Renewable energy project success: Internal vs. external stakeholders' satisfaction and influences of power-interest matrix

Abstract

Stakeholders satisfaction, as well as an effective involvement, is of utmost importance for any mega project, when it comes to the public concerning projects this role becomes more essential. In the case of developing countries where the political, economic and administrative settings are challenging, managing all the key stakeholders satisfaction for prosperous projects becomes extremely intricated, no matter even it is about sustainable and renewable energy projects. Studies have been conducted on project governance and shareholder relationships, nevertheless, the role of power-interest matrix in maximising stakeholder satisfaction on renewable energy projects has not been fully explored in the literature. This research was attempted to investigate the direct and indirect influencing mechanisms of the stakeholders satisfaction in conjunction with five critical success factors (CSFs) (namely communication factors, team factors, technical factors, organisational factors and environmental factors) in the renewable energy projects. Alongside a direct link of the CSFs in renewable energy projects, an indirect influence of both the internal and external stakeholders satisfaction has been also checked in this research. A quantitative approach was used to collect the questionnaire survey based data from the professionals working in the renewable energy industry of Pakistan. A snowball sampling technique was used to collect a total of 565 valid responses from the professionals working on medium and large scale renewable energy projects. The structural equation modelling (SEM) technique was used to perform the data analysis and provide inferences between the direct impacts of CSFs and indirect influences of internal and external stakeholders satisfaction in the renewable energy projects. The first stage of the SEM analysis depicts the direct impacts of the CSFs on renewable energy projects. However, in the second stage, though the mediating role of internal stakeholders satisfaction was observed in between all the CSFs and project success, external stakeholders satisfaction was found to be significantly mediating only between the communication factors and environmental factors, and renewable energy project success. Though the findings provide useful guidelines for the professionals, policymakers and administrators that in order to have prosperous renewable energy projects the influence of both the internal and external stakeholders satisfaction is important alongside CSFs, however, the role of internal stakeholders satisfaction is more critical to consider for such sustainable projects.

Keywords: Renewable energy projects; stakeholders' satisfaction; internal stakeholders; external stakeholders; project success.

1. Background

The projects related to renewable energy have a major share in securing global insecure incidents including the concerns related to the atmosphere, and environmental safety and healthy requirements of human beings. The advantages of such projects are to fulfill the current needs and secure the requirements of future generations. Due to the industrial revolution, there are several environmental concerns generated like an increase in the drainage of polluted water from industries, the exhaust of harmful chemical residue in the atmosphere from industries and vehicles, and dumping of radioactive wastage etc (Maqbool et al. 2022). Ultimately, we all human beings are facing destructive effects. The effect of such changes results in rising global temperature and changes in environmental living standards. Moreover, change in temperature also effects especially the North Pole, where melting of glaciers has direct connection with the climate change. Every country is trying to increase industrialization. A shift from agriculture to industrial revolution effects seriously on agricultural production as well. It is well recognized that the climate change is one of the major causes of several challenging issues including health hazards (Farooqui, 2014). Therefore, the present study emphasises on the importance and requirements of renewable energy resources, which are one of the prominent pillars of the sustainable environment of the society. The present study benefits many professionals including environmentalists, scientists, policy makers, politicians, researchers, experts and investigators as well as organizations and, industry; in short all who understand the importance of environmental sustainability while overcoming the consequences of global warming and climate change. Since many decades, there is realization of the importance of sustainability globally (Maqbool et al. 2022). However, due to several factors like financial, insufficient advancement has been observed so far to achieve environmental sustainability challenges. Eventually, the increase in pollution, unhealthy atmosphere, scarcity of pure water effects directly on the climate of the earth, which may increase natural disasters like floods, typhoons, and earthquakes. Therefore, the force behind this study is to share and contribute to research in this vital field of sustainability and the environment.

With greater focus on the renewable energy projects cleaner and greener atmosphere helps in diminishing global warming, which eventually can fulfil the need of low-cost energy needs and successful economic growth. Based on current circumstances Pakistan is among the top ten and highly affected country with global warming (Ashfaq et al. 2019; Maqbool et al., 2018). Pakistan has to take serious actions to improve its renewable energy options. Due to the strategic location, Pakistan is going to aid as an international energy and trade corridor in upcoming years, with approx. 2.56% contribution of the total global population (Farooqui, 2014). Since many years, Pakistan is facing energy crises problems. Pakistan is a vital country in sub-continent Asia (Sahir & Qureshi, 2008; Rafique & Rehman, 2017). Therefore, country has to initiate and actively plan and implement several energy projects to fulfill its energy demands as well as to focus on sustaining its energy needs for future requirements. Actually, severe shortage of power both for residential and industrial sector resulting in frequent load shedding and break down of power. It depends on the demand on summer and wintertime; however, in peak times like in summer there is around 8-9 hours in rural areas whereas 4-8 hours in urban areas of the country (Maqbool., et al., 2020a). According to a study, there is huge gap of electricity demand and supply. It was recorded at 26.82% in 2009-2010, while it increases further by 50% in 2012 (Sahir & Qureshi, 2008). Due to the energy crises issues in Pakistan, several industrialists and businesspersons have starting financing and investing in other countries (Sakrani et al., 2012). In order to reduce such crises initiation of both short term and long term projects are vital.

Pakistan can be a greener country enriched in enormous resources, and this target is still in developing phase. Although, there are several renewable energy sources, as discussed in this study from which huge amount of energy in several gigawatts can be generated to overcome the energy crises. The energy demand has elevated substantially in last couple of decades in Pakistan; the similar is to be expected in the near future. However, renewable energy can be utilized as an optimum choice in overcoming the energy crises. Optimal use of renewable energy can outstandingly reduce up to 30% consumption of natural gas and results in economic and industrial development (Shahbaz et al., 2012; Khan & Pervaiz, 2013). Hence, to accomplish this task, the current policy of the Government direly needs to be shifted from conventional energy resources to sustainable energy resources. Renewable energy projects have been expected as a hands-on support for Pakistan in consuming the sustainable energies for the power generation. However, the progress of the projects is gradual and influenced by some political issues. The renewables have

an excessive power generation potential that is approx. 2900 GW from solar (Khan & Pervaiz, 2013), 120 GW from wind energy (Harijan et al., 2011), 5.7 GW from biomass (Farooqui, 2014). Pakistan's forthcoming energy should be composed blend of all these renewable sources, at the same time it must steadily diminish its reliance on the crude oil (Ashfaq et al. 2020).

Table 1: Abandoned or Delayed Power Projects

Project	Capacity	Status
Neelum-Jhelum hydropower project	969MW	Delayed
Tarbela 4th and 5th extension	1510MW	Behind schedule
Golen Gol hydropower project	106MW	No feasibility of coming online on time
Pakistan Power Park at Gadani	6600MW	Shelved
Qadirabad (Sahiwal)	2× 660MW	Under progress
Bhikki (Sheikhupura)	Combined capacity 6600MW	Converted from coal to RLNG/Delayed
Haveli Bahadur Shah (Jhang)		Converted from coal to RLNG/Delayed
Balloki (Kasur)		Converted from coal to RLNG/Delayed
Trinda Saway (Rahim Yar Khan)		Shelved
Mouza Saddanwali (Muzaffargarh)		Shelved
Pind Daden Khan of Salt Range		No progress
Nandipur Thermal Power Plant	425MW	Operating below capacity
Chichoki Mallian	425-525MW	Not online
UAE-gifted plant at Faisalabad	320-350MW	Not online
China Machinery Engineering Corporation (CMEC)	1× 330MW	Abandoned

***Source** Siddiqui (2016)

Though recently some renewable energy projects have been initiated by the Government of Pakistan, however, the results of such projects are still not satisfactory. The major reasons are considered as the economic condition, political instability, lack of technology and administrative incapacities. The details of some of such failed projects are presented in Table 1. Therefore, this research is intended to understand the important success measures alongside the role of internal and external stakeholders influences in the renewable energy projects. The extent of our investigation is completely new with regard to Pakistan. Utilizing the current literature, statistics, and survey outcomes, we attempt to investigate the prospects for better operational performance of ongoing renewable energy projects in Pakistan. The rest of the paper is arranged as follows: section 2 presents the literature review regarding current trends towards constructing renewable energy projects over the world, its potential in Pakistan, critical success factors (CSFs) for such projects, and the stakeholders management and satisfaction is also presented in light of power-

interest matrix. Section 2 also discusses the theoretical framework and hypotheses development to support the purpose of this research; section 3 highlights the methodology; section 4 lists the findings of this study; and section 5 completes the paper and suggests possible recommendations.

2. Literature Review

2.1.The State of the Art on Project Success

Lenssen (2010) and APM (2019) suggest that the alignment of project governance mechanism to the organisational governance model is crucial and must be taken into consideration when defining roles and responsibilities, project governance framework and stakeholder communication and engagement. This is because it is significant to understand the project's environment, to ensure its suitability with the set organisational governance model. Goel et al (2020) recommend that these are prerequisites that should be clearly defined at the inception of the project for quality project implementation and performance. Additionally, Dasi et al. (2021) posit that apart from quality, budget and time, quality-based dimensions such as customer's benefit and stakeholders' satisfaction are also critical factors of evaluating project performance (Atkinson, 1999; Zhu & Mostafavi, 2017). This is because every project has different success factors that could require a multidimensional approach in the performance analysis. The goal of a project is to mix multiple interests among various stakeholders to ensure project success. The aim is to reach a consensus and acquire acceptance from all the key stakeholders on the project (Cao & Hoffman, 2011; Lecoeuvre, 2016; Zhu & Mostafavi, 2017; Malik et al., 2021).

The governance plan with the stakeholder component should entail details of stakeholder analysis, engagement, mapping, network analysis and communication plan (Noland & Phillips, 2010; Andriof & Waddock, 2017). In the renewable energy projects, project completion and stakeholders' satisfaction both are critical to confirm a warranted project success. Project completion is regarded as the short-run success measures, whereas the stakeholders' satisfaction is long-run success measures (real success) (Maqbool, et al., 2020a), these instructions can also be generalized in the context of renewable energy projects. The linkage between stakeholders' satisfaction and project success has already examined in the pertinent literature (Maqbool, et al., 2020a; Erkul, et al., 2019; Castro, et al., 2020; Anantatmula & Rad., 2018). However, this linkage

further needs to test and understand in renewable energy projects settings, more specifically in terms of both the internal and external stakeholders' satisfaction.

2.2.Critical Success Factors in Renewable Energy Projects

We contend that renewable energy projects are the only sustainable answer to the world's energy needs. Furthermore, renewable energy projects will empower the nations to alleviate climate change. This study attempts to expose the critical success factors (CSFs) that may guide a comprehensive transition from fossil fuel to renewable energy, and address these factors by recommending policy implications, which we regard imperative for a quick change from the regular based to an inexhaustible renewable energy system.

Different researchers have provided their insights about the CSFs and eventually shortlisting the ones which are most critical to the renewable energy project success. Some of the CSFs mentioned in the studies can be classified in different areas. For instance, social conditions and public awareness can be classified under user participations, whereas CSFs like economic profitability and power generation can be categorized under financial factors (Wixom and Watson, 2001).

In the study of Chin & Yong (2019), seven factors namely: readiness of hazardous waste beneficiary, economic and environmental benefits, stakeholder's pressure, effects on corporate image, commitment from the top management, adoption of ISO14001 and incentives and rewards were taken into consideration.

The six key aspects mentioned in the report of Schübeler, et al. (1996), which are institutional aspects, technological aspects, financial aspects, government's capability, social condition and public awareness and cooperation of the residents. A similar set of CSFs is considered by Tsiga, Emes and Smith (2017) and Liu et al. (2018) for their study of critical success factors in the petroleum industry. Oberlender (2014) discussed the coordination amongst project participants, efficient project planning and control, owner's participation and dedication, achievable goals and objectives and performance of the project manager. By evaluating the literature, it was observed that there are five factors that contributed exponentially to the renewable energy project success namely; communication, team, technical, organisational and environmental factors. The details of the past studies and respective critical success factors are presented in Table 2.

