CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, ISLAMABAD

Impact of Gritty and Servant Leadership on Project Sustainability

by

Aliza Zeeshan

A thesis submitted in partial fulfillment for the degree of Master of Science

in the

Faculty of Management & Social Sciences
Department of Management Sciences

2026

CERTIFICATE OF APPROVAL

Impact of Gritty and Servant Leadership on Project Sustainability

by

Aliza Zeeshan

(MPM233010)

THESIS EXAMINING COMMITTEE

S. No.	Examiner	Name	Organization
(a)	External Examiner	Dr. Bilal Anwar	BU, Islamabad.
(b)	Internal Examiner	Dr. M. Ishfaq Khan	CUST, Islamabad.

Dr. Arif Ud Din
Thesis Supervisor
January, 2026

Dr. S.M.M. Raza Naqvi
Head
Dept. of Management Sciences
January, 2026

Dr. Arshad Hassan
Dean
Faculty of Management & Social Sci.
January, 2026

Author's Declaration

I, **Aliza Zeeshan** hereby state that my MS thesis titled "**Impact of Gritty and Servant Leadership on Project Sustainability**" is my own work and has not been submitted previously by me for taking any degree from Capital University of Science and Technology, Islamabad or anywhere else in the country/abroad.

At any time if my statement is found to be incorrect even after my graduation, the University has the right to withdraw my MS Degree.

(Aliza Zeeshan)

MPM233010

Plagiarism Undertaking

I solemnly declare that research work presented in this thesis titled "**Impact of Gritty and Servant Leadership on Project Sustainability**" is solely my research work with no significant contribution from any other person. Small contribution/help wherever taken has been duly acknowledged and that complete thesis has been written by me.

I understand the zero tolerance policy of the HEC and Capital University of Science and Technology towards plagiarism. Therefore, I as an author of the above titled thesis declare that no portion of my thesis has been plagiarized and any material used as reference is properly referred/cited.

I undertake that if I am found guilty of any formal plagiarism in the above titled thesis even after award of MS Degree, the University reserves the right to withdraw/revoke my MS degree and that HEC and the University have the right to publish my name on the HEC/University website on which names of students are placed who submitted plagiarized work.

(Aliza Zeeshan)
MPM233010

Acknowledgement

First and foremost, I offer my deepest gratitude to **Almighty Allah** for granting me the strength to complete my thesis. Every step of this journey has been possible only through his endless blessings and mercy. I would like to express heartfelt thanks to my parents and siblings, whose unwavering prayers, love, and sacrifices have been the backbone of my academic journey. Their constant support has inspired me to pursue my goals with confidence and purpose. Your belief in me never wavered, even during the most challenging phase of this journey. I dedicate this work to them as a token of my deepest appreciation. I am sincerely grateful to my thesis supervisor, **Dr. Arif Ud Din**, for his consistent guidance, insightful feedback, and patience throughout this research. I also want to extend my appreciation to all the faculty members and colleagues who contributed to my learning and growth during this academic journey. Lastly, I am thankful to my friends and well-wishers who stood by me, offered words of encouragement, and helped me stay motivated when things became overwhelming. Your support made this accomplishment possible. This thesis stands not only as a reflection of my efforts but also as a tribute to the people who supported me throughout.

(Aliza Zeeshan)

Abstract

The proposed study explores how Gritty Leadership (GL) and Servant Leadership (SL) influence project sustainability in IT projects, where Collaborative Social Resources (CSRS) act as a mediator variable and Agile Management Practices (AMP) as a moderator variable. It also looks at the moderated mediation and investigates whether AMP mediates the effects of SL and GL on Project Sustainability (PS) via CSRS. The conceptual model holds SL and GL as independent variables, PS as dependent variable, CSRS as mediator, and AMP as member and moderate variable in the mediated relationship. The quantitative method was chosen and a 50-item structed questionnaire was employed on 450 IT professionals in Rawalpindi and Islamabad through the convenience sampling method. Preliminary data analysis was done using SPSS and testing of direct, indirect, mediating, moderating and moderated mediation were done using PLS-SEM in SmartPLS. SL and GL have a positive and significant effect on PS. Moderated mediation was confirmed by CSRS mediating these effects to a degree, and AMP to a considerable degree, mediating the indirect relations. This shows that the effect of leadership on PS through CSRS is more favorable when the levels of AMP are elevated. The research offers theoretical and empirical knowledge on the interplay of adaptive leadership, collaboration, and agile practices in improving the sustainability of a project. Leadership styles, collaborative resources, and practices based on agility can help IT project managers to realize sustained project performances.

Keywords: Gritty Leadership, Servant Leadership, Project Sustainability, Collaborative Social Resources, Agile Management Practices, IT Project Management.

Table of Contents

List of Figures

List of Tables

Abbreviations

ALT	Adaptive Leadership Theory
AMP	Agile Management Practices
CSRS	Collaborative Social Resources
GL	Gritty Leadership
INST	Institutional Theory
IT	Information Technology
PMI	Project Management Institute
PS	Project Sustainability
SEM	Structural Equation Modeling
SL	Servant Leadership
SPSS	Statistical Package for the Social Sciences

Chapter 1

Introduction

1.1 Background

Project sustainability (PS) is one of the leading priorities among businesses that intend to remain competitive and deliver long-term value in the fast moving and shifting information technology (IT) industries. The failure rates of IT projects are often high, even though their methodologies and technologies have been enhanced due to the changing requirements, the mis-interaction of stakeholders, and the lack of leadership (Project Management Institute (PMI), 2021). These problems are more acute in Pakistan and the urban IT centers, in particular, Rawalpindi and Islamabad, because of the lack of resources, the complexity of the project, and the shifts in digital needs (Shafiq et al., 2023). Consequently, leadership has become a major determinant of the ability of IT projects to deliver long term, as well as short term impacts. The conventional leadership methods which are mostly based on the task and top-down models do not suffice in the face of dynamic people-oriented agile, innovation-driven environments. By contrast, both Servant Leadership (SL) and Gritty Leadership (GL) are adaptable and responsive styles, which can be applied to a volatile, ambiguous, and rapidly changing environment (Heifetz et al., 2023).

