Stakeholders interest fulfilment, project end-user satisfaction, strategic objectives of the firm and overall business success, quality, and environmental impact are some of the criteria that are being used nowadays (Al-Shaaby & Almessabi, 2018; Davis, 2014, 2016, 2017; Ika, 2009; Serrador & Pinto, 2015; Shokri-Ghasabeh & Kavousi-Chabok, 2009). Within Pakistan project field is also an emerging field and new developments are underway.

Some of the important industries or type of firms where projects are implemented include construction industry, software engineering and information technology (IT) industry, textile industry, renewable energy firms, paint manufacturing companies, contractor, tobacco, telecommunication, and banks in Pakistan(Ali et al., 2021; S. Hussain et al., 2022; Imam & Zaheer, 2021; Irfan et al., 2021; Irfan & Hassan, 2019; Khalifeh et al., 2023; Saad et al., 2022; Shaukat et al., 2022; B. Wang et al., 2022; Z. Wang et al., 2020). As the goal of the research was about finding project success measurement criteria in Pakistan, discrepancies were seen in the literature. For instance, researchers has reported that within these above mentioned industries and organizations multiple criteria for project success measurement has been used such as Iron triangle, project scope, project effectiveness, client/user satisfaction, project future potential, customer acceptance, project impact, organizational benefits, compliance with regulatory requirements etc.(Ali et al., 2021; S. Hussain et al., 2022; Irfan et al., 2021; Irfan & Hassan, 2019; Maqbool et al., 2018; Raziq et al., 2018; Razzaq et al., 2018; Saad et al., 2022; Sarwar et al., 2020). To investigate a more detailed analysis was conducted which is reported in discussion and presentation of finding section.

To provide overview of the most recent used Project Success Measurement Criteria in Pakistan, systematic literature review of twenty-two articles was done. The papers which were published within the last 5 years in SCI active journals werethe most relevant papers.

The details of source (journal name), number of articles in the source, publisher name, impact factor Score in SCI, are listed in Table1. It has been found that the selected 22 articles were published in 17 Journals. It has been further seen that International Journal of Project Management by Elsevier was having the highest Impact Factor Score (9.053), while the lowest Impact Factor Score (no impact factor) was observed for Innovation and Management Review published by Emerald. Out of 17 Journals Sustainability and International Journal of Managing Projects in Business had the maximum number of articles (i.e., 7), while remaining fifteen journals had 1 article published on topic under study.

Table 1

No.	Source	Number of Articles	Impact Factor Scopus	Title	Publisher
1	International Journal of Project Management	1	9.053	1. Shared leadership and project success: The roles of knowledge sharing, cohesion, and trust in the team	Elsevier
2	International Journal of Managing Projects in Business	3	3.152	1. Does inclusive leadership affect project success? The mediating role of perceived psychological empowerment and psychological safety 2. Linking humble leadership and project success: the moderating role of top management support with mediation of team building 3. The impact of ethical leadership on project success: the mediating role of trust and knowledge sharing	Emerald
3	Innovation & Management Review	1	Nil	1. How innovative climate leads to project success: the moderating role of gender and work culture	Emerald
4	Leadership & Organization Development Journal	1	3.962	1. Leadership styles, goal clarity, and project success: Evidence from project-based organizations in Pakistan	Emerald
5	Economic	1	3.544	1. The impact of psychological	Taylor &

	Research-Ekonomska Istraživanja			empowerment of project-oriented employees on project success: A moderated mediation model	Francis Group
6	Pertanika Journal of Social science & Humanities	1	0.363	The effect of project governance and sustainability on project success of the public sector organizations in Pakistan	University Putra Malaysia Press
7	Journal of Management in Engineering	1	6.589	Improving the performance of public sector infrastructure projects: Role of project governance and stakeholder management	American Society of Civil Engineers
8	Journal of Civil Engineering and Management	1	3.518	Finding the critical success factors and their relevant aspects for renewable energy projects; An empirical perspective	Lithuanian Academy of Sciences
9	Energy	1	8.511	The influence of government support, organizational innovativeness, and community participation in renewable energy project success: A case of Pakistan	Elsevier
10	Risk Management and Healthcare Policy	1	2.733	Exploring the relationships between a toxic workplace environment, workplace stress, and project success with the moderating effect of organizational support: Empirical evidence from Pakistan	Taylor & Francis Group
11	Engineering Management Journal	1	2.85	Project governance, project performance, and the mediating role of project quality and project management risk: An agency theory perspective	Taylors and Francis Groups
12	Risks	1	1.783	An innovative framework for risk management in construction projects in developing countries: Evidence from Pakistan	MDPI
13	International Journal of Construction Management	1	3.831	Role of awareness in strengthening the relationship between stakeholder management and project success in the construction industry of Pakistan	Taylor & Francis Group
14	Environmental	1	5.034	Investigating the nexus between critical	Springer