Table 2: Factors Influencing the Renewable Energy Projects

Source	Communication factors	Team factors	Technical factors	Organizational factors	Environmental factors
Maqbool & Sudong (2018)	✓	✓	✓	✓	✓
Zhao & Chen (2018)	✓	✓	✓		✓
Maqbool et al. (2018)	✓	✓	✓	✓	✓
Kirchhoff et al. (2016)			✓		✓
Maqbool (2018)	✓	✓	✓	✓	✓
Young & Brans (2017)	✓	✓		✓	✓
Dong et al. (2016)				✓	✓
Xu et al. (2011)	✓	✓	✓	✓	✓
Zhao et al. (2013)	✓		✓		✓
Xavier et al. (2017)	✓		✓		✓
Liang et al. (2016)		✓	✓	✓	✓
Wu et al. (2016)	✓		✓	✓	✓
Zhao et al. (2010)	✓	✓	✓	✓	✓
Goh et al. (2014)	✓		✓		✓
Lam et al. (2013)	✓		✓	✓	✓
Pantaleo et al. (2014)	✓		✓	✓	✓
Carlisle et al. (2015)			✓		✓
Lin & Moubarak (2014)		✓			✓
Zhao et al. (2012)	✓		✓	✓	✓
Ansari et al. (2013)	✓	✓	✓	✓	✓
He et al. (2013)			✓	✓	✓
Qi et al. (2014)			✓		✓
Zhao et al. (2016)	✓	✓	✓		✓
Kaldellis et al. (2013)	✓		✓		✓
Maqbool et al. (2020a)	✓	✓	✓	✓	✓
Total	**18**	**12**	**22**	**15**	**25**

Internal and external practices, namely communication factors, team factors, technical factors, organizational factors, and environmental factors can affect the overall operational performance of renewable energy projects. Effective practices of organizations operating on renewable energy projects can direct to better performance of the project, because the stakeholders can easily improve the operational needs of each other and then improves the overall project performance (Maqbool & Sudong, 2018).

2.3.Stakeholder Management

It is established that the role of stakeholders satisfaction is of utmost importance for the renewable energy projects (Maqbool et al., 2020a). In order to gain the stakeholders satisfaction the management of all the internal and external stakeholders is plays a vital role in the renewable energy projects. Joseph (2006) and Brunton et al (2017) assert that in order to have a sustained performance of any construction project and capacity to manage the stakeholders depends on how it is formulated on the adequate strategies alongside providing effective decision making with the involvement and communication of the key stakeholders. Khan et al., (2021) 'provided a list of factors which influence the stakeholder satisfaction in the public sector infrastructure projects, as provided the Figure 1.

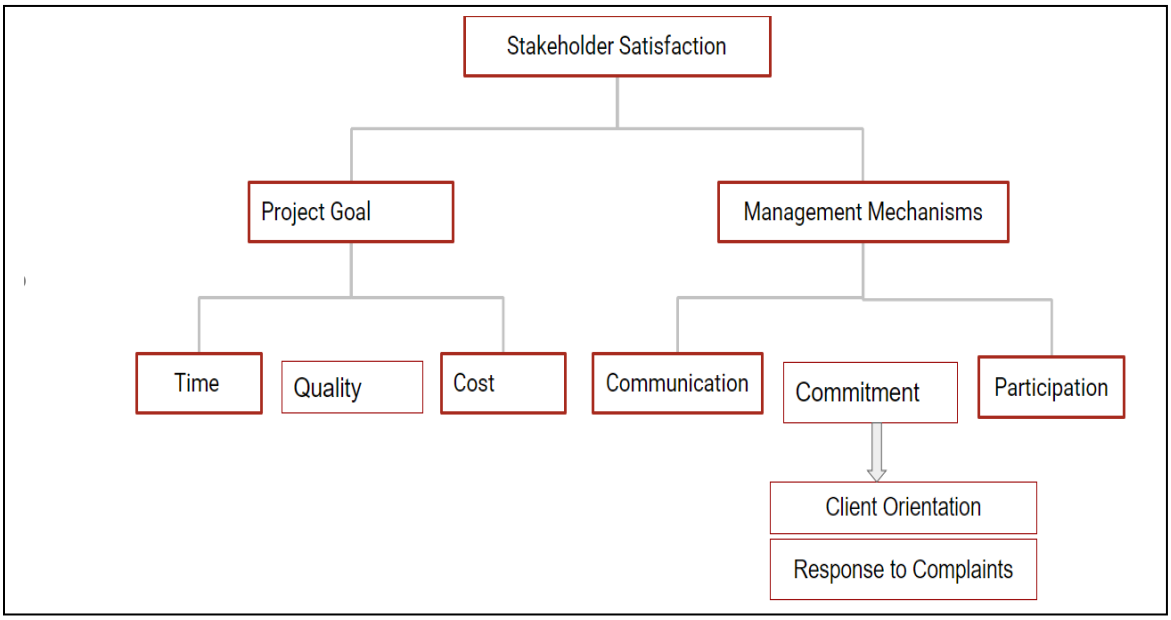


Figure 1: Factors of Stakeholder Satisfaction (Khan et al., 2021)

An effective stakeholder engagement and satisfaction will result in high-quality delivery of the project (Olander, 2007; Jayasuriya et al., 2020). One of the ways to address the stakeholder satisfaction process is through the concept of participation and involvement of project stakeholders in the decision-making process (Joseph, 2006; Pagnussatt et al., 2018). Therefore, this study aims to investigate the stakeholder satisfaction as mediating factors in between critical success factors and renewable energy project success as shown in Figure 3.

2.3.1. Stakeholder Identification and Mapping

The identification of stakeholders is a continuous process throughout the life cycle of the project (Turner & Hawkins, 2016; APM, 2019). The identification and understanding of stakeholders are key to ensure their demands, expectations and needs are appropriately managed (Davis, 2014; PMI, 2018). Turner & Hawkins (2016) recognises further that stakeholder identification is key to the success of projects. This is because all stakeholders on a project have their expectations and needs which need to be satisfied to avoid conflicts. Internal stakeholders are individuals or groups of people whose interest comes through a direct relationship with the company such as ownership, investment or employment (Ackermann & Eden 2011; Plichta, 2019). However, external stakeholders are people that do not work with the company directly but can be affected somehow by the actions and outcomes of the business and can also influence the outcome of the business (Plichta, 2019; Freudenreich et al., 2020).

Ndlela, (2019) highlights that no project can satisfy the need of all stakeholders, but a great effort should be made to engage with all stakeholders for adequate understanding between the project governance and stakeholders to avoid the crisis. Furthermore, Bahadorestani et al (2020) state that stakeholders have conflicting interests and may never be satisfied with all decisions on project implementation processes and outcomes. Thus, emphasizing the need for adequate stakeholder engagement for more sustainable project implementation. In contrast, Wang and Huang (2006) argue that stakeholder engagement is not a guarantee for project success as projects still fail with adequate management of stakeholder's expectations and further state that key factors of project success are leadership and personality trait of team members on the project as shown in Figure 2.3. The mapping of stakeholders is conducted to generate a list of both internal and external stakeholders on a project, analyse and evaluate their characteristics and values for an effective stakeholder engagement (Olander & Landi, 2005; Aligica, 2006; Walker et al., 2008; Shams et al., 2020). Newcombe (2003) and APM (2019) outlined that the outcome of stakeholder evaluation after mapping should be presented in a table to enable the design of an adequate communication strategy towards an effective engagement.

Scholes (2001) and Stocker et al., (2020) proposed that the Power-Interest matrix is one of the most efficient tools that could be used to map out stakeholders and characterise them effectively.

Furthermore, Xue et al (2020) highlight that the Power Interest grids are a simple tool that assists project governance to categorize project stakeholders with growing interest and power in the project. This tool enables the project governance to target the key stakeholders who can make or mar your project as shown in Figure 2 (Bhatt & Singh, 2020; Guðlaugsson et al., 2020). According to Shafiq et al (2018) selecting the most effective tools can be of great help in accomplishing the required tasks on the project hence the need for the Power Interest matrix which is multi-dimensional as shown in Figure 2.

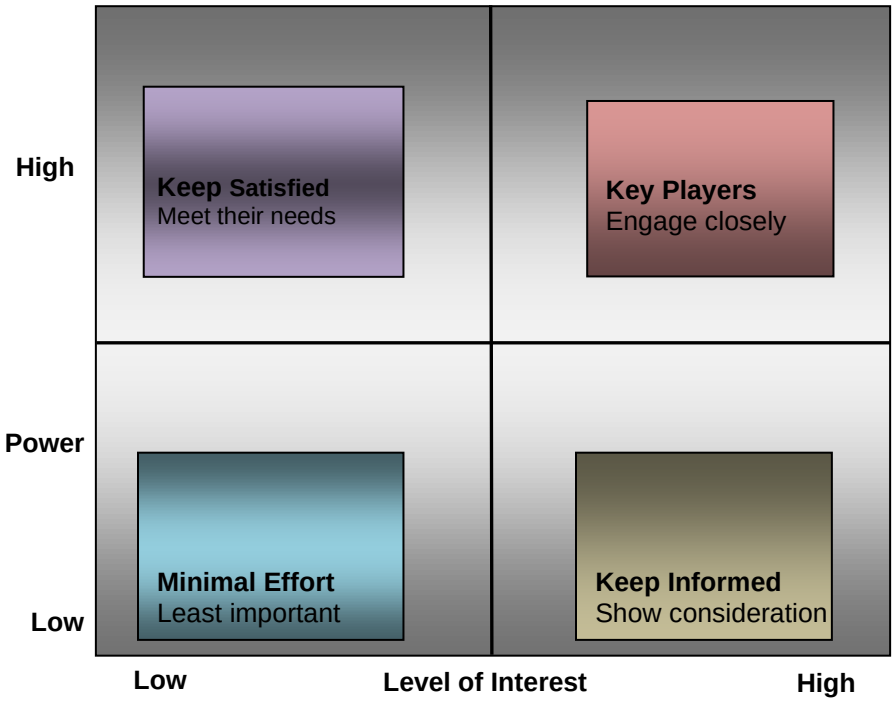


Figure 2: Stakeholder Mapping, The Power-Interest Matrix (Burford, 2013, p.56; Ackermann & Eden., 2011, p.183)

2.3.2. Internal Stakeholder Salience

The stakeholder's salience represents the degree to which stakeholders are visible, vocal and important on a project (Pedrosa-Ortega et al., 2019; Yu et al., 2019). This is one of the commonest stakeholder management tools and is key to successful stakeholder engagement (Ortega et al., 2019). This is because it is very common for highly vocal stakeholders to make decisions above their level of authority and expertise, thus impacting the outcome of a project negatively (Ali, 2017; Goldsby et al., 2018). Therefore, the stakeholder salient provides a clear picture of stakeholders and their level of authority to project governance thus ensuring an appropriate level

of engagement is given to all stakeholders' based on their level of actual influence (Ali, 2017, Wood et al., 2018; Powell & Walsh, 2018).

Additionally, the stakeholder's salience is usually modeled based on three factors as power, legitimacy and urgency, which is normally presented in a Venn diagram (Chen et al., 2020; Carney et al., 2020). Ali (2017) and Chen et al (2018) argue that "urgency" relates to a stakeholder's action instead of salience, therefore, suggested that the term "urgency" should be replaced with organisations. Similarly, Poplawska et al (2015) and Chen et al (2020) recognise urgency as a subform of power, however, suggested it cannot be classified as an entity. The more power, urgency and legitimacy stakeholders have, the greater their salience leading to a higher focus and priority given to them during the engagement (Ali, 2017). Once the mapping is done, stakeholders should be monitored closely throughout the project life cycle because stakeholders may gain power at another project phase and become more influential (Chen et al., 2020). Therefore, more priority must be given to those gaining more power to ensure effective engagement at all levels.