The idea of Servant Leadership (SL) is based on the empathy, ethical conduct, and the idea of followers development (Eva et al., 2019). It urges leaders to be of service to their teams by providing an inclusive and supportive atmosphere in which people

are allowed to perform and develop. The style helps to build the trust, factor of psychological safety and team cohesion which are considered as a specific feature in the Pakistani culture which is more collectivist and where the relations, mutual respect, and orientation on the community are very important factors. When the development and well-being of the followers are a priority, they are more engaged and productive at the workplace. Servant leaders consider themselves custodians of the organizations and strive to enlarge the financial and other ones, which have entrusted them (Dierendonck, 2011). Consequently, although they are willing to lay much emphasis on making their followers grow personally, they do not put performance standards behind. Unlike performance-based leadership styles, servant leaders are focused on long-term and sustainable achievements, and unlike performance-based styles, they often sacrifice people on the altar of profit and growth (Sendjaya, 2015). Team development and health have been linked to successful projects and these concepts have been the focus of the SL. SL has a positive influence on PS in IT project, and the mediating roles are offered by affective commitment and perceived organizational support (Zaman et al., 2022).

At the same time, a Gritty Leadership (GL) assists in encouraging workers to learn, mature and expand. The concept of grit is explained as endurance and enthusiasm when aiming to achieve long-term goals (Duckworth, 2016). GL lays stress on long-term hard work and dedication despite hardships and failures. Grit leaders can be able to build resilience, improve team motivation, and deliver projects to long-term sustainability within a project management environment, which is characterized by complexity, uncertainty, and time constraints (Faiz et al., 2024). The two fundamental elements of grit, Perseverance of effort and Consistency of Interest enable leaders to remain committed and dedicated in the long run (Duckworth and Quinn, 2009; van Zyl and Hofmeyr, 2021). This, combined with SL, can significantly improve the sustainability of the project, as it leads to the establishment of the culture of perseverance, direction, and long-term commitment to the project team. The general importance of gritty leadership in different organizational contexts has been emphasized in recent studies. As an example, a study analyzes the twin effects of GL in project-based organizations with a focus on how GL influences the performance and the success of an organization (Sylvia et al.,

2024). When speaking of its benefits, grit it leaders can create optimism and motivate employees (Lucky et al., 2022). Role models have been said to facilitate how a person can enhance the grit of others or more so by arguing that the individual will make this possible (Duckworth, 2016). Gritty leadership ensures success and encourages managers to be enthusiastic despite the adversities (Caza and Posner, 2018). In addition, the combination of GL and other types of leadership like SL is known to be a formidable team in ensuring long term success. Grit and servant leadership synergy have been demonstrated to facilitate sustainable business operations, making the importance of determination and empathy, combined in a successful leader, evident (Perkins, 2024).

The use of agile methods has gained popularity due to the fact that software development is a complex and iterative process. Agile methods have a high value on the iterative delivery value, customer collaboration and responsiveness to values that supplement servant and practical leadership styles. According to the Agile Manifesto, agile projects rely on the team dynamics and leadership. The current trends emphasize the development of agile, 2024 to embrace sustainability indicators, hybrid models, and scaling on the enterprise level (Agile Delta Consulting Limited, 2025; Sprint2Scale and Saripalli, 2024). AMP can also reinforce or undermine the relationship between leadership styles and sustainability, based on their use.

The concept of such elements of CSRS as mutual respect, trust, open communication and shared understanding is the key to successful leadership and long-term projects. These are mediators between the leadership behavior and the actual team outcomes (Kloppenborg and Petrick, 1999; Kloppenborg and Opfer, 2002). The recent research has pointed out the pivotal contribution of CSRS towards the improvement of project sustainability. Literature highlights the combination of human resources, intellectual capital and innovation by means of green initiatives through collaboration, and the role of CSRS in the process of environmental performance and sustainability within organizations. CSRS plays an essential role in enhancing the cohesion, motivation, and the effectiveness of projects in agile teams, in which decentralized decision making and collaboration are crucial (Qiu et al., 2025).

Although the importance of leadership and collaboration is acknowledged to be the key factors of IT project success, empirical studies have not investigated the potential impact of SL and GL on project sustainability in the synergy of CSRS and AMP as interveners. To fill this gap, this paper will research the direct, indirect, and conditional relationships between SL, GL, CSRS, AMP and project sustainability in the Pakistani IT industry. These relationships are essential in understanding how effective leadership can improve and how collaborative resources can be used and an agile approach to deliver the ultimate project results.

Conclusively, IT projects demand leadership practices that go beyond the traditional command and control paradigms because of its dynamic and high-pressure nature. Their similar people focus, tenacity and purpose make servant and gritty leadership an exciting framework of achieving long-term project outcomes. These leadership philosophies are able to significantly enhance the sustainability, flexibility, and sustainability of IT projects when they are reinforced by AMP and CSRS.

1.2 Research Gap

The current studies regarding the sustainability of projects are mainly on conventional success indicators that include cost, time, and quality (Project Management Institute (PMI), 2021). The dimensions, though being very insightful, tend to ignore the contribution of the leadership behavior, especially, adaptive and human-oriented leadership styles to sustainable project outcomes. Within the IT project, where the environment is changing, multifaceted, and technology-centered, the impact of leadership on long-term sustainability has not been investigated as much (Shafiq et al., 2023).

Servant Leadership (SL) studies have been widely used in different industries, including education, healthcare, and service-based areas (Khan and Ullah, 2024; Eva et al., 2019). Although there are no comprehensive studies done on the implementation of software in information technology projects, there is still a lack of data that can be analyzed. Very little research has been done to determine the influence of this factor on the project sustainability (PS) particularly in terms

of team bonding, morale as well as long term benefits in future projects in agile and fast-paced working environments. This difference highlights the need to carry out empirical research to determine the extent to which software life-cycle management can speed up the realization of sustainable outcomes in information technology projects through the use of user-centric solutions.