	Science and Pollution Research			success factors, despotic leadership, and success of renewable energy projects	
15	International Journal of Civil Engineering	1	2.392	Critical external risks in international joint ventures for construction industry in Pakistan	Springer
16	Sustainable Development	1	7.883	Revisiting the relationship between sustainable project management and project success: The moderating role of stakeholder engagement and team building	John Wiley & Sons
17	Sustainability	4	4.166	1. Structural equation model for evaluating factors affecting quality of social infrastructure projects 2. Exploring the nexus of sustainability and project success: A proposed framework for the software sector 3. Role of project planning and project manager competencies on public sector project success 4. Project managers' personality and project success: Moderating role of external environmental factors	MDPI

Table 2 consist of detail of relevant studies in Pakistani context that were used for analysis purpose. As project success's measurement traditional criteria is iron triangle, we saw that it was still considered as an important criterion for measuring success. Although(Gomes & Romão, 2016) has argued that Iron triangle is becoming an outdated criteria however out of 22 studies which were selected for this paper 17 has used iron triangle criteria for project success measurement (Hussain et al., 2021; S. Hussain et al., 2022; Imam & Zaheer, 2021; Irfan et al., 2021; Khalifeh et al., 2023; A. Khan et al., 2021; J. Khan, Jaafar, et al., 2020; J. Khan, Malik, et al., 2020; Maqbool et al., 2018; Nawaz et al., 2019; Raziq et al., 2018; Saad et al., 2022; Shaukat et al., 2022; B. Wang et al., 2022; Z. Wang et al., 2020). This shows that although current research trends are moving towards other criteria like stakeholder satisfaction, organizational benefits but still iron triangle is considered an essential element for the determination of project success in Pakistani context. This approach can be justified due to the reason that in some industries like software, telecommunication and IT, time, cost and quality are major elements to remain competitive(Bhatti et al., 2021; Haq et al., 2018; Imam & Zaheer, 2021; Khalifeh et al., 2023; Raziq et al., 2018; Shaukat et al., 2022).

Client/user satisfaction has also been used in some studies along with iron triangle (S. Hussain et al., 2022; J. Khan, Jaafar, et al., 2020; Z. Wang et al., 2020). Furthermore, organizational benefits which include business success and strategic goal attainment were also found in studies (Ali et al., 2021; Haq et al., 2018; Irfan et al., 2021; Irfan & Hassan, 2019; Khalifeh et al., 2023; Maqbool et al., 2018) which are consistent with studies conducted by multiple researcher (Al-Shaaby & Almessabi, 2018; Davis, 2014, 2016, 2017; Serrador & Pinto, 2015; Shokri-Ghasabeh & Kavousi-Chabok, 2009). There were some other criteria as well which were used by different researchers including project impact, project effectiveness, internal stakeholder satisfaction, project meeting technical requirements, process performance, team output, future potential, and team efficiency(Ali et al., 2021; Haq et al., 2018; S. Hussain et al., 2022; Irfan et al., 2021; Irfan & Hassan, 2019; Khalifeh et al., 2023; J. Khan, Malik, et al., 2020; Maqbool et al., 2018; B. Wang et al., 2022; Z. Wang et al., 2020). Thus, the stream of literature which is based on last five years research work conducted in Pakistan by different authors clarifies that now the success measurement criteria in project field is also incorporating latest trends. Table 2 sheds light on the nature of research, whether they were qualitative or empirical studies. Only two studies were pure qualitative(Khalifeh et al., 2023; Razzaq et al., 2018), and one used mixed method(Hussain et al., 2018), while remaining nineteen studies were empirical studies. Table 2 also represents variables that affect project success including, organizational factors, team factors, government support, organizational innovativeness, organizational support, team role, leadership styles and role, psychological empowerment, innovative work behavior etc.