In any project, and especially in renewable energy projects, several unique and sometimes varied stakes must be pondered. The representatives of these stakes are described as the project stakeholders. According to Lin & Moubarak (2014), the stakeholder can be a single individual or multiple persons as a group, with entrust in the project outcome or the environment in which that particular project operates. Renewable energy projects mainly depend on various stakeholders, usually classified as internal and external stakeholders. Understanding all these key players' viewpoints can assist to bring successful projects, keeping away from any unavoidable situation (Zhao et al., 2012). Owed to having major control on project resources by key stakeholders, the stakeholder theory recommends for formulating and implementing those processes which would lead to stakeholders' satisfaction (Ansari et al., 2013), moreover, it will also ensure the long-term survival of project firm (He et al., 2013; Qi et al., 2014; Zhao et al., 2016). The famous stakeholders' power-interest matrix (Burford, 2013, p.56; Ackermann & Eden., 2011, p.183) explains the key stakeholders' mapping in the project management (see Figure 1). Grouping the stakeholders into power-interest matrix can give a clear idea about the communication and relationships of the stakeholders and their influence in the project.

Similarly, in Chinese project management settings, the practices are seemed to be impressed by the principle of ‘‘relation/guanxi’’, which leads the strong bonds among the project stakeholders (Chua et al., 1999; Prabhakar, 2008). The ‘‘relation/guanxi’’ is the major thing which influences the project leadership in China’s projects settings to keep personal and strong relations with key stakeholders, such as clients and contractors. Owed to its significance in numerous projects, it can be said with firm belief that the ‘‘relation/guanxi’’ is the major factor of stakeholders satisfaction in any project, including renewable energy projects. The significance of stakeholders’ satisfaction has been also noted in the prior literature of renewable energy projects (Angeloudis & Falconer, 2017; Büyüközkan & Karabulut, 2017; Maqbool et al., 2020a; Sundqvist et al., 2014).

2.3.3. External Stakeholder Salience

Renewable energy projects can lead to the reduction of carbon emissions by neutralizing the need for energy from environment friendly sources and can further reduce the methane generated from landfills. Despite the tremendous growth of renewable energy projects, fundamental questions like the above still arise making such projects, especially Waste-to-Energy (WTE) not a favourite waste disposal technique amongst the general public and subsequently leading to a low public acceptance. Ahmadi and Esmaeilion (2019) compare the WTE incineration process with its close competitor; landfilling and found out that landfills produce a sizeable volume of CH4 and CO2 during waste disposal and produce 54% more greenhouse gases than the WTE incineration. Further, Levaggi et al. (2020) state that the WTE project constrains the production of carbon dioxide by up to 50 million tons which would otherwise get emitted if landfilling or disposal via burning the fossil fuels is considered. Besides the above, the incinerators can be accommodated near the cities and towns which means that it saves the transportation expenditure which can eventually be used for community growth and safety. Hence, the restriction of waste transportation ultimately contributes to the reduction of carbon footprint.

Similarly, wind energy power projects also have similar public pressure to shut down their operations. The major reason behind such opposition is because of its negative property valuation. The negative property valuation due to wind energy projects was observed at about 15% within one mile radius of any wind power project (Heintzelman & Tuttle, 2012). Similarly, Jones & Eiser (2010), also highlighted wind power projects as the controversial projects in the UK, the reason

why more public opposition has increased. Though public opposition is not severe to solar power projects as compared to WTE and wind power projects observed, however these projects still have some challenges. The biggest challenge to solar power projects because people believe that these projects disturb the pristine desert, wildlife habitat and scenic views (Roth, 2019). Moreover, the people also argue that though these projects are built in their areas, but actually these are more useful for the people of cities not for the villagers.

2.3.3.1.Community Engagement

These rationales help to define who to engage, the expected impact and outcome from the community engagement and the standards of participation. The first rationale is the 'normative' rationale which discusses about the constitutional rights of citizens to engage in a purposeful decision making (Perhac, 1998). The second is the 'substantive' rationale that connotes the philosophical debate on the significance of different kinds of knowledge in the decision process. The final rationale is the 'instrumental' rationale which suggests that efficient community engagement establishes trust and restricts the project to get into any controversies.

2.3.3.2.Public Acceptance

Prior literature advocates that the external stakeholders satisfaction, more specifically public acceptance is associated with some certain aspects, for instance, benefits and risks observations, authenticity and fairness, accordingly it can be further retained by sharing the clear and enlightening understanding with the public (Liu et al., 2019). Gross (2020) described that, when the questions of renewable energy projects linked with the economic, or health problems or they dislike aesthetics the public can start opposing such projects, even those who were initially in the favour of renewable energy projects. Furthermore, Table 3 depicts the public opposition events due to implementation of such renewable energy projects locally. As a result, undertaking a high level of both the internal and external stakeholders satisfaction (public acceptance) for renewable energy projects is the fundamental objective that needs to be taken care of.

Table 3: Examples of Renewable Energy Projects that Faced Public Opposition

Year	Facility	Country	Main Events

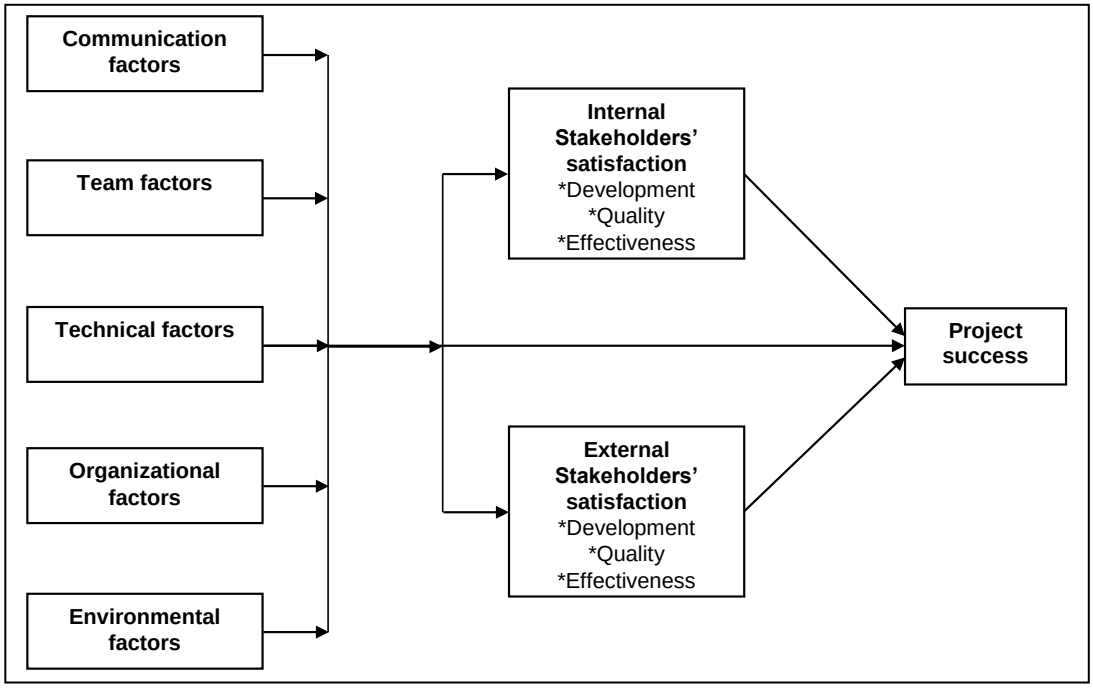
2016	Okhla WTE plant	India	Local public opposition for producing pollution.
2015	Wisconsin Realtors Association	USA	The wind plant faced public opposition due to its negative housing and property devaluation impacts.
2016	The Jixian plant	China	Local residents opposed the design of the project, and forced the administrators to change their plans.
2019	San Bernardino County	USA	People argue that the solar power project disturbs the pristine desert, wildlife habitat and scenic views.
2014	The North Hankou plant	China	Due to the resolute opposition by the native authorities, the plant closed before the scheduled closure date.
2017	The ill-fated Cape Wind project	USA	The opposition of rich householders to these offshore wind power project, who argue that these wind mils spoil their views, and its concerns to high cost, navigation issue and impacts on the marine environment.
1996	The Portrack Incinerator	UK	The plant was strongly denied by the local public and people were very reluctant after its construction which ultimately led to its decommissioning.
2016	Cape Wind at Block Island	USA	The major reason for public opposition is due to its negative impact on the local tourism and fishing.

2.4.Theoretical Framework

Current research goes to explore the influences of CSFs on the Renewable energy project success mediated by the stakeholders satisfaction. The developed themes are supported by some theoretical approaches to making sensible inferences based on the analytical techniques. According to Li et al. (2021), “sustainable management theory”, sustainable projects should be in a way that these are contributing to sustainable economic growth and social integrity. Such renewable energy projects

construction should be the main pillar of social, economic and environmental viability. According to this theory, such environmentally friendly projects are very impactful to save money and depletable energy resources. Moreover, these renewable energy projects are used to make high return on investment (ROI), which give economical sustainability for the nations. It has been seen that recently, in the world, many communities are also giving forces to adopt such projects. Project managers or companies, who are making those projects, should not only think about their own economic profitability, but they should also evaluate the future impact of those projects to those families, who will get benefitted from these resources through energy supplies.

Internal as well external environment management of a renewable project generally means that high commitment with the project by different management teams or stakeholders to lead the project towards successful completion. The basic link of a renewable energy project's successful completion and operational performance is well maintained with the internal and external drivers of stakeholders involved and the effective usage of CSFs (Pigosso et al., 2013). Resource based theory explains that it is associated with project performance that it would be helpful in decision making from transformation of successful project completion on desired schedule, cost and quality for organizational benefit point of view which can increase the renewable energy project's operations.



Y = CSFs → Stakeholders' satisfaction → Project success = β0 + β1 to 5 X + β6a to 6e M1 + β7a to 7e M2 + €

Figure 3: Research Model

Resource base theory is an ideal reference which focuses on overall performance e.g., stakeholders satisfaction of renewable energy projects besides the short-term benefits e.g., project completion (Peteraf & Barney, 2003). Since the project firms ensure project operational performance at first to achieve the overall project success before handing over the project to the client, we may argue that project's stakeholders satisfaction is more integral to the project success. Consequently, here the guidelines of stakeholder management theory direct us towards intervening (mediating) influences of stakeholders satisfaction in between critical success factors (CSFs) and project success. The mediating influence of stakeholders satisfaction in between critical success factors (CSFs) and project success has been already discussed in the literature (Maqbool, et al., 2020a). However, in this research, it would be comparatively elaborated on both the internal stakeholders satisfaction and external stakeholders satisfaction with mediating influences in between CSFs and renewable energy project success.

The stakeholder management theory helps to investigate about the important research questions that how the project leaders accept diverse views and how they made their decisions towards it. The instructions of this theory support the diverse opinions and arguments in the organizations' processes and projects and external to their organisations, primarily relying on public views. Consequently, the development of a research model framing the critical success factors (CSFs) for renewable energy projects is mainly based on the stakeholder management theory because the construction of such projects is for both internal and external people. Grounded on this theory guidelines, the stakeholders acceptance should be extensively implemented so as to achieve a better development and sustainable insight. Subsequent to pertinent literature and aforementioned theory guidelines hypotheses and conceptual framework has been developed to prove in the current research, mentioned in Figure 3.