In like manner, Gritty Leadership (GL) defined by perseverance and long-term desire to achieve long-term goals has proven to be effective in facilitating resilience and performance in the face of uncertainty (Duckworth et al., 2007). However, the issue of the impact of such factor on successful sustainability in IT projects with a high level of intricacy, limited time-frames, and limited resources is underexplored. Also, there is scanty research that explores the interactive effects of Servant Leadership (SL) and Grit on performance synergy; this limits our understanding of how the two factors interact to drive organizational success by PS.

Collaborative Social Resources (CSRS) including trust, open communication, shared understanding, and mutual support are identified as important intangible resources of the success of the project (Kloppenborg and Petrick, 1999; Kloppenborg and Opfer, 2002). Even though their role is not ignored in general management and community-based research (ud Din et al., 2021), Studies investigating the presence of CSRS as a mediator between leadership styles (SL and GL) and PS within IT projects are few.

Research on contextual matters in underdeveloped countries such as Pakistan remains scanty, but they contribute to the degree of cooperation among team members who are distributed in various locations via effective communication and the ability to learn of new experiences to make a sustainable success in remote projects.

Agile Management Practices (AMPs) are many of the organizations that apply to their IT projects to enhance adaptiveness, learning, and iterative delivery (Roberts and Singh, 2025). Nevertheless, the existing studies do not provide adequate data that can prove a connection between these factors and the relationship between the styles of leadership and the sustainability of the project. More specifically, it is still not clear whether AMP positively or negatively affects the effect of SL

and GL on PS leaving a significant vacuum in the knowledge about the effect of agile methodologies on the organizational structures to deliver sustainable results. To conclude, the study of leadership, collaboration, and agile practices has been performed separately, whereas there is a lack of a complete framework of SL, GL, CSRS, AMP, and PS integration in IT projects. Previous studies have by this point failed to systematically examine the mediated-moderated processes through which leadership can affect sustainability, in fast-paced, generation-in depth settings. By filling these gaps, the proposed research will theoretically contribute to the field of IT project management as well as propose practical implications to project managers in highlighting the dualistic nature of servant and gritty leadership mediated by CSRS and moderated by AMP to achieve sustainable project performance.

1.3 Problem Statement

Regardless of improvements in project management practices, the failure rates of IT projects in the world and in Pakistan are high due to the lack of long-term sustainability in the projects (Project Management Institute (PMI), 2021). Although past studies have conducted investigations on the general leadership and project success, minimal information exists about the role of particular leadership styles, including Servant Leadership (SL) and Gritty Leadership (GL) to maintain project success in dynamic IT environments. The current literature does not pay much attention to how leadership influences sustainable performance and how supportive social resources (CSRS) can mediate the process.

Furthermore, although agile management practices (AMP) is a common practice in IT projects to enhance flexibility and incremental delivery, moderating impact of agile on relationship between leadership styles and project sustainability is not taken into account. Therefore, the project-based organizations inflicted in Pakistan do not have an empirically proven framework, which incorporates leadership behavior, collaborative resource, and agile practice to improve sustainable project outcomes. Thus, the knowledge gap on the effect of SL and GL on sustainability of project together through CSRS and at varied rates of AMP is the primary issue.

This gap needs to be filled to come up with evidence-based leadership strategies that allow IT project team to attain long-term sustainability, organizational alignment, and maximization of performance in complicated and fast-changing project environments.

1.4 Research Questions

This study is intended to provide answers to the following questions: -

i. Does Gritty Leadership impact Project Sustainability in IT projects?

ii. Does Servant Leadership impact on Project Sustainability in IT projects?

iii. Do Collaborative Social Resources mediate the relationship between Gritty Leadership and Project Sustainability?

iv. Do Collaborative Social Resources mediate the relationship between Servant Leadership and Project Sustainability?

v. Do Agile Management Practices moderate the relationship between Gritty Leadership and Project Sustainability?

vi. Do Agile Management Practices moderate the relationship between Servant Leadership and Project Sustainability?

vii. Does the indirect effect of Gritty Leadership on Project Sustainability, through Collaborative Social Resources depend on the level of Agile Management Practices (moderated mediation)?

viii. Does the indirect effect of Servant Leadership on Project Sustainability, through Collaborative Social Resources depend on the level of Agile Management Practices (moderated mediation)?

The research questions are expected to offer a detailed study of the effect of GL and SL on PS and the mediating effect of CSRS and the moderating role of AMP in the interaction of both variables.

1.5 Research Objectives

The primary aim of the paper is to discuss how the gritty and servant leadership styles contribute to the sustainability of the project in the case of IT projects. This

is aimed at the mediating influence of the joint social capital and the moderation of agile management practices. This paper tries to explain how empathy determines leadership styles and finally affect the outcome of sustainable projects.
RO1: To investigate the influence of GL on PS in IT projects.

In this paper, the authors examine the effects of GL on PS as it relates to IT projects. GL is the trait of perseverance and long-term goal interest necessary to work in a complicated project environment. The study examines the role of GL in enhancing stable project implementation, stability of teams, and the sustainability of projects. The study will seek to know the impact of grit in sustainable practices in project execution by analyzing the capacity of leaders to remain committed when faced with setbacks.

RO2: To evaluate the effect of SL on PS in IT projects.

In this paper, the authors examine the effects of SL on PS as it relates to IT projects. SL is the trait of perseverance and long-term goal interest necessary to work in a complicated project environment. The study examines the role of SL in enhancing stable project implementation, stability of teams, and the sustainability of projects. The study will seek to know the impact of grit in sustainable practices in project execution by analyzing the capacity of leaders to remain committed when faced with setbacks.

RO3: To investigate the mediating effect of CSRS in the relationship between GL and PS.

The aim of this is the mediating effect of CSRS on the correlation between GL and PS. The paper examines whether powerful social capital, including knowledge sharing, reciprocity of support and collaboration, enhances the positive influence of GL on sustainable project results. It is the proposed study that the leaders exhibiting high levels of grit could construct and capitalize on CSRS in promoting the overall success and endurance of a project.

RO4: To investigate the mediating effect of CSRS in the relationship between SL and PS.