Table 2

No.	Author, year	Variables	Success Criteria Dimensions	Qualitative/ Empirical	Context	Methods	Theory	Perspective	Gap
1	Khalifeh et al. (2023)	Software Project Sustainability	1. Iron triangle (time, cost, quality), 2. Impact on customers, 3. Impact on team, 4. Business success, 5.Preparing for future,	Qualitative	Software Projects	Content Analysis	Fiedler's contingency Theory	Literature Review	Testing of Proposed model with controlled variables
2	Hussain et al. (2022)	Government Support, Organizational Innovativeness and	1. Internal Stakeholder's requirement, 2. Project efficiency (time, cost, and quality	Empirical	Renewable Energy Projects in Construction Industry	Smart-PLS 3.2.7 and SPSS 24	Stakeholder Theory	Government officials, Chief Engineers, Chief Architects, Executive	Including both public and private sectors

		Community Participation .	standard), 3. Prepare for the Future (Sustainability), 4. Meet overall customer benefit, 5. Satisfaction of external stakeholder (users) need, 6. the project achieved its purpose					Engineers, Project Managers, Assistant Project Managers, Sub-Engineers, and Surveyors	
3	Wang et al. (2022)	Organizational Factors, Team Factors, Technical Factors, and Communication Factors, Despotic Leadership	1. Internal stakeholder's requirement, 2. Project efficiency 3.(time, cost, and quality standard), 4. Prepare for the Future (Sustainability), 5. Meet overall customer benefit, 6 Satisfaction of external stakeholder (users) need	Empirical	Renewable energy-based organizations	Smart PLS 3.2	Social Learning Theory, Conservation of Resource (COR) Theory	Project Director, Project Manager, Functional Managers, and Team Leaders	Global level coverage by considering both renewable and sustainable projects
4	Saad et al. (2022)	Stakeholder Management and Engagement	1. Iron Triangle (Time, Cost and Quality)	Empirical	Private and government construction firms	Smart PLS (SEM)	Stakeholder theory, Balanced Score Card Theory	Project Managers	Including uncertainties and their impact, Individual study of stakeholder manage

									ment dimensions
5	Shaukat et al. (2022)	Sustainable Project Management (SPM), Stakeholder Engagement and team Building	1. Customer acceptance/satisfaction, 2. project efficiency, scope, (budget, time)	Empirical	Construction, Information technology, and telecommunications	Smart PLS 3 (SEM)	Stakeholder Theory	Project Managers, Team Leaders, Consultant, Managers and Assistant Managers, Team Supervisor, and Senior Team Members	Explore drivers and critical success factors, for firms to implement SPM practices (leadership commitment and values, organizational culture, employee involvement, and communication climate)
6	Ali et al. (2021)	Humble Leadership, Team Building and Organizational Support	1. Project Mission, 2. Top Management Support 3. Schedule and Plans, 4. Client Consultation 5. Personnel Recruitment, 6. Technical Tasks 7. Client Acceptance 8. Monitoring and Feedback	Empirical	Information technology sector	SPSS 23, AMOS 23	Conservation of Resources (COR) Theory	Employees	study the effect of humble leadership on different knowledge areas of project management across team-building dimensi

			9. Communication, 10. Troubleshooting						ons (goal setting, role clarification, interpersonal process and problem-solving).
7	Irfan et al. (2021)	Project Planning and Project Manager Competencies	1. Iron Triangle (Time, cost and quality), scope, 2. compliance to defined procedures, 3. impact on public, 4. satisfaction of the public, 5. projects meet goals, 6. follow safety and environmental Regulations	Empirical	Public Sector Organizations	PLS-SEM	Nil	Mid-Level Managers (Executive engineers)	Methodologies including Projects in Controlled Environments (PRINCE) and International Project Management Association (IPMA), and other international standards such as ISO 21501 can be used for analysis.
8	Hussain et al. (2021)	Personality Traits, External Environmental Factors	Iron Triangle (Time, cost, quality)/Scope	Empirical	National and multinational construction	SPSS 3, PROCESS Macro	Person-organization fit theory	Project Managers	Role of organizational dynamics could be used