3. Methodology

Initially, a comprehensive literature review is conducted to identify the fundamental success factors that are crucial for the renewable energy project. Secondly, the success factor gathered is

compartmentalized into five categories of CSFs based on their traits. Thirdly, the pertinent literature is explored about the stakeholders' satisfaction in terms of both the internal and external stakeholders. Fourthly, a conceptual framework of the study is made consisting of all the CSFs, mediation and highlighting the dependent and independent variables of the study. Subsequent to this, a brief description about the measures of each variable is given and eventually used for the development of the questionnaire. In the next step an anonymous questionnaire survey was conducted with having back approximately 565 valid responses. The data gathered from the questionnaire was then be analysed to find out the impact of stakeholders' satisfaction as well as CSFs over the project success. Finally, a discussion was carried out based on the analysis of the data and to summarize the study a conclusion and recommendation section. Figure 4 highlights the major steps undertaken in the proposed methodology and showcase in the form of a flow chart.

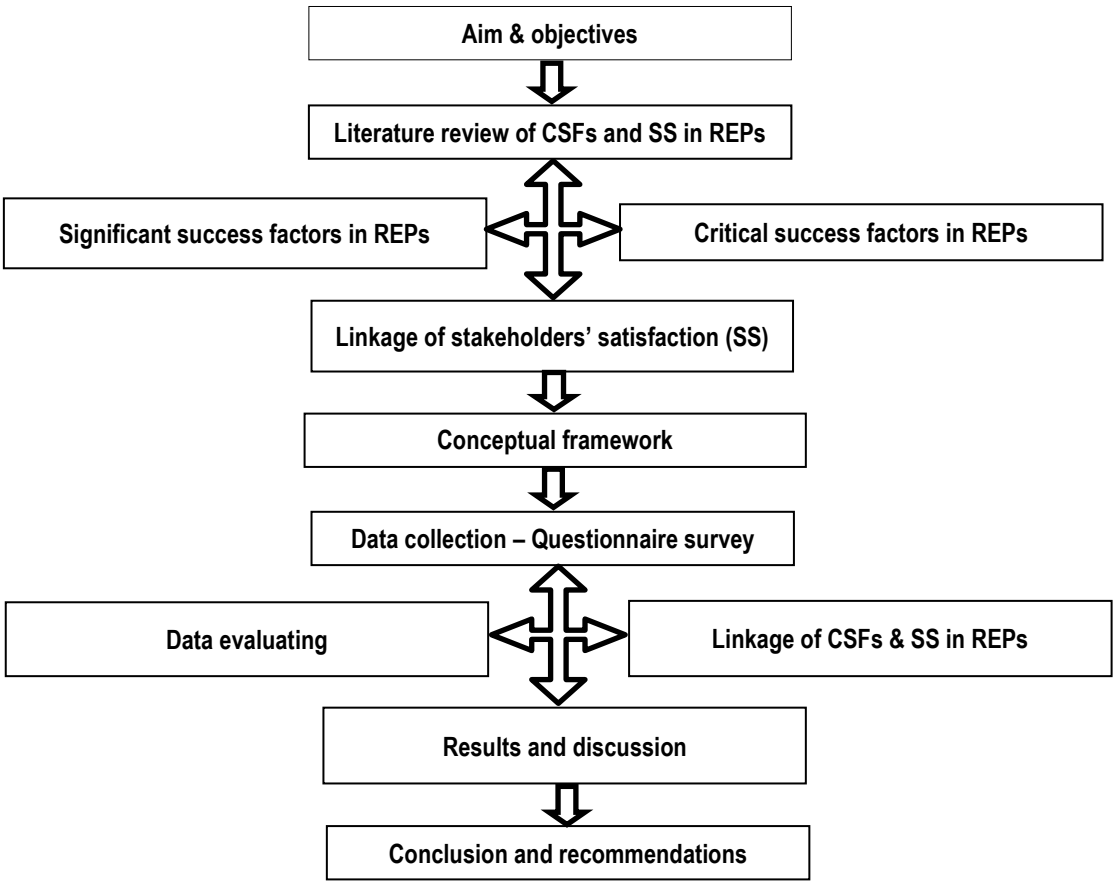


Figure 4: Research Methodology

3.1.Research Strategy

Conducting a proper research strategy is one of the most challenging parts among all research areas. It is important to set the proper research strategy to meet research aims and questions to find out proper research output (afWåhlberg, 2017). Research strategy mainly gives proper directions to the researcher, that they can get a proper signal for the data collection process with proper data analysis plans accordingly (Belgrave & Seide, 2019). In addition, through an appropriate research strategy, the quality of the research also can be ensured. Here, in this study, understanding the project success in renewable energy projects is required to analyse different success factors as well stakeholders' aspects to establish research extract. Positivism has been chosen to demonstrate different dimensions of this research data and findings and to focus on the data collection process. This research is supported by deductive research approaches; thus, this research can be analysed based on the previous research scales and theories to support such research topics and available evidence (Bairagi & Munot, 2019). Initially, an overview of this research topic has been discussed thoroughly, which demonstrates what kind of research scales have been available to continue research methods.

3.2.Population and Sampling

Using the snowball sampling, a total of 565 valid responses were received on a closed ended questionnaire survey from the professionals working in the renewable industry in Pakistan. Demographically the respondents were divided into clusters or subgroups based on their common characteristics. The clusters were made because of an expected deviation in the measurement of interest between different subgroups; hence, the categorisation helps in the accurate representation of data from all subgroups (Qian, 2010). The demographic details of the respondents are provided in Table 4.

Table 4: Demographic Details

Characteristics	Category	Frequency	Percentage
Gender	Male	451	79.82%
	Female	114	20.18%
Educational background	PhD/Master	161	28.50%
	Bachelor	272	48.14%

	<Bachelor	132	23.36%
Experience	>15 Years	275	48.67%
	10 – 15 Years	224	39.65%
	5 – 10 Years	66	11.68%
Designation	Project director	78	13.80%
	Project manager	196	34.69%
	Functional manager	163	28.85%
	Team leader	107	18.94%
	Other	21	3.72%

3.3.Measurement and Instrumentation

A quantitative research methodology based on a questionnaire survey has been utilized for the purpose of this research. The questionnaire was divided into two sections. First sections covered the demographic information and general questions related to their experiences. Second part covered the research specific questions. The research questions for all the CSFs variables involved in this study were taken from the earlier published studies. A total of 71 research related questions were involved part of this research, which were asked based on the 5 points Likert scale ("strongly disagree" to "strongly agree" which were coded with 1 to 5 respectively).

Prior to going for a data collection an initial pilot survey process was conducted to ensure the reliability and validity of the instrumentation. Accordingly, questions wording and scales related to factors involved in this research were improved based on the feedback received from the pilot survey experts. In the second step, the full and comprehensive questionnaire was circulated among industrial executives to receive their responses on the questions related to factors of this study.

Table 5 presents the details of the instrument used for the collection of data for this study.

Table 5: Instrument Details

Sr. No	Variable	Themes	No of Items	Sources

1	Communication factors	Leadership, communication, relationship between client and project leadership, maximize stability, reduce ambiguity, cooperation, and balance in flexibility and rigidity.	11	Li (1997), Prabhakar (2008), and Sudhakar (2012).
2	Team factors	task orientation, team capability/competence, team commitment, teamwork, select right project team, project team coordination, team empowerment	8	Prabhakar (2008), and Sudhakar (2012).
3	Technical factors	Technology support, technical tasks, troubleshooting, technical uncertainty, integration of tasks, technical implementations problems, quality testing and removing legacy systems.	9	Prabhakar (2008), and Sudhakar (2012).
4	Organizational factors	Personal recruitment, top management support, realistic expectations, business process re-engineering, organizational politics, financial support, increasing efficiency, power, market intelligence, reducing a cost base, and attrition.	11	Sudhakar (2012).
5	Environmental factors	Community involvement, stability of political situation, continuity of policies, domestic capital markets and credit rating, policy of paying foreign currencies, credit management system, domestic interest rate, and legal environment.	9	Zhao et al. (2010), Fang and Zeng (2007), and Sudhakar (2012)
6	Internal stakeholders' satisfaction	Relationship development, relationship quality, and relationship effectiveness.	7	Maqbool, et al. (2020a), Mazur & Piasarski (2013), Fisher et al. (1997), and Abdel-Halim (1981).

7	External stakeholders' satisfaction	Relationship development, relationship quality, and relationship effectiveness.	7	Maqbool, et al. (2020a), Mazur & Piasarski (2013), Fisher et al. (1997), and Abdel-Halim (1981).
8	Project success	budgeted cost, scheduled time, team factors, communication, participation, and desired quality	9	Maqbool, et al. (2020a), Maqbool, et al. (2020b), Maqbool, et al (2020c), Maqbool, et al. (2018), Maqbool (2018), Maqbool & Sudong (2018), Muller and Turner (2010); and Maqbool et al. (2017)

3.4.Ethical Consideration

Proper research ethics and rules have been maintained by the researchers, while conducting this research. As here, researchers have carefully considered the important ethical practices during the data collection process. In case of survey conducting, researchers have chosen a justified group of respondents. Sample groups of the survey have proper knowledge regarding the research topic, as here; it is the understanding of the stakeholders' satisfaction in the renewable energy projects. Respondents have been asked to respond to the questions based on their overall knowledge and experience of renewable energy projects, rather than providing feedback of a specific project. It helped maintaining an unbiased response criterion from the respondents. The confidentiality of the survey respondents was well maintained, as no personal information was asked and stored for analysis. Every participant got his or her survey questions before starting the process and most importantly, every respondent filled their consent form to make this survey process legal.

On the other hand, in case of collecting secondary sources from several research journals and articles, researchers have followed the copyright act that emphasizes the fact, those research studies have been well cited with both in-text reference and as a full reference at the end of the paper. Every secondary source has been collected from reliable sources respectively.

4. Analysis and Discussion

The study has formed to understand the features that effectively deal with the renewable energy projects and the characteristics that can be considered critical to their success or failure. Maintaining this feature and enhancing the success rate of such clean and green energy sources can be helpful in promoting healthier and greener earth for the next generation of mankind and other animal lives. Production of green energy and promoting life will be easier when such projects will be more prudent, effective and increase in number. In order to understand the experts' responses on our questionnaire, we have conducted several data analysis techniques after following first few steps of data screening.

Two data analysis techniques, namely Statistical Package for the Social Sciences (SPSS)-26 and Analysis of Moment Structures (AMOS)-26 were used to perform data analysis and provide inferences in this study. The reliability, validity, respondents' demographics and correlations analyses were performed through SPSS software. Moreover, AMOS software was used to perform the research specific regression and mediation analyses, such as confirmatory factor analysis (CFA) and structural equation modelling (SEM), accordingly decisions on the particular hypotheses were made. AMOS based SEM analysis technique was used as it helps to analyse the complex modelling involving intermediaries (mediating and moderating variables). Moreover, it helps in estimating the model conformability and illustrates the variance in the factors used, while the data collected is a small sample size in this research.

4.1.Descriptive Analysis of the Data

Data was carefully checked for the initial screening such as missing values, normality and multicollinearity prior to performing the research specific analyses to decide about the hypotheses. It was observed that no missing was present in the data, and similarly no outliers were found within the collected data. In order to check the normality of the data skewness and kurtosis was performed under the guidelines of Tabachnick & Fidell (2012), which provided the recommended distribution data values of -2 to 2.

Construct validity of the dependent, mediating and dependent constructs was verified by performing the exploratory factor analysis (EFA) via principal components. Then, Factor analysis

of the consortium of all variables was found by Varimax rotation. In the constructed group, only those items were, which took the correlation values to consist between 4 to 8 and commonalities are greater than 0.5. The reliability of the respective measurement scales was measured through Cronbach's alpha analysis. According to Nunnally & Bernstein (1994) and Andertson & Gerbing (1998), the excellent standard value for data Cronbach's alpha is 0.7 and above. In this study, each construct's Cronbach's alpha value was according to the proposed standard value. The detail of the descriptive analysis is provided in Table 6.