This study is an analysis of the mediation of relationship between SL and PS by CSRS. Servant leaders tend to promote interpersonal trust and team cohesion

that consequently makes CSRS stronger. The paper examines whether these social processes are important to translate the principles of SL into sustainable practices that last the project lifecycle and particularly in agile and innovation-based IT setting.

RO5: To analyze the moderating role of AMP on the relationship between GL and PS in the IT project.

This purpose is to examine the moderating effect of AMP between GL and PS. The study takes into account such a question as whether AMP reinforces or diminishes the effect of GL by establishing adaptive conditions in which perseverance and long-term orientation are either promoted or not. The analysis of AMP into the study reveals the potential of flexible and iterative project approaches to improve the role of GL in sustainable project implementation.

RO6: To analyze the moderating role of AMP on the relationship between SL and PS in the IT project.

This paper evaluates the potential moderating effect of AMP on the correlation that exists between SL and PS. In most cases, agile methodologies are in harmony with the values of SL, i.e., empowerment, continuous feedback, and collaboration. The paper will examine how presence of AMP contributes to the power of SL on sustainability through responsive teams and adaptive project structures thereby creating viability of project in the long term.

RO7: To investigate whether Agile Management Practices (AMP) moderate the indirect relationship between Gritty Leadership (GL) and Project Sustainability (PS) through Collaborative Social Resources (CSRS).

This goal is aimed at assessing the effect of AMP on the strength of the mediating effect of CSRS between the relationship between GL and PS. Strauss leaders promote perseverance, a long-term orientation, and flexible attitudes that may lead to members of such project teams having stronger networks. The research question is whether the existence of AMPs can either strengthen or undermine this indirect pathway by developing adaptive, iterative and feedback-based environments that promote viable utilization of social resources, and therefore playing a role in ensuring sustainable project results.

RO8: To investigate whether Agile Management Practices (AMP) the indirect relationship between Servant Leadership (SL) and Project Sustainability (PS) through Collaborative Social Resources (CSRS).

In the relation between SL and PS, this goal will evaluate the mediating impact of CSRS between AMP. Servant leaders are trustful, empowering, and team developers, therefore, enhancing the social collaboration networks. The paper examines the question of whether the combination of AMPs increases this indirect impact by fostering continuous communication, flexibility and ownership in project teams, which in turn increases the sustainability of IT projects.

1.6 Significance of the Study

It is extremely important to understand what makes the projects sustainable in the long term, yet the existing studies do not provide a complete insight into the impact of Gritty Leadership (GL) and Servant Leadership (SL) on long-term sustainability of complex IT projects. There is a knowledge gap on the contribution of the perseverance-based and service-oriented leadership behavior in maintaining a long-lasting project performance, especially in developing countries like Pakistan since most studies are based on traditional management styles or technical skills (Project Management Institute (PMI), 2021; Dierendonck, 2011; Duckworth, 2016).

The gap is addressed in this study, which considers Collaborative Social Resources (CSRS) as a mediating mechanism, where the role of social capital and working in a team in transforming leadership behaviors into sustainable project outcomes is under-explored (Din et al., 2022; Xin et al., 2020). Additionally, Agile Management Practices (AMP) as a moderating factor address a significant gap in the literature on project sustainability since the relationship between leadership and agile approaches is yet to be theorized, despite increasing relevance in IT project environments (Rigby et al., 2016; Conforto et al., 2014). This study demonstrates the influencing power of leadership on sustainable project outcomes and how it can be reinforced or diluted by agile practices using a moderated mediation approach.

In practice, this study can guide IT project managers, Human Resource, and policymakers in Pakistan, particularly in such cities as Rawalpindi and Islamabad

where digital projects develop rapidly. Sustainable delivery of projects requires leaders who are able to develop trust, teamwork, adaptability and long-term commitment. This study provides a practical and concise framework by integrating leadership behavior, social capital mechanisms, and nimble project management perspectives to fill gaps in the research that are of relevance in studying leadership, collaboration, and sustainable project performance

1.7 Supporting Theory

Two coherent theoretical approaches of Adaptive Leadership Theory (ALT) and Institutional Theory (INST) are used to craft the research to explain the impact of GL and SL on PS within the sphere of IT settings.

1.7.1 Adaptive Leadership Theory

The theoretical framework of this paper is compatible with Adaptive Leadership Theory that focuses on the ability of leaders to maneuver among complexity and collaborative problem-solving in vibrant IT projects (Heifetz et al., 2023). Such a congruency is presented in gritty leadership (GL) and servant leadership (SL). GL enhances long-term persistence and hard work towards long-term goals that lead to sustainable project performance (H1), and SL, focus on empathy, empowerment, and development of others, team resilience, and well-being (H2).

Both types of leadership help to develop collaborative social resources (CSRS) including mutual trust and knowledge sharing, and emotional support through creation of an environment that promotes collaboration and psychological safety (H3) and (H4). CSRS should play the role of a major brokerage between leadership practices and sustainability outcomes to assist GL, maintain the motivation and cohesion of their staff in long-term project life cycles (H6) and assist SL, empowered and supported team members work together in a synergistic manner (H7, H5).

Moreover, the agile management practices (AMP) increase the ability of leadership styles to provide real-time feedback, plan in an iterative way, and quickly adapt to

changes. AMP reinforces the connection between leadership styles and CSRS (H8, H9) and enhances the indirect influence of leadership on project sustainability in a stronger way than CSRS (H10, H11), as the previous studies have found that the agile frameworks enhance the increase in leadership performance through better team flexibility and team members collaboration (Denning, 2021; Rigby et al., 2016).

1.7.2 Institutional Theory

The institutional theory offers a contextual prism through which one can interpret the ways in which the norms, expectations, and culture influence the leadership behavior and practices within the project and legitimacy seeking. The developing IT sector of organizations in Pakistan is more frequently using agile leadership styles which are considered effective and legitimate throughout the world. Both gritty and servant leadership align with institutional requirements of successful management anchored on resilient, ethical, and people-focused management H1, H2 in the environment where human capital is one of the primary success factors (DiMaggio and Powell, 1983).