					companies				as possible moderators and role of demographics
9	Imam and Zaheer (2021)	Shared leadership, Knowledge Sharing, Cohesion and Trust	1. Cost, 2. Time, 3. Performance, 4. Client use, 5. Effectiveness, 6. Satisfaction	Empirical	IT Projects in Software Firms	SPSS PROCESS Macro	Nil	Member of project team	To what extent shared leadership fosters creativity in team and engage team members in creative process
10	Bhatti et al. (2021)	Ethical Leadership, Trust and Knowledge	1. Technical requirements 2. technical problems found and resolved 3. Project cost 4. Satisfaction of project client/users 5. No impact on organizational cultural values 6. Project Team satisfaction 7. No quality Problems	Empirical	IT and Software Projects	AMOS SPSS 24	Social Learning Theory	Project team members	Evaluate team psychological safety among team members
11	Khan et al. (202	Project Governance,	1. Efficiency, (adherence to Schedule,	Empirical	Public Sector	SPSS 21 AMO	Stakeholder Theory	Employees	Longitudinal Field Study,

	1)	Stakeholder Management	quality and Budget)/Iron Triangle, 2. the amount of produced work, 3. ability to meet its goals with stakeholder satisfaction.			S 20 SEM			Different Stakeholder Dimensions needs to be included
12	Khan, Malik, et al. (2020)	Psychological Empowerment, Knowledge Sharing, Employee based Creativity, Project based Organization	1. Amount of work team produced, 2. efficiency of team operations, 3. Iron Triangle (adherence to budgets(cost), the team adherence to schedule(time), the team adherence to quality of work (Quality), 4. Team interaction effectiveness	Empirical	Project Oriented Business Firms	SPSS, PROCESS, AMOS,	Conservation of resource (COR) Theory, Self-Determination Theory	Employees, supervisors	Employee feeling about themselves, longitudinal studies, mediating role of job involvement and moderating role of culture
13	Sarwar et al. (2020)	Innovative Work Behavior, Innovative Organizational Climate, Gender and Work culture	1. (Time, Cost (budget), Quality)/scope 2. Customer satisfaction	Empirical	Paint Manufacturing Industry	SPSS	Organizational Climate Theory	Executive, Middle level and Senior level management	Longitudinal or Experimental study design, Study with moderators (job engagement and motivation)

14	Khan, Jaafar, et al. (2020)	Inclusive Leadership, Psychological Empowerment, Psychological Safety	1. Iron Triangle (Time, Budget, Quality) 2. the project Effectiveness for end user 3. sustainable project outcomes 4. Outcomes for end user 5. Problem solving solution 6. satisfaction with project implementation process 7. Project Team satisfaction with project implementation process 8. No or minimal startup problems 9. improve performance of target audience 10. Impact on target beneficiaries 11. donor satisfaction 12. Scope achieved	Empirical	IT Industry	Amos 26(SEM)	Leader–Member Exchange (LXM) Theory	Employees	Use of some other mediators in the relationship
15	Wang et al. (2020)	Toxic Work Environment, Organizational Support,	1. Iron Triangle (Time, cost), scope), 2. Customer satisfaction, 3. team	Empirical	Renewable Energy Projects	AMOS 18 (SEM)	Resource Based View (RBV)	Senior managers, middle-level managers, and administrat	Same model in diverse cultural context with more

		Workplace Stress	member satisfaction, 4. Stakeholder satisfaction, 5. Satisfaction with deliverables, 6. Satisfaction of employers, 7.Project purpose, 8. Self-defined criteria 9. Supplier satisfaction					ive staff.	expert respondents
16	Nawaz et al. (2019)	Risk Management Techniques (Identification, Assessment, Treatment)	1. Iron Triangle (Time, Cost, Quality) Scope, 2. Completion of Technical Specification, 3. No complain or claims,	Empirical	Contractors Companies	SPSS 25	Risk Management Framework in Projects	Senior Engineers, Planning Engineers, Deputy Project Engineers, Project Managers	Risk management practices in other countries needs to be investigated
17	Irfan and Hassan (2019)	Project Governance, Sustainability	1. Project Efficiency /Iron Triangle, 2. Stakeholder satisfaction, 3. Future potential, 4. Project Impact, (social, economic, and Environmental) 5. Organizational benefits	Empirical	Public Sector Construction Firms	Smart PLS 3.0 (SEM)	Sustainable Development	Project manage, program managers, Team member, Architects, Portfolio Managers	Study the effect of project governance and sustainability on the different dimensions of project success,