Table 6: Descriptive

Variable	Mean	S.D	Skewness	Kurtosis	Cronbach's α	Items
Project success	4.3142	1.03563	.181	1.029	.905	9
Internal stakeholders' satisfaction	4.1653	1.03920	-.191	.292	.891	14
External stakeholders' satisfaction	4.2025	1.02476	-.247	.305	.888	14
Communication factors	4.2037	1.04341	-.265	-.178	.887	11
Team factors	4.0256	1.16541	-.149	-.527	.829	8
Technical factors	3.8742	1.36624	-.055	-.730	.821	9
Organizational factors	4.0436	1.02517	-.249	.376	.757	11
Environmental factors	4.1837	1.06716	-.212	.359	.893	9

4.2.Data Evaluation

Construct validity of the dependent, mediating and independent variables was verified by employing the exploratory factor analysis (EFA) by principal components analysis (PCA). Moreover, the Factor analysis of all the constructs was determined by Varimax rotation. In the constructed group, only those items taken their correlation values to consist between 4 to 8 and commonalities are greater than 0.5. The reliability of the measurement scales was analysed by Cronbach's alpha. According to Nunnally & Bernstein (1994) and Andertson & Gerbing (1998), the excellent standard Cronbach's alpha value is 0.7 and above. In this study, each construct's Cronbach's value was according to the proposed standard value.

Prior to proceeding for the structural equation modeling (SEM), model fitness was measured by the confirmatory factor analysis (CFA). The model was enhanced to the acceptable level by

excluding some items. The results of the factor loading depicted an optimum acceptable construct validity with factor loading of 0.5 and over loading values for all the items, with the significance level at 5%, as suggested by Fornell & Larcker (1981). The convergent validity was also determined by the constructs of the model. Similarly, discriminant validity was measured to check the unique measuring concept, which was found well within the acceptable ranges as suggested by Hair, et al., (2006). The details of the CFA and model goodness of fitness indicators are provided in Table 7, depicting the acceptable range of all the important parameters.

Table 7: CFA and the Final Model Fitness Indicators

GOF	CFA model	Final model	Goodness of fitness (GOF) range	Threshold
CMIN/DF	2.73	2.69	0 or above	1.00 to 3.00
P-Value	.00	.00	0 (no fit) to 1 (perfect fit)	Over .9
CFI	.83	.91	0 (no fit) to 1 (perfect fit)	Over .9
GFI	.93	.94	0 (no fit) to 1 (perfect fit)	Over .9
TLI	.97	.98	0 (no fit) to 1 (perfect fit)	Over .9
RMSEA	.095	.092	0 (perfect fit) to 1 (no fit)	Less than .1

The Kasier Meyer Olkin (KMO) was employed to test the sampling adequacy of the data of this research. It was observed that the KMO tests values were well within the acceptable range of 05 to 1.00, as suggested by Malhotra (2008). Moreover, all the variances were also observed equal with the findings of the Bartlett test of sphericity, with the specific test values of the p=0.000 and d.f=94. The principal components analysis (PCA) and varimax rotation also determine the Eigenvalues values of the constructs over the level of 1 (Kwek et al., 2010). Further, since the items are not cross leading the constructs a discriminant validity is also determined. Overall, the model was well fit to test for relevant hypotheses in the research. The details of the Average variance extracted (AVE) and R-Square is provided in Table 8.

Table 8: Results of R2 and Average Variance Extracted (AVE)

Factor	R-Square	AVE
Project success	.921	.759
Internal stakeholders satisfaction	.906	.702
External stakeholders satisfaction	.850	.610
Communication factors	.859	.452
Team factors	.896	.681
Technical factors	.798	.595

Organizational factors	.848	.616
Environmental factors	.901	.683

4.3.Correlation

Prior to testing the hypotheses through structural equation modelling (SEM), the correlation values were checked between the dependent, mediating and independent variables (Please see Table 9). All the variables were observed to have significant inter correlation values between each other over the p-value of 0.05. However, it the correlation vales between the technical factors and external stakeholders satisfaction (γ=0.094, p>0.05) could not determine significant over the p-value of 0.05. Overall, no issue was observed with the correlation between the dependent, mediating and independent factors, accordingly, SEM analysis can be performed in this study.

Table 9: Correlation Analysis

Variable	Correlation							
	1	2	3	4	5	6	7	8
1 Project success	1							
2 Internal stakeholder satisfaction	.558**	1						
3 External stakeholder satisfaction	.406**	.417**						
4 Communication factors	.552**	.408**	.429**	1				
5 Team factors	.517**	.386**	.418**	.331**	1			
6 Technical factors	.226**	.247**	.094	.206*	.156*	1		
7 Organizational factors	.242*	.213*	.396**	.196*	.274**	.214**	1	
8 Environmental factors	.398*	.327**	.537**	.366**	.418**	.316**	.425**	1

**. Significance level is 0.01.
*. Significance level is 0.05.
N=565

4.4.Hypotheses Testing and Discussion

This study attempts to test the impact of five critical success factors (CSFs), namely communication factors, team factors, technical factors, organisational factors, and environmental factors on the renewable energy project success. Moreover, the mediating role of stakeholders satisfaction (both the internal stakeholders satisfaction and external stakeholders satisfaction) between the aforementioned critical success factors (CSFs) and renewable energy project success was also tested in this study. As per the earlier literature, there is a strong linkage between the renewable energy project success and effective communication, team involvement, technical

organisational capacities, and environmental influences (Maqbool, 2018; Maqbool & Sudong, 2018; Maqbool et al., 2018).

The hypotheses were tested through structural equation modelling in two steps; 1). The direct impact of CSFs on renewable energy projects was addressed by the hypotheses H1, H2, H3, H4, and H5, and 2). The indirect impact of internal stakeholders satisfaction and external stakeholders satisfaction between the CSFs and renewable energy project success was addressed by the hypotheses H6, H6a, H6b, H6c, H6d and H6e, and H7, H7a, H7b, H7c, H7d and H7e. The findings of the structural equation modelling confirmed all the direct hypotheses H1, H2, H3, H4, and H5, highlighting the significant impact of the critical success factors (CSFs) over the renewable energy project success. Table 9 provides the details of the directly accepted hypotheses H1, H2, H3, H4, and H5. These results are well in line with the findings of Maqbool et al., (2018), Maqbool, (2018), and Maqbool et al., (2020a). It can be depicted that for successful renewable energy projects in Pakistan the role of internal stakeholders satisfaction and external stakeholders satisfaction is of utmost importance alongside the effective communication, project team factors, organisational and technical competencies and environmental influences. The findings were also well in line with the studies conducted in other countries (Buchanan & Badham, 2008; Kamal, 2006; Young & Poon, 2013). Though all the direct hypotheses were found to be accepted, the role of internal stakeholders satisfaction was comparatively more significant than the external stakeholders satisfaction. Table 10 presents the details of the direct effects of the model.

Table 10: Direct Effects of the Model

Hypothesis	Estimate	S.E.	C.R.	P
Hypothesis 1 (H1)				
Project-Success <--- Communication-Factors	.297	.015	4.657	***
Hypothesis 2 (H2)				
Project-Success <--- Team-Factors	.269	.147	7.491	***
Hypothesis 3 (H3)				
Project-Success <--- Technical-Factors	.138	.046	2.725	***
Hypothesis 4 (H4)				
Project-Success <--- Organizational-Factors	.173	.049	3.684	***
Hypothesis 5 (H5)				
Project-Success <--- Environmental-Factors	.214	.086	5.871	***

The second step was related to the mediating role of internal stakeholders satisfaction and external satisfaction, which observed the influence in between the five categories of CSFs (namely

communication factors, team factors, technical factors, organisational factors and environmental factors) and renewable energy project success. This step leads to two main hypotheses H6 and H7, and then respective sub-hypotheses; H6a, H6b, H6c, H6d, H6e, and H7a, H7b, H7c, H7d, H7e. It was observed by the SEM findings that the internal stakeholders satisfaction mediates the association among CSFs and project success, as shown in Table 9, so that hypotheses H6, H6a, H6b, H6c, H6d, H6e were supported. Following the involvement of the first mediating variable, internal stakeholders satisfaction, the direct impact of CSFs over the renewable energy projects success was significantly reduced, however, it was still over the value of 0. Considering this, a partial mediating role between the CSFs and renewable energy project success was observed.

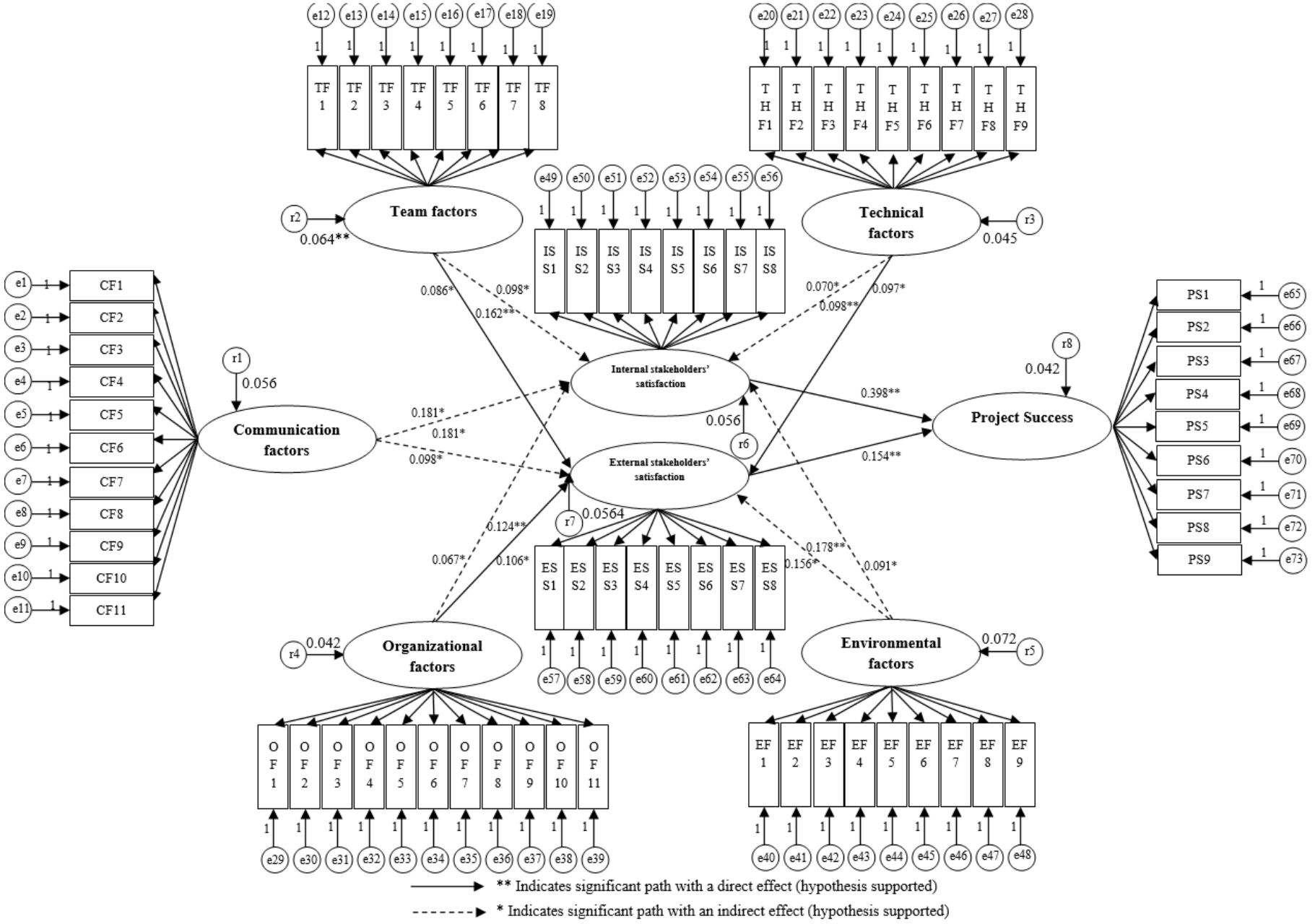


Figure 5: Structural Equation Modeling

Similarly, the mediating role of external stakeholders satisfaction in between the CSFs and renewable energy project success was also checked by the SEM analysis (see Figure 5). Though mediating role of internal stakeholders satisfaction was observed in between all the CSFs and project success, the mediating impact of external stakeholders satisfaction was only observed in between the communication factor and environmental factors, and project success. However, the mediating impact of external stakeholders satisfaction was not observed in between team factors, technical factors, organisational factors, and renewable energy project success (see Figure 5). So, it can be depicted that the role of external stakeholders satisfaction is important in renewable energy projects with effective communication and suitable environmental settings. Thus, organizations of the renewable energy projects should put emphasis on their stakeholders satisfaction because it is the ultimate and real success factor for a renewable energy project to control both the internal and external environments. In resultant, such kinds of projects enhance the project success. The reason behind the failed renewable energy projects is a failure in stakeholders satisfaction to such projects. The details of the mediating hypotheses are provided in Figure 5 and Table 11.