In addition, the CSRS practices, including teamwork, shared norms and inter-organizational trust are being institutionalized within project-based organizations as a normal constituent of high performing sustainable teams. The leaders that foster these values (GL in H3, SL in H4) are perceived as culturally compatible and institutionally supported. Consequently, CSRS assumes a key role to keep the project alive and satisfactory to stakeholders (H5). The institutional norms also justify the extensive use of AMP particularly when firms are under pressure to innovate and be responsive in the face of competition. The practices support the adaptive capacity of teams and the moderating impact of agile methodologies between the leadership and CSRS (H8, H9).

In agile environments that are highly institutionalized, the indirect impacts of leadership on sustainability through CSRS are more heightened (H6, H7). The indirect effects of GL and SL on the sustainability of a project through CSRS become even greater in highly structured agile environments (H10, H11). Accordingly, the

institutional perspective the legitimacy and embeddedness of the leadership styles, CSRS practices, agile frameworks, etc. all support the postulated paths in this research.

1.8 Operationalize Definitions of Variables

1.8.1 Independent Variable: Gritty Leadership

GL implies that an individual does not give up quickly, but works hard and persists on his or her objectives much longer when encountering difficulties and obstacles. It demonstrates that you do not give up quickly and follow your plan over a long period, and teams do not lose their way, overcome difficulties, and act in the same direction. IT projects that may have leaders who are tough and persistent will be able to keep up with emerging ideas and changes at times when things are unpredictable (Ahmed et al., 2021).

1.8.2 Independent Variable: Servant Leadership

It is founded on the concepts of servant -first, servant-centered, and servant-inspired leadership. SL is a leadership style that puts other people first by ensuring that they develop, feel appreciated, and stay healthy. The style is the best as it encourages trust, teamwork and ethical conduct and is especially successful with knowledge-intensive and team-oriented projects such as IT projects. Servant leaders make their teams feel belonging, appreciated and accountable to accomplish long term objectives. (Saad et al., 2021).

1.8.3 Mediating Variable: Collaborative Social Resource

The definition of CSRS is based on the common social mechanisms and networks that facilitate collaboration and exchange of resources among partners and stakeholders in the programme management (PgM). It involves things like creating relationships with other partners through consortium meetings, formal and informal gatherings and common field visits. These collaborative resources serve as a set of critical mediators between enterprise environmental factors (EEFs) and

PgM resources, and thus promote the sustainability of social enterprises (Din et al., 2022).

1.8.4 Mediating Variable: Agile Management Practice

AMP can be defined as the use of agile tools like Scrum, Kanban or Extreme Programming focused on iterative development, cross-functional operation, flexibility and constant feedback. Agile practices in IT initiatives enhance responsiveness, communication, and team independence, and have a moderate effect on the influence of leadership on project sustainability (VersionOne, 2016).

One of the widely used tools in the field of software development and project management is AMP practices, where flexibility, teamwork, and quick delivery are put at the forefront (Idrees et al., 2024). It focuses on the rapid adjustment to the environmental changes, the promotion of the open dialogue, of the creative approach, and of the further evolution of teams. Agile practices can help companies in creating teamwork, building solutions in an iterative manner, and adapting fast to evolving customer requirements and technology breakthroughs (Chukwunweike and Aro, 2024).

1.8.5 Dependent Variable: Project Sustainability

PS is shaped as a multidimensional outcome, which is not limited to conventional measures of success (time, cost, and scope) but the long-term social, environmental and economic effects. It embodies the combination of sustainable project management, stakeholder involvement, and knowledge exchange, which is consistent with the Triple Bottom Line (TBL) model to make sure that value is created to the organization and the society (Fernandes et al., 2023).

1.9 Research Justification

The present research narrows down to Gritty Leadership (GL), Servant Leadership (SL), Collaborative Social Resources (CSRS), Agile Management Practices (AMP), and Project Sustainability (PS) due to the fact that these variables fill

critical gaps of understanding human centered, social and process related aspects in the success of IT project. GL and SL have been selected among other leadership constructs since they focus on sustainability of project results, long-term commitment, empathy and development of followers, which conventional leadership constructs usually lack (Duckworth et al., 2007; Dierendonck, 2011). CSRS is more suitable than general team or organizational resources as it demonstrates the mediating role of social capital, trust, and collaboration in transforming the leadership behaviors into the sustainable outcomes (Xin et al., 2020; ud Din et al., 2021). To study its moderating impact, AMP is chosen over generic project methodologies as adaptive and iterative practices can augment or restrict the impact of leadership on project sustainability in dynamic IT environments (Rigby et al., 2016; Conforto et al., 2014). These constructs can be combined to have an integrated framework that integrates behavioral leadership, social mechanism, and agile processes to have the theoretical depth and practical relevance is enhancing sustainable IT project performance in Pakistan.

Chapter 2

Literature Review

2.1 Introduction

This literature review focuses on the role of gritty leadership (GL) and servant leadership (SL) on project sustainability (PS) in the Pakistan context of the IT projects. The literature is based on Adaptive Leadership Theory (ALT) and Institutional Theory (INST) and aims at examining the impacts of leadership behavior on the sustainable project outcomes, which are intangible and based on value relationships, i.e. trust, collaboration, and shared purpose.

All these attributes are captured in the process of creating joint social resources (CSRS) which is a major mediator in the relationship between leadership and sustainability.

Moreover, the chapter also covers the moderating function of agile management practices (AMP), and how such practices as iterative planning, self-organizing teams and responsiveness to change can either reinforce or undermine leadership and sustainability relationship.

This review brings together literature on the leadership, collaboration in the teamwork, agile methodologies, and sustainability, which creates a clear theoretical foundation of the study as well as the reason why the proposed model is adequate to analyze the problems facing the developing IT project environment in Pakistan.

2.2 Role of Gritty Leadership in Project Management

Gritty Leadership, a style of leadership that is marked with persistence and drive towards long-term objectives has become an essential style of leadership within the dynamic and high-pressure setting of IT project management (Duckworth et al., 2007). The recent studies (Chodkowski et al., 2021), consider tough leaders more apt to maintain their subordinates focused on the objectives of the project, support a culture of persistence, and demonstrate the spirit of hard work. Such leaders often show unending commitment to the success of the project and therefore inspire their colleagues to share the same spirit.