18	Razzaq et al. (2018)	External Risks	1. Iron triangle	Qualitative	International construction projects.	Analytical Hierarchy Process	Nil	Project Director, Project Manager, Financial Consultant, Director External Relations, 'Manager Internationalization, Manager Inland Development	Number of criteria for project success and risk categorization cane be enhanced
19	Raziq et al. (2018)	Transformational Leadership Style, Transactional Leadership style, Organizational Type, Goal Clarity	1. Customer satisfaction, 2. (Quality, Time and Budget) Iron Triangle	Empirical	Project-based organizations from different sectors (textile, tobacco, software, telecommunication, and banks)	Smart PLS (SEM)	Path Goal Theory and Distributive Justice Theory	Functional Managers, Team Leaders as well as Dedicated Project Managers	Study other styles of leadership such as spiritual leadership, and laissez-faire with project performance and success/ Leadership Theory)
20	Hussain et al. (2018)	Material Related Factors, Stakeholder Related Factors, Design related Factors, Construction related	1. Quality	Qualitative and Empirical	Social infrastructure projects, public construction industry	Smart PLS (SEM)	Nil	Practitioner in construction firms	

		factors and external factors							
21	Maqbool et al. (2018)	Communication, Team, Technical, Organizational, and environmental factors	1. Iron Triangle (Time, cost, scope), 2. Customer satisfaction, 3. team member satisfaction, 4. stakeholder satisfaction, 5. satisfaction with deliverables, 6. satisfaction of employers, 7. Project purpose, 8. Self-defined criteria 9. Supplier satisfaction	Empirical	Construction firms working on renewable energy	SPSS 20, AMOS 18 (SEM)	Diffusion Innovation Theory	Project Team Members including Project managers	Repeat in different countries and different industries to find cultural differences
22	(Haq et al., 2018)	Project Governance, Quality, Project Management Risk	1. Product performance 2. Process performance.	Empirical	Software firms	SPSS 17, AMOS 21	Agency theory Perspective	project manager, project directors or team leaders	extended to other populations, adding new variables to the current model. Use of other theories like Stakeholder theory and stewards

									hip theory

The theories used to support theoretical framework in empirical studies are also mentioned in Table2 along with the gaps found by the respective authors.

Table 3 is constructed through adapting(Bannerman, 2008; Castro et al., 2019) approach for combing and analyzing project literature data. To combine multiple sides of project success measurement six dimensions are presented in Table 3. These dimensions include "Project Efficiency (Iron Triangle and Scope), Project Effectiveness (meeting project objectives and requirements), Organizational Benefits (business success and strategic success), Stakeholder satisfaction (Internal and external), Project Impact/Future Potential of Project (Environmental, Economic, Social and Legislative).

Table 3

No.	Project Success Measurement Dimensions	No of Articles
1	Project Efficiency	17
2	Stakeholder satisfaction	12
3	Organizational Benefits	7
4	Project Effectiveness	6
5	Project Impact	6

Figure 2 shows bar chart for Project success measurement dimensions. Most used criteria by researchers in Pakistan is Iron triangle (17 studies), followed by stakeholder satisfaction (12 studies), organizational benefits (7 studies) on third place then organizational effectiveness (6) and final project impact is used in 6 studies. Which suggest that still iron triangle is one of the most used criteria within Pakistani projects however stakeholder satisfaction is also been incorporated in many studies. Finally, researchers are now not using just one criterion for measurement but rather they have used multiple criteria for project success measurement which is a good indicator.