Table 11: Mediation Effect of the Model

Hypothesis	Estimate	S.E.	C.R.	P
Hypothesis 6				
Project-Success <--- Internal-Stakeholders-Satisfaction	0.398	.056	4.716	***
Hypothesis 6a (H6a)				
Communication-Factors ---> Project-Success	0.169	0.056	2.466	***
Communication-Factors --->Internal-Stakeholders-Satisfaction ---> Project-Success	0.181	0.070	3.831	***
Hypothesis 6b (H6b)				
Team-Factors ---> Project-Success	0.162	0.064	3.526	***
Team-Factors --->Internal-Stakeholders-Satisfaction ---> Project-Success	0.086	0.026	2.147	***
Hypothesis 6c (H6c)				
Technical-Factors ---> Project-Success	0.098	0.045	3.212	***
Technical-Factors --->Internal-Stakeholders-Satisfaction ---> Project-Success	0.070	0.015	2.766	***
Hypothesis 6d (H6d)				
Organizational-Factors ---> Project-Success	0.124	0.042	2.461	***

Organizational-Factors --->Internal-Stakeholders-Satisfaction ---> Project-Success	0.067	0.023	4.136	***
Hypothesis 6e (H6e)				
Environmental-Factors ---> Project-Success	0.178	0.072	1.621	***
Environmental-Factors --->Internal-Stakeholders-Satisfaction ---> Project-Success	0.156	0.042	2.642	***
Hypothesis 7				
Project-Success <--- External-Stakeholders-Satisfaction	0.154	.0564	2.712	***
Hypothesis 7a (H7a)				
Communication-Factors --->External-Stakeholders-Satisfaction ---> Project-Success	0.098	0.038	2.451	***
Hypothesis 7b (H7b)				
Team-Factors --->External-Stakeholders-Satisfaction ---> Project-Success	0.178	0.075	3.236	0.083
Hypothesis 7c (H7c)				
Technical-Factors --->External-Stakeholders-Satisfaction ---> Project-Success	0.097	0.032	3.171	0.077
Hypothesis 7d (H7d)				
Organizational-Factors --->External-Stakeholders-Satisfaction ---> Project-Success	0.106	0.041	2.781	0.052
Hypothesis 7e (H7e)				
Environmental-Factors --->External-Stakeholders-Satisfaction ---> Project-Success	0.091	0.056	3.921	***

The internal and external settings of the renewable energy organisations are determined as the major reason for the successful completion and meeting desired project management goals. These findings are unique in Pakistani conditions; the possible reasons for that are unique organisational cultures, political instability and the centrally controlled such mega projects. Considering the highly failed percentage of such renewable energy projects, there is a dire need of prompt and constructive actions by the policymakers and administrators for meeting the desired energy targets. Since the failed ratio of such projects is no less in international setting, as explained in Table 3, the findings of this study regarding the role of internal and external stakeholders satisfaction is critical to focus on in all sorts of medium/mega level renewable energy projects. As highlighted by Maqbool, et al., (2020a), the stakeholders satisfaction has a constructive linkage with the overall organizational performance. Owed to the producing expected level of energy output, switching costs, speed of delivery, safety, high flexibility, resource conservation, waste reduction and high productivity, we can say with confidence that success of renewable energy projects as measured by the stakeholders satisfaction is the real reason to focus on with a thorough plan. The important

linkage element, as derived from the stakeholder mapping is the power-interest matrix of the stakeholders involved in such projects (Burford, 2013, p.56; Ackermann & Eden., 2011, p.183). Wherever the stakeholders feel powerful and have their own interests the chances of such projects are healthy to complete well within the defined success measures. Considering this importance, the leadership involved in the renewable energy projects should consider the power and interests of both the internal and external stakeholders, so that the projects would not deviate from its performance track.

It is quite an understandable that the quality of life in any country largely depends upon per capita energy usage in that particular country. Considering the Pakistani case, where energy crisis on its peak from last two decades, poverty is also accelerating rapidly. So, the scope of this research will help suggesting the energy empowerment in Pakistan through successful renewable energy projects, alongside other developing states with similar geopolitical, economic and environmental conditions to Pakistan. The scenario of employment opportunities is also getting worse in Pakistan, as employment opportunities are getting scarce in the country with the increase of population. Moreover, the energy crises have reasoned into stronger influence in this aspect. So, the scope of this research will also help suggesting the employment benefits in Pakistan thorough successfully proceeding with renewable energy projects. Moreover, there is always a big cost of waste handling to existing as well as potential depletable businesses. Moreover, the production waste was never seen to be assimilated back into the environment safely. So, the scope of this research will also help in health conditions through a planned waste management or minimum waste production through successful renewable energy projects in Pakistan. The current research will also support the energy production businesses to reduce their waste disposal costs (opportunity cost) and make purchasing decisions intelligently.

5. Conclusion and Recommendations

Pakistan being an energy deficient country with an abundance of renewable energy resources, this study suggests a significant recommendation to contrive the effectual strategies to obtain the maximum outcome from the renewable industry. The present study advances further step ahead by highlighting the five critical success factors (CSFs) (i.e., communication factors, team factors, technical factors, organizational factors, and environmental factors). These factors are established

based on careful literature review, as well as pilot interviews conducted with project specialists, like project coordinators, project managers, team leaders of the project, and project directors. The five critical success factors (CSFs) chosen in the study were based on the multiple sub factors where each sub factor was related to its CSFs category and further contributing to overall renewable energy project success. In addition, thorough review of previous studies, the authors identified the mediating factors, internal stakeholders satisfaction and external stakeholders satisfaction for this study. The hypothesized model and theoretical concept considered in this study, show that the CSFs effect the project success while considering both the internal and external stakeholders satisfaction as mediating variables. It is an innovative contribution in the context of renewable energy projects. To the best of authors knowledge, it is the first effort and only research which evaluated the comparative impacts of the internal and external stakeholders satisfaction in respect to CSFs in renewable energy projects.

A questionnaire survey was conducted to examine the comparative importance of internal and external stakeholders satisfaction with respect to mentioned CSFs and renewable energy project success. The questionnaire survey was prepared was based on a Likert scale where 1 being "strongly disagree" and 5 being "strongly agree". Approximately 1000 questionnaires were sent out in the Pakistani renewable energy sector, where a total of 565 respondents returned complete questionnaires. After performing the initial reliability and validity tests, the structural equation modeling (SEM) was employed to understand the direct and indirect hypotheses. The study results provide strong relationship between critical success factors (CSFs) and project success. Our findings are based on empirical analysis clearly show a strong linkage of CSFs with the factors related to the success of renewable energy projects. In addition, the mediating factors internal stakeholders satisfaction and external stakeholders satisfaction, pointing out that these factors further influences the renewable energy project success. It was also observed that internal stakeholders satisfaction mediates in between all the CSFs and renewable energy project success. However, the external stakeholders satisfaction was found to be mediating only in the relationships of communication factors and environmental factors, and renewable energy project success. The findings depicted the importance of both the internal and external stakeholders satisfaction in order to influence the renewable energy projects, both directly or indirectly by mediating the CSFs in such projects. However, in order to get a successful renewable energy project, the first priority should be internal stakeholders satisfaction, then it comes to the external stakeholders satisfaction.

Moreover, the power-interest matrix is an important tool to gauge any of stakeholders satisfaction for the renewable energy project, for the favourable outcomes.

The critical success factors (CSFs) were dynamic for project success, where stakeholders satisfaction was a significant component to create the connection among critical success factors (CSFs) and project success. It is well noted that the project success in renewable energy projects can only be achieved through projects' stakeholders satisfaction. These empirical findings have useful implications for academicians and practitioners. The current study has filled the gap of the literature on exploring the role of stakeholders influence in renewable energy projects in a different way. This research will also help the project-oriented organizations in weighing the critical success factors (CSFs) in all the stakeholders perspectives that have not been discussed before. Particular in Pakistan the renewable industry is still in the developing stage, this study will help the project-oriented organizations to adopt those critical success factors (CSFs) which enhance the success of the renewable projects while considering the important factor of key stakeholders satisfaction. Indeed, our results cover the way of constructive decision making in choosing the appropriate project (where the success can be ensured through CSFs) and in strengthening the aforementioned stakeholders influence in constructing renewable energy projects. The future researches can explore stakeholders decision making factors in term of inner and outer boundaries, while comparing it at a wider study in different geographical locations.

List of Abbreviations

CSFs = Critical success factors

OP = Operational Performance

SEM = Structural equation modeling

ROI = Return on investment

APM = Association for project management

ISO = International Organization for Standardization

WTE = Waste-to-Energy

UK = United Kingdom

REPs = Renewable energy projects

SS = Stakeholders satisfaction

SPSS = Statistical Package for the Social Sciences

AMOS = Analysis of Moment Structures

CFA = Confirmatory factor analysis

EFA = Exploratory factor analysis

S.D = Standard deviation

PCA = Principal components analysis

GOF = Goodness of fitness

KMO = Kasier Meyer Olkin

AVE = Average variance extracted

C.R. = Critical ratio

S.E. = Standard error

References

Abdel-Halim A. A. (1981). A re-examination of ability as a moderator of role perceptions–satisfaction relationships. Personnel Psychology, 34(3), 549–561.

Ackermann F. & Eden C. (2011) Strategic Management of Stakeholders: Theory and Practice. Long Range Planning. Vol. 44. 179-196.

afWåhlberg, A. A. (2017). Driver behaviour and accident research methodology: unresolved problems. CRC Press.

Ali, M.A., 2017. Stakeholder salience for stakeholder firms: An attempt to reframe an important heuristic device. *Journal of Business Ethics*, *144*(1), pp.153-168.

Aligica, P.D., 2006. Institutional and stakeholder mapping: frameworks for policy analysis and institutional change. *Public Organization Review*, *6*(1), pp.79-90.

Anantatmula, V. S., & Rad, P. F. (2018). Role of organizational project management maturity factors on project success. *Engineering Management Journal*, *30*(3), 165-178.

Andertson, J., & Gerbing, D. (1998). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, 103(2), 411-423. http://dx.doi.org/10.1037/0033-2909.103.3.411

Andriof, J., & Waddock, S. (2017). Unfolding stakeholder engagement. In *Unfolding stakeholder thinking* (pp. 19-42). Routledge.