Such a leadership style does not only enhance the morale within the team, but also the results of a project, particularly in the IT sector since it often requires sustained cognitive and emotional investment (Akhtar et al., 2023).

One of the studies brings out that GL has a positive effect on team effectiveness and PS within IT settings. Grit leaders have higher chances of encouraging their work teams to overcome challenges and stay focused on the objectives of the project, resulting in a higher probability of sustainable project work (Ahmed et al., 2021).

Therefore, GL can be considered an important factor in the realization of PS. Grit leaders have a higher chance of withstanding adversities and motivating their staff to do so. This toughness may result in long-term project success especially during a time when things are not going well (Duckworth et al., 2007).

H1: Gritty Leadership has a positive impact on project sustainability in IT projects.

2.3 Role of Servant Leadership in IT Projects

The concept of servant leadership (SL) allows a leader to serve others and is concerned with the development and welfare of the team members. Such a leadership style fosters a positive and encouraging atmosphere where collaboration, trust, and ethical conduct (which is necessary to achieve the long-term project results in

the IT project) will take place (Eva et al., 2019; Sendjaya et al., 2008). Servant leaders foster favorable organizational climate that facilitates project success and sustainability in the long run by putting in service to others instead of serving their own interest (Luthans and Avolio, 2003; Liden et al., 2008).

As a research study carried out in 2024 found, SL is a key component in PS because it develops a green organizational culture, and thus the impact of leadership is felt in the environmental responsibility (Khalid et al., 2024). One of the studies indicated that servant leadership contributes to enhanced performance within a project group, owing to the development of a more cohesive team (Rachmawati and Lantu, 2014). Servant leadership has been shown to increase the success in large-scale projects by fostering trust in the team members, which depends on the governance structure of the project (Zheng et al., 2023).

According to meta-analytic studies, servant leadership proves to be a unique ethical leadership style, as it enhances personal development, empowerment of followers, and the reduction of self-interest. (Hoch et al., 2018; Kauppila et al., 2022). It has also been shown in the studies that SL has a positive effect on organizational commitment, job satisfaction, and employee engagement, which in turn has a direct impact on Project Sustainability (Malik et al., 2022; Nauman et al., 2022a,b). Servant leaders provide an environment, which facilitates the development of teams, to accommodate a dynamic and complex IT project environment in the most timely manner, within scope, and utilizing resources effectively (Harwardt, 2018)

The idea behind SL is a brainchild of the classic work by Robert Greenleaf, who stressed that leadership should be sought through serving people first and authority second (Rachmawati and Lantu, 2014). Servant leaders are able to guide, impart knowledge, give constructive feedback, and provide the followers with required resources to realize project goals (Ogochi et al., 2022; Liden et al., 2014). This service-oriented method encourages the delivery of sustainable project results, as it supports the uniformity of team behavior towards organizational objectives and encourages the collaborative and accountable culture.

H2: Servant Leadership has a positive impact on project sustainability in IT projects

2.4 Collaborative Social Resource on Leadership Styles

CSRSs (including shared knowledge, trust, team-based support systems, etc.) are the pillars of attaining sustainable project results in IT project-based organization (PBOs). These resources are formed due to the strong interpersonal relationships and teamwork that are necessary in complex and the fast-moving IT situations (Nahapiet and Ghoshal, 1998).

SL which puts its emphasis on empathy, empowerment and team member development (Greenleaf, 1977; Eva et al., 2019), is in active development of CSRS. Servant leaders foster trust, psychological safety, and open communication among teams to make the environment conducive to the free flow of knowledge and support to other members (Liden et al., 2008).

In an analogous way, GL, which is about perseverance and commitment to goals in the long run (Duckworth et al., 2007), strengthens resilience and team cohesiveness in times of pressure and uncertainty typical of IT projects. Additional evidence to this opinion constitutes the recognition of collaborative culture to mediate the relationship between SL and PS, in which the collaborative dynamics play an indirect role in converting leadership into sustainable outcomes (Ahmadzai et al., 2024).

H3: Gritty leadership has a positive impact on collaborative social resources.

H4: Servant leadership has a positive impact on collaborative social resources.

2.5 Collaborative Social Resource on Project Sustainability

Collaborative Social Resources (CSRS) advances the capacity of a group to manage change and uncertainty, which fits the perspectives of ALT in favor of flexibility and the insistence of INST in inbuilt systems of collaboration. CSRS rich teams are also more responsive, communicative and resilient qualities which serve PS directly by enhancing problem solving and coordinated action.

According to the theory of social capital, applicable networks, trust, and mutual understanding allow the successful action and knowledge transfer, which can enhance resilience and sustainability performance in dynamic settings (Nguyen-Duc et al., 2021)

CSRS, as an aspect that constitutes a part of social capital, can in an organizational setup improve the sharing of knowledge and solving problems in a coordinated manner to a significant extent, making leadership actions translate into sustainable outcomes of a project. Recent literature also shows that a high level of social capital and collaborative mechanisms can lead to resilience and sustainable performance because they enable teams to adjust to disruptions and continue to be productive (Sari et al., 2024)

H5: Collaborative social resources have a positive impact on project sustainability.

2.6 Mediating Role of CSRS between Leadership Styles and PS

Gritty individuals such as leadership style allow CSRS and consequently the sustainable outcomes. Grit might not be sufficient to achieve sustainability unless it is backed by collaborative networks that cushion teams against stress and breakdown and help them to solve problems collectively. It has been found that social support and collaborative behavior are processes that connect individual personalities such as grit with performance outcomes by increasing teamwork and creativity (Gunadarma et al., 2025).

Likewise, Servant leaders develop CSRS by being trusted, empowered, making shared decisions and safety in their hearts, which create conditions which facilitate cooperation and resilience. It has been observed that relationship between leaders' behaviors and performance outcomes are mediated by such collaborative environments and it is seen that the influence of leadership is often a social and relational but not necessarily a direct influence. (Yusna et al., 2025; Ahmadzai et al., 2024).