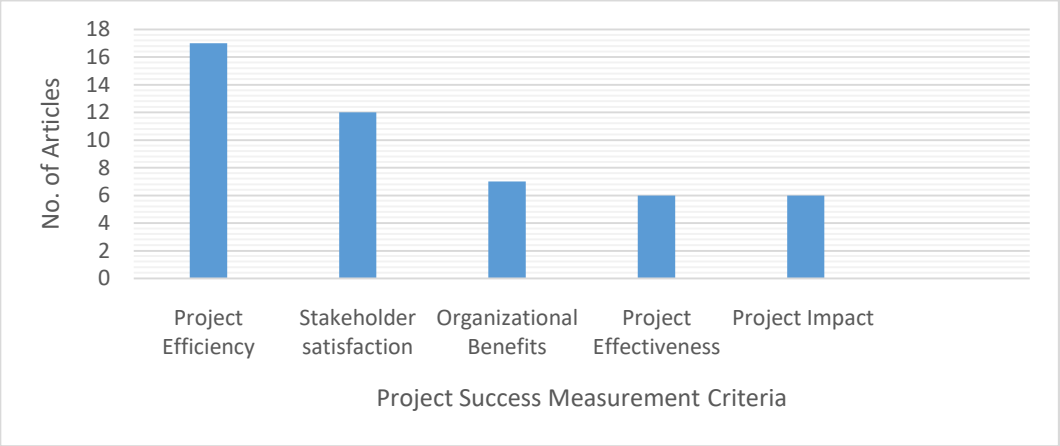

Figure 2

Conclusion

The aim of this literature review was to find contemporary criteria used for project success measurement in Pakistan. For this purpose, 22 research studies were used in the last five years. The criteria for article selection were based on use of selective key terms, using SCI based articles published in unrestricted access journals and having active status in 2023. The analysis showed that multiple criteria were used to access project success in multiple industries and sectors. However, the dominant criteria were Iron Triangle and Stakeholder satisfaction. Other criteria were also used in conjunction with iron triangle and stakeholder satisfaction like Project Future potential, Project Effectiveness, organizational benefit, and project impact. The finding suggests that although, project evaluation in terms of success has moved from more traditional methods towards more modern criteria but still in Pakistan firms are paying more attention towards iron triangle which is getting outdated(Davis, 2017; Gomes & Romão, 2016) and now being used less in international context. However, the analysis showed some positive aspects that showed in Pakistan project-based firms are now also paying attention towards latest trends like few studies has measured project success in terms of their relative impact on public, and environment. As world is moving towards sustainable developmental goals, which suggest environmental, societal, and economic benefits for all therefore, firms in Pakistan needs to incorporate these criteria in their firms according to changing circumstances.

Contribution, Limitation and Future Implications

There are two major contributions of this study firstly, as the aim of the study was to find how project success was measured in Pakistani firms. This research has shed light on the current trends about project success assessment in Pakistan. The research findings based on last five-year data has clarified that within Pakistan iron triangle is still considered as an important parameter in measuring project success, however new dimensions are also included in the evaluation of projects including stakeholder satisfaction, organizational benefit, project impact,

project effectiveness and sustainability to evaluate project success. My second contribution is that this research is qualitative in nature and has used systematic literature review technique. It was seen during the research that there were less qualitative studies (only 3) that could be traced within Scopas Open Access Database in the last five years that were conducted within Pakistan and especially in Project Field.

This study is not without limitations. Firstly, as the articles from only unrestricted access journals in Scopus were selected, a few articles could have been left out from this study due to this approach. Secondly, for the analysis purpose articles were based on last 5-year data were considered which limits the data. Therefore, extending this limit to ten years can also show modification in the results. Thirdly, this study is context limited as it has focused articles from Pakistan only, therefore application of this study in another international context will generate different results.

Furthermore, this study has some practical implications and future recommendations as well. First implication is that as result findings from 22 articles that were collected through Scopus data base showed that Pakistani Firms are still focusing on time, quality, and cost dimensions to compare success of a project, firms need to include most recent criteria that are being used in international context to remain competitive. Secondly, academic research should also use multiple criteria of project success that are found in this research while conducting research in the Project field. This will enhance the coverage of latest trends being used in the project field. Furthermore, researchers can also extend time lapses for conducting research on the same topic. Another suggestion is that, as it was found that majority of the researchers has gathered project related data from Public/Private construction firms, IT and Software firms therefore there is dire need that researchers should include multiple industries like textile, fashion deigning, multinational firms, business incubation centers where projects are being implemented regularly. In the last, as gaps in literature were also presented in this research therefore, future researchers can also work on found gaps (See Table 2).

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