Angeloudis, A., & Falconer, R. A. (2017). Sensitivity of tidal lagoon and barrage hydrodynamic impacts and energy outputs to operational characteristics. Renewable Energy, 114, 337-351.

Ansari, M.F., Kharb, R.K., Luthra, S., Shimmi, S.L., Chatterji, S., (2013). Analysis of barriers to implement solar power installations in India using interpretive structural modeling technique. Renew. Sustain. Energy Rev. 27(2013), 163-174.

APM, A. (2019). Body of Knowledge. *High Wycombe: Association of Project Management*.

Ashfaq, S., Tang, Y., & Maqbool, R. (2019). Volatility spillover impact of world oil prices on leading Asian energy exporting and importing economies' stock returns. *Energy*, *188*, 116002.

Ashfaq, S., Tang, Y., & Maqbool, R. (2020). Dynamics of spillover network among oil and leading Asian oil trading countries' stock markets. *Energy*, *207*, 118077.

Atkinson, R. (1999). Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. International journal of project management, 17(6), 337-342.

Bahadorestani, A., Naderpajouh, N., & Sadiq, R. (2020). Planning for sustainable stakeholder engagement based on the assessment of conflicting interests in projects. *Journal of Cleaner Production*, *242*, p.118402.

Bairagi, V., & Munot, M. V. (Eds.). (2019). Research methodology: A practical and scientific approach. CRC Press.

Belgrave, L. L., & Seide, K. (2019). Grounded theory methodology: principles and practices. In Handbook of research methods in health social sciences (pp. 299-316). Springer Singapore.

Bhatt, B., & Singh, A. (2020). Stakeholders' role in distribution loss reduction technology adoption in the Indian electricity sector: An actor-oriented approach. *Energy Policy*, *137*, p.111064.

Brunton, M., Eweje, G., & Taskin, N. (2017). Communicating corporate social responsibility to internal stakeholders: Walking the walk or just talking the talk?. *Business Strategy and the Environment*, *26*(1), 31-48.

Buchanan, D., & Badham, R. (2008). Power, Politics, and Organizational Change: Winning the Turf Game. London, 1st ed. UK: SAGE Publications. pp. 173–286, ISBN. 1412928338, 9781412928335.

Burford L. D. (2013) Project Management for Flat Organizastions. Cost effective steps to achieving successful results. J. Ross Publishing.

Büyüközkan, G., & Karabulut, Y. (2017). Energy project performance evaluation with sustainability perspective. Energy, 119, 549-560.

Cao, Q., & Hoffman, J. J. (2011). A case study approach for developing a project performance evaluation system. International Journal of Project Management, 29(2), 155-164.

Carlisle, J.E., Kane, S.L., Solan, D., Bowman, M., Joe, J.C., (2015). Public attitudes regarding large-scale solar energy development in the U.S. Renew. Sustain. Energy Rev. 48(2015), 835-847.

Carney, M., Edwards, G., & Kim, A. (2020). Doing Well by Doing Wrong: Stakeholders Salience, Wrongdoing, and Reputational Penalties. In *Academy of Management Proceedings* (Vol. 2020, No. 1, p. 19962). Briarcliff Manor, NY 10510: Academy of Management.

Castro, M. S., Bahli, B., Barcaui, A., & Figueiredo, R. (2020). Does one project success measure fit all? An empirical investigation of Brazilian projects. *International Journal of Managing Projects in Business*, 14(3), 788-805.

Chen, J., Dyball, M.C., & Harrison, G. (2020). Stakeholder salience and accountability mechanisms in not-for-profit service delivery organizations. *Financial Accountability & Management, 36*(1), pp.50-72.

Chen, J., Harrison, G., & Jiao, L. (2018). Who and what count? An examination of stakeholder salience in not-for-profit service delivery organizations. *Australian Journal of Public Administration, 77*(4), pp.813-828.

Chin, Y. H., & Yong, H. N. A. (2019). Barriers and critical success factors towards sustainable hazardous waste management in electronic industries–A review. In *IOP Conference Series: Materials Science and Engineering* (Vol. 669, No. 1, p. 012029). IOP Publishing.

Chua, D., Kog, Y., Loh, P. (1999). Critical success factors for different project objectives. Journal of construction engineering and management, 125(3), 142-150. https://doi.org/10.1061/(ASCE)0733-9364(1999)125:3(142)

Davis, K. (2014). Different stakeholder groups and their perceptions of project success. *International journal of project management, 32*(2), 189-201.

Dong, L., Liang, H.W., Gao, Z.Q., Luo, X., Ren, J.Z. (2016). Spatial distribution of China's renewable energy industry: regional features and implications for a harmonious development future. Renew. Sustain. Energy Rev. 58(2016), 1521-1531.

Erkul, M., Yitmen, I., & Celik, T. (2019). Dynamics of stakeholder engagement in mega transport infrastructure projects. *International Journal of Managing Projects in Business*, 13(7), 1465-1495.

Farooqui, S. Z. (2014). Prospects of renewables penetration in the energy mix of Pakistan. *Renewable and Sustainable Energy Reviews*, *29*, 693-700.

Fisher R. J., Maltz E., & Jaworski B. J. (1997). Enhancing communication between marketing and engineering: the moderating role of relative functional identification. Journal of Marketing, 61(3), 54–70.

Fornell, C., & Larcker, D. (1981). Evaluatng structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50. doi:10.2307/3151312

Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2020). A stakeholder theory perspective on business models: Value creation for sustainability. Journal of Business Ethics, 166(1), 3-18.

Goel, A., Ganesh, L.S., & Kaur, A. (2020). Social sustainability considerations in construction project feasibility study: a stakeholder salience perspective. *Engineering, Construction and Architectural Management*, *22*(2), pp.15-44.

Goh, H.H., Lee, S.W., Chua, Q.S., Goh, K.C., Kok, B.C., Teo, K.T.K., (2014). Renewable energy project: project management, challenges and risk. Renew. Sustain. Energy Rev. 38(2014), 917-932.

Goldsby, M.G., Kuratko, D.F., Bishop, J.W., Kreiser, P.M., & Hornsby, J.S. (2018). Social proactiveness and innovation: The impact of stakeholder salience on corporate entrepreneurship. *Journal of Small Business Strategy*, *28*(2), pp.1-15.

Gross, S. (2020). Renewables, land use, and local opposition in the United States. Brookings Institution, January. http://docs.wind-watch.org/FP_20200113_renewables_land_use_local_opposition_gross.pdf

Guðlaugsson, B., Fazeli, R., Gunnarsdóttir, I., Davidsdottir, B. and Stefansson, G., 2020. Classification of stakeholders of sustainable energy development in Iceland: Utilizing a power-interest matrix and fuzzy logic theory. *Energy for Sustainable Development*, *57*, pp.168-188.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham. R. (2006). Multivariate data analysis (Vol. 6): Pearson Prentice Hall Upper Saddle River. New Jersey, USA; pp. 295–375, ISBN. 0130329290, 9780130329295.

Harijan, K., Uqaili, M. A., Memon, M., & Mirza, U. K. (2011). Forecasting the diffusion of wind power in Pakistan. *Energy*, *36*(10), 6068-6073.

He, Y.X., Xia, T., Liu, Z.Y., Zhang, T., Dong, Z., (2013). Evaluation of the capability of accepting large-scale wind power in China. Renew. Sustain. Energy Rev. 19(2013), 509-516.

Heintzelman, M. D., & Tuttle, C. M. (2012). Values in the wind: A hedonic analysis of wind power facilities. Land Economics, 88(3), 571-588.

Jayasuriya, S., Zhang, G., & Yang, R. J. (2020). Exploring the impact of stakeholder management strategies on managing issues in PPP projects. *International Journal of Construction Management*, *20*(6), 666-678.

Jones, C. R., & Eiser, J. R. (2010). Understanding 'local'opposition to wind development in the UK: how big is a backyard?. Energy policy, 38(6), 3106-3117.

Joseph, K. (2006). Stakeholder participation for sustainable waste management. *Habitat International*, *30*(4), 863-871.

Kaldellis, J.K., Kapsali, M., Kaldelli, E., Katsanou, E., (2013). Comparing recent views of public attitude on wind energy, photovoltaic and small hydro applications. Renew. Energy 52(2013), 197-208.

Kamal, M. (2006). IT innovation adoption in the government sector: identifying the critical success factors. Journal of Enterprise Information Management, 19(2),192-222. https://doi.org/10.1108/17410390610645085

Khan, A., Waris, M., Panigrahi, S., Sajid, M.R., & Rana, F. (2021). Improving the Performance of Public Sector Infrastructure Projects: Role of Project Governance and Stakeholder Management. *Journal of Management in Engineering*, *37*(2), p.04020112.

Khan, H. A., & Pervaiz, S. (2013). Technological review on solar PV in Pakistan: Scope, practices and recommendations for optimized system design. Renewable and Sustainable Energy Reviews, 23, 147-154.

Kirchhoff, H., Kebir, N., Neumann, K., Heller, P. W., & Strunz, K. (2016). Developing mutual success factors and their application to swarm electrification: microgrids with 100% renewable energies in the Global South and Germany. Journal of Cleaner Production, 128(2016), 190-200. doi:10.1016/j.jclepro.2016.03.080.

Kwek, C., Lau, T., & Tan, H. (2010). Education quality process model and its influence on students' perceived service quality. International Journal of Business and Management, 5(8),154-165.

Lam, J.C.K., Woo, C.K., Kahrl, F., Yu, W.K., (2013). What moves wind energy development in China? Show me the money! Appl. Energy 105(2013), 423-429.

Lecoeuvre, L. (2016). A Sustainable Approach for Project Management Performance JEAN-CHARLES HAINGLAISE AND LAURENCE LECOEUVRE. In The Performance of Projects and Project Management (pp. 172-190). Routledge.

Lenssen, G., Bevan, D., Fontrodona, J., Spitzeck, H. and Hansen, E.G., 2010. Stakeholder governance: how stakeholders influence corporate decision making. *Corporate Governance: The international journal of business in society*, *23*(3), pp.188-214.

Liang, H., Ren, J., Gao, Z., Gao, S., Luo, X., Dong, L., & Scipioni, A. (2016). Identification of critical success factors for sustainable development of biofuel industry in China based on grey decision-making trial and evaluation laboratory (DEMATEL). Journal of Cleaner Production, 131(2016), 500-508. doi:10.1016/j.jclepro.2016.04.151.

Lin, B.Q., Moubarak, M. (2014). Renewable energy consumption-Economic growth nexus for China. Renew. Sustain. Energy Rev. 40(2014), 111-117.

Liu, J., Ma, Y., Appolloni, A., & Cheng, W. (2021). How external stakeholders drive the green public procurement practice? An organizational learning perspective. Journal of Public Procurement, Vol. 21 No. 2, pp. 138-166. https://doi.org/10.1108/JOPP-04-2020-0035

Malhotra, N. (2008). Marketing research: An applied orientation, (5th ed). Pearson Education: New Jersey, USA; pp. 600–720, ISBN. 8131723178, 9788131723173.

Malik, M., Sarwar, S., & Orr, S. (2021). Agile practices and performance: Examining the role of psychological empowerment. International Journal of Project Management, 39(1), 10-20.

Maqbool, R. (2018). Efficiency and effectiveness of factors affecting renewable energy projects; an empirical perspective. Energy, 158(2018), 944-956.

Maqbool, R., & Sudong, Y. (2018). Critical success factors for renewable energy projects; empirical evidence from Pakistan. Journal of Cleaner Production, 195(2018), 991-1002.

Maqbool, R., & Wood, H. (2022). Containing a sustainable urbanized environment through SuDS devices in management trains. *Science of The Total Environment*, *807*, 150812.