CSRS serves as an intermediary between the leadership of their companies and the institutional values needed to achieve sustainability along the border (Nauman et al., 2022a; Ellahi et al., 2022). According to the studies conducted in the same field of the research on leadership, it is observed that collaboration and mediate the influence of leadership on performance and sustainability outcomes, which implies the relevance of the identified mechanisms in the complex organizational environment (Springer research et al., 2024). Moreover, the recent studies in the field of SL have emphasized the indirect route in which leadership can affect pro-environmental and organization citizenship actions and the effect of the research is further reinforced by the role of CSRS as a mediating mechanism in the sustainability settings (Ahmed et al., 2021) (Saleha et al., 2024).

AMPs do not just moderate direct relationships that exist between leadership and outcomes, but in addition, they intensify the strength of mediation because they provide conditions under which social resources are more easily constructed and consumed. Great agility promotes building of trust, knowledge sharing, and adaptive behaviors which attenuates the CSRS-mediated leadership-sustainability pathway even more.

H6: Collaborative social resources positively mediate the relationship between gritty leadership and project sustainability.

H7: Collaborative social resources positively mediate the relationship between servant leadership and project sustainability

2.7 Agile Management Practice as a Moderator

AMP entails the iterative development, the continuous feedback and dynamic planning, crucial in responding to changes and uncertainties in IT projects. Agile methodologies can improve the agility and responsiveness of the team and, therefore, affect the sustainability of project deliverables. In a study, it was identified that when AMP is adopted, the efficacy of leadership to accomplish PS is increased (Ahmed et al., 2021).

By adopting agile processes, leaders can adjust better to change and lead their organizations to a sustainable solution. A different study showed applicable methods

of integrating sustainability into agile software development and emphasized the need to align AMP with sustainability objectives (Oye-deji et al., 2024).

This flexibility indicates that AMP can balance the association between leadership styles and CSRS by establishing environments to enable trust, sharing of knowledge and adaptive behaviors of teams. Leaders that adopt agile approaches are in a better position to build cooperative networks, and that is why improve project sustainability.

H8: Agile management practices moderate the relationship between gritty leadership and collaborative social resources

H9: Agile management practices moderate the relationship between servant leadership and collaborative social resources.

2.8 Moderated Mediation of Agile Management Practice

Based on the mediating effect of Collaborative Social Resources (CSRS) between leadership styles and Project Sustainability (PS), Agile Management Practices (AMPs) are suggested to be a boundary condition that enhances such indirect effects. AMPs boost team adaptability and responsiveness through fostering trust, knowledge sharing, ongoing feedback and adaptive behaviors between project phases and provide an environment that fosters collaboration and resiliency (Khan and Ullah, 2024).

Agile conditions lead to the development and use of CSRS, which enhance trust, sharing of knowledge, and adaptive behaviors, which compound the influence of both Gritty Leadership (GL) and Servant Leadership (SL) on the successful execution of a sustainable project. Agile practices are also found to considerably enhance the performance outcome due to the dominance of team commitment and shared understanding in the dynamic projects (Sohail et al., 2025).

In this regard, it is anticipated that AMPs will contribute to not only moderating direct leadership, CSRS relationships (H8 and H9), but also strengthening the

mediation between leadership and PS through CSRS. This is one of the moderated mediation processes in which the magnitude of the indirect impact of leadership on project sustainability is based on the magnitude of agile practices applied within the project world. Moreover, the research in agile project and organizational environments also suggests that agile approaches do not only exert a direct impact on performance indicators but also connect with collaborative processes, including knowledge sharing and stakeholder engagement, to enhance indirect impacts of leadership on the success indicators (Khalil & Hussain et al., 2025).

H10: Agile Management Practices positively moderate the indirect effect of Gritty leadership on Project Sustainability through Collaborative Social Resources.

H11: Agile Management Practices positively moderate the indirect effect of Servant leadership on Project Sustainability through Collaborative Social Resources.

2.9 Hypothesis Summary

H1: Gritty leadership has a positive impact on project sustainability in IT projects.

H2: Servant leadership has a positive impact on project sustainability in IT projects.

H3: Gritty leadership has a positive impact on collaborative social resources.

H4: Servant leadership has a positive impact on collaborative social resources.

H5: Collaborative social resources have a positive impact on project sustainability.

H6: Collaborative social resources positively mediate the relationship between gritty leadership and project sustainability.

H7: Collaborative social resources positively mediate the relationship between servant leadership and project sustainability.

H8: Agile management practices moderate the relationship between gritty leadership and collaborative social resources.

H9: Agile management practices moderate the relationship between servant leadership and collaborative social resources.

H10: Agile Management Practices positively moderate the indirect effect of Gritty Leadership on Project Sustainability through Collaborative Social Resources.

H11: Agile Management Practices positively moderate the indirect effect of Servant Leadership on Project Sustainability through Collaborative Social Resources.

2.10 Research Framework

In the IT projects, the proposed framework incorporates the constructions of GL, SL, CSRS, and AMP in investigating their influence on PS. With the holistic approach, it is possible to develop a comprehensive vision of the factor affecting the project outcomes, and understand how leadership styles and organizational practices can be used to maximize sustainability.

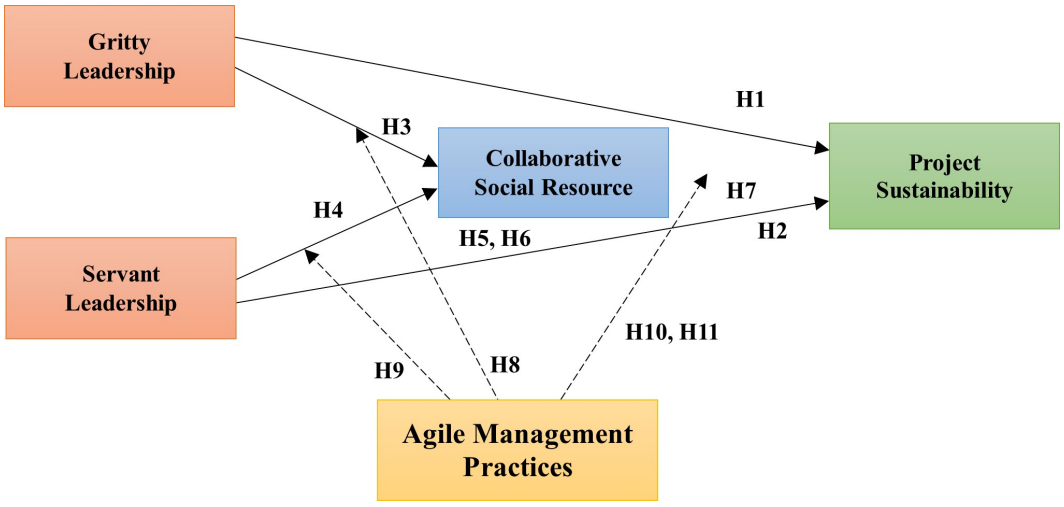

FIGURE 2.1: Conceptual Framework

Chapter 3

Research Methodology

3.1 Research Design

The study used a quantitative and cross-sectional design in its effort to examine the contribution of Gritty Leadership (GL) and Servant Leadership (SL) to Project Sustainability (PS) in IT projects and the mediating role of Collaborative Social Resources (CSRS) and the moderating effect of Agile Management Practices (AMP). The presence of cross-sectional approach was due to the fact that data were gathered at a single time and thus it was appropriate in getting the current perceptions and experiences of IT professionals. The research design is suitable when the researcher requires to quantify and analyze variables without having control over the research environment.

The research design was based on the use of self-administered questionnaires that were organized. The standardized survey items facilitated the ability to measure the respondents in a consistent way and also enabled the objective measurement of all the variables involved in the model. Quantitative approach has been chosen due to the possibility to test in a statistical manner the hypothesized relationships and the need to be precise when measuring the leadership styles, collaborative processes and project outcomes.

Following data collection, the answers were analyzed using a number of statistical tests in order to guarantee the accuracy, consistency and credibility of the results. These analyses involved reliability testing, validation of validity, correlation

analysis, as well as the structural model testing. In general, this design offered a methodical scheme of investigation of direct, indirect, and conditional impacts that were advanced in the study.

3.2 Research Philosophy

This research adheres to positivist research philosophy that assumes the objectivity of reality that exists in spite of what the researcher perceives. Positivism emphasizes the application of real evidence and structured data collection and scientific methods to discover knowledge that can be reliable and applicable in numerous conditions (Saunders et al., 2015). In this design, the researcher aims at being neutral so that individual biases do not affect the data collection, data analysis or data interpretation processes.

In this line of positivism, the research adopts quantitative research methods, which enable the researcher to explore the relationships using measurable variables and statistical procedures. Positivism best suits those studies that strive to test hypotheses, find patterns, and study causal relationships on the basis of numerical data. Surveys and statistical analysis are important in ensuring that things are fair and strong as required in this type of research.

Using a positivist approach, the research would obtain results that are structured, repeatable and can be applied in other similar circumstances. This decision is also consistent with the general strategy of the study, which considers the accuracy of measurements, replicability, and evidence-based inferences.

3.3 Population and Sample

The target population of this research will be the people who are employed in IT firms registered with the Pakistan software export board (PSEB) that regulates thousands of ICT and software based firms operating in major cities in Pakistan. Many of these organizations are located in Islamabad and Rawalpindi where the IT sector has been growing at the rate of knots in the last ten years. All these companies provide a wide variety of services and include software development,

front-end and back-end engineering, database management, quality assurance and IT project management. In this study, the population of interest will be the project managers, team heads, software engineers, and developers, among other individuals who engage directly in the activity of IT projects. These people have direct experience in leadership practices, projects, agile methodology, and teamwork, which makes them the right choice in assessing the variables investigated in this paper. This definition of the population is effective because it will deal with respondents that are well informed and have been actively involved in IT projects, which will help the study to achieve its purpose of understanding the leadership-sustainability dynamics in the Pakistani context of IT projects.

3.4 Time Horizon

In this study, the time horizon used is of a cross-sectional nature that is represented by the collection of data at one point in time. The cross-sectional design is suitable when it is intended to test the association between variables without tracking changes over some expanse of time (Saunders et al., 2015). The approach is widely applicable in management, leadership, and project since it enables the researchers to gain a fast insight into what employees believe at the moment (Clark et al., 2021).

A cross-sectional time frame was chosen because of the pragmatic nature of repeated measurements in IT projects setting, wherein the project teams, project schedule and project managers are often changing. Making data collection at one point in time makes responses to be similar and avoids the biases that may occur due to the transformation of the organization in a longer period. The data used in this study was gathered in the period of August 2025-November 2025. This time span gave sufficient time to send questionnaires to IT professionals, get feedback, conduct follow ups, and have a complete and quality of the information collected.

3.5 Contribution of the Study

This research provides useful information to academic literature and practice by investigating the effect of adaptive leadership styles on the sustainability of a

project in the case of IT projects. It deepens the understanding of sustainable leadership practices in high-speed organizational settings that included the mediating influence of collaborative social resources and moderating influence of agile management practices.

3.6 Theoretical Framework Expansion

This study contributes to the theory by integrating the adaptive leadership styles, which are gritty leadership and servant leadership, into the sustainability of the project in an IT project. Also, unlike the previous research that discussed servant leadership and grit individually (Duckworth, 2016; Dierendonck, 2011), this study introduces servant leadership and grit as a component of a project management procedure, introducing a new view of these two concepts. The integration of Collaborative Social Resources (such as mutual trust, sharing of knowledge and team synergy) as a mediating variable in which these leadership styles are converted into improved sustainability outcomes (Hsu et al., 2023). Also, Agile Management Practices act as a moderator, which brings contextual flexibility making the leadership styles more effective in project environments that are dynamic and technologically driven (Conforto et al., 2014)(Silva et al., 2024). There are indications that the combination of perseverance and people-oriented philosophy helps to sustainability in complicated settings, and cooperation contributes to leadership power, and agility to innovation and toughness. The work brings together gritty and servant leadership in a mediated