Maqbool, R., Deng, X., & Ashfaq, S. (2020b). Success of renewable energy projects under the financial and non-financial performance measures. *Sustainable Development*, *28*(5), 1366-1375.

Maqbool, R., Deng, X., & Ashfaq, S. (2020c). A risky output of variation orders in renewable energy projects: Identification, assessment and validation. *Science of The Total Environment*, *743*, 140811.

Maqbool, R., Deng, X., & Rashid, Y. (2020a). Stakeholders' satisfaction as a key determinant of critical success factors in renewable energy projects. *Energy, Sustainability and Society*, *10*(1), 1-15.

Maqbool, R., Rashid, Y., Sultana, S., & Sudong, Y. (2018). Identifying the critical success factors and their relevant aspects for renewable energy projects; an empirical perspective. Journal of Civil Engineering and Management, 24(3), 223-237.

Mazur, A., Pisarski, A., (2013). The ISR and ESR scales: Measures of the Project Manager–Stakeholder Relationship. 2013 British Academy of Management, 10–12 September, Liverpool, United Kingdom.

Ndlela, M.N. (2019). *Crisis Communication: A Stakeholder Approach*. Cham: (pp. 21-44), Palgrave Macmillan.

Newcombe, R., 2003. From client to project stakeholders: a stakeholder mapping approach. *Construction management and economics*, *21*(8), pp.841-848.

Noland, J. & Phillips, R. (2010). Stakeholder engagement, discourse ethics and strategic management. *International Journal of Management Reviews*, *12*(1), pp.39-49.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory, 3rd ed.; McGraw-Hill Education: New York, USA; pp. 240–252, ISBN. 007047849X,9780070478497

Oberlender, G. D. (2014). *Project management for engineering and construction*. McGraw-Hill Education.

Olander, S. (2007). Stakeholder impact analysis in construction project management. *Construction management and economics*, *25*(3), 277-287.

Olander, S. and Landin, A., 2005. Evaluation of stakeholder influence in the implementation of construction projects. *International journal of project management*, *23*(4), pp.321-328.

Ortega, C.P., Hernández-Ortiz, M.J., Martí, E.G. and Martos, M.C.V., 2019. The Stakeholder Salience Model Revisited: Evidence from Agri-Food Cooperatives in Spain. *Sustainability*, *11*(3), pp.1-14.

Pagnussatt, D., Petrini, M., dos Santos, A. C. M. Z., & da Silveira, L. M. (2018). What do local stakeholders think about the impacts of small hydroelectric plants? Using Q methodology to understand different perspectives. *Energy Policy*, *112*, 372-380.

Pantaleo, A.M., Giarola, S., Bauen, A., Shah, N., (2014). Integration of biomass into urban energy systems for heat and power. Part II: sensitivity assessment of main techno-economic factors. Energy Convers. Manag. 83(2014), 362-376.

Pedrosa-Ortega, C., Hernández-Ortiz, M., García Martí, E. and Vallejo Martos, M.C., 2019. The Stakeholder Salience Model Revisited: Evidence from Agri-Food Cooperatives in Spain. *Sustainability*, *11*(3), p.574.

Perhac Jr, R. M. (1998). Comparative risk assessment: where does the public fit in?. Science, Technology, & Human Values, 23(2), 221-241.

Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. Managerial and decision economics, 24(4), 309-323.

Pigosso, D. C., Rozenfeld, H., & McAloone, T. C. (2013). Ecodesign maturity model: a management framework to support ecodesign implementation into manufacturing companies. Journal of Cleaner Production, 59, 160-173.

Plichta, J. (2019). The co-management and stakeholders theory as a useful approach to manage the problem of overtourism in historical cities–illustrated with an example of Krakow. International Journal of Tourism Cities, 5(4), 685-699. https://doi.org/10.1108/IJTC-12-2018-0107

PMI (Project Management Institute),. (2018). Governance of Portfolios, Programs, and Projects. Project Management Institute.

Poplawska, J., Labib, A., Reed, D.M. and Ishizaka, A., 2015. Stakeholder profile definition and salience measurement with fuzzy logic and visual analytics applied to the corporate social responsibility case study. *Journal of Cleaner Production*, *105*, pp.103-115.

Powell, P. and Walsh, A., 2018. Whose curriculum is it anyway? Stakeholder salience in the context of Degree Apprenticeships. *Higher Education Quarterly*, *72*(2), pp.90-106.

Prabhakar, G. (2008). Project and Their Management: A Literature Review. International Journal of Business and Management, 3(9), 3-10. http://dx.doi.org/10.5539/ijbm.v3n8p3

Qi, T.Y., Zhang, X.L., Karplus, V.J. (2014). The energy and CO2 emissions impact of renewable energy development in China. Energy Pol. 68(2014), 60-69.

Qian, Q. K. (2010). Government's roles and measures needed in China for promoting building energy efficiency (BEE). International Journal of Construction Management, 10(4), 119-138.

Rafique, M. M., & Rehman, S. (2017). National energy scenario of Pakistan–Current status, future alternatives, and institutional infrastructure: An overview. Renewable and Sustainable Energy Reviews, 69, 156-167.

Roth, S. (2019). California's San Bernardino County slams the brakes on big solar projects. Los Angeles Times.

Sahir, M. H., & Qureshi, A. H. (2008). Assessment of new and renewable energy resources potential and identification of barriers to their significant utilization in Pakistan. Renewable and Sustainable Energy Reviews, 12(1), 290-298.

Sakrani, H., Butt, T. T., Hassan, M., Hameed, S., & Amin, I. (2012). Implementation of load shedding apparatus for energy management in Pakistan. In International Multi Topic Conference (pp. 421-431). Springer, Berlin, Heidelberg.

Scholes, K., 2001. Stakeholder mapping: A practical tool for the public sector. *Exploring Public Sector Strategy*, p.165.

Schübeler, P., Christen, J., & Wehrle, K. (1996). *Conceptual framework for municipal solid waste management in low-income countries* (Vol. 9). St. Gallen: SKAT (Swiss Center for Development Cooperation).

Shafiq, M., Zhang, Q., Akbar, M.A., Khan, A.A., Hussain, S., Amin, F.E., Khan, A. and Soofi, A.A., 2018. Effect of project management in requirements engineering and requirements change management processes for global software development. *IEEE Access*, *6*, pp.25747-25763.

Shahbaz, M., Zeshan, M., & Afza, T. (2012). Is energy consumption effective to spur economic growth in Pakistan? New evidence from bounds test to level relationships and Granger causality tests. Economic Modelling, 29(6), 2310-2319.

Shams, S.R., Vrontis, D., Chaudhuri, R., Chavan, G. and Czinkota, M.R., 2020. Stakeholder engagement for innovation management and entrepreneurial development: A meta-analysis. *Journal of Business Research, 23*(3), pp.101-144.

Siddiqui, H.A. (2016, August 8). Failed plan, The news international, Retrieved from https://www.thenews.com.pk/magazine/instep-today/140810-Failed-plan

Stocker, F., de Arruda, M.P., de Mascena, K.M. and Boaventura, J.M., 2020. Stakeholder engagement in sustainability reporting: A classification model. *Corporate Social Responsibility and Environmental Management*, *24*, pp.64-68

Sundqvist, E., Backlund, F., & Chronéer, D. (2014). What is project efficiency and effectiveness?. Procedia-Social and Behavioral Sciences, 119, 278-287.

Tabachnick, B. G., & Fidell, L. (2012). Using multivariate statistics, 6th ed.; Pearson: New Jersey, USA: 2012; pp. 67–80, ISBN. 0205849571,9780205849574

Tsiga, Z., Emes, M., & Smith, A. (2017). Critical success factors for projects in the petroleum industry. Procedia Computer Science, 121, 224-231.

Turner, E. and Hawkins, P., 2016. Multi-stakeholder contracting in executive/business coaching: An analysis of practice and recommendations for gaining maximum value. *International Journal of Evidence-Based Coaching and Mentoring*, *14*(2), p.48.

Walker, D.H., Bourne, L.M. and Shelley, A., 2008. Influence, stakeholder mapping and visualization. *Construction management and economics*, *26*(6), pp.645-658.

Wang, X. and Huang, J., 2006. The relationships between key stakeholders' project performance and project success: Perceptions of Chinese construction supervising engineers. *International journal of project management*, *24*(3), pp.253-260.

Wixom, B. H., & Watson, H. J. (2001). An empirical investigation of the factors affecting data warehousing success. MIS quarterly, 17-41.

Wood, D.J., Mitchell, R.K., Agle, B.R. and Bryan, L.M., 2018. Stakeholder identification and salience after 20 years: Progress, problems, and prospects. *Business & Society*, p.0007650318816522.

Wu, G., Zeng, M., Peng, L.L., Liu, X.M., Li, B., Duan, J.H., (2016). China's new energy development: status, constraints and reforms. Renew. Sustain. Energy Rev. 53(2016), 885-896.

Xavier, R., Komendantova, N., Jarbandhan, V., & Nel, D. (2017). Participatory governance in the transformation of the South African energy sector: Critical success factors for environmental leadership. Journal of Cleaner Production, 154, 621-632.

Xu, P., Chan, E. H. W., & Qian, Q. K. (2011). Success factors of energy performance contracting (EPC) for sustainable building energy efficiency retrofit (BEER) of hotel buildings in China. Energy Policy, 39(11), 7389-7398. https://doi.org/10.1016/j.enpol.2011.09.001

Xue, J., Shen, G.Q., Yang, R.J., Wu, H., Li, X., Lin, X. and Xue, F., 2020. Mapping the knowledge domain of stakeholder perspective studies in construction projects: A bibliometric approach. *International Journal of Project Management*, *38*(6), pp.313-326.

Young, J., & Brans, M. (2017). Analysis of factors affecting a shift in a local energy system towards 100% renewable energy community. Journal of Cleaner Production, 169(2017), 117-124. DOI:10.1016/j.jclepro.2017.08.023

Young, R., & Poon, S. (2013). Top management support—almost always necessary and sometimes sufficient for success: Findings from a fuzzy set analysis. International Journal of Project Management, 31(7), 943-957. https://doi.org/10.1016/j.ijproman.2012.11.013.

Yu, T., Liang, X., Shen, G.Q., Shi, Q. and Wang, G., 2019. An optimization model for managing stakeholder conflicts in urban redevelopment projects in China. *Journal of Cleaner Production*, *212*, pp.537-547.

Zhao, X.G., Wang, J.Y., Liu, X.M., Liu, P.K., (2012). China's wind, biomass and solar power generation: what the situation tells us? Renew. Sustain. Energy Rev. 16 (8), 6173-6182.

Zhao, Z. Y., & Chen, Y. L. (2018). Critical factors affecting the development of renewable energy power generation: Evidence from China. Journal of Cleaner Production, 184(2018), 466-480.

Zhao, Z. Y., Yan, H., Zuo, J., Tian, Y. X., & Zillante, G. (2013). A critical review of factors affecting the wind power generation industry in China. Renewable and Sustainable Energy Reviews, 19(2013), 499-508.

Zhao, Z. Y., Zuo, J., Zillante, G., & Wang, X. W. (2010). Critical success factors for BOT electric power projects in China: Thermal power versus wind power. Renewable energy, 35(6), 1283-1291. https://doi.org/10.1016/j.renene.2009.09.016.

Zhao, Z.Y., Chen, Y.L., Chang, R.D., (2016). How to stimulate renewable energy power generation effectively?-China's incentive approaches and lessons. Renewable Energy 92(2016), 147-156.

Zhu, J., & Mostafavi, A. (2017). Discovering complexity and emergent properties in project systems: A new approach to understanding project performance. International journal of project management, 35(1), 1-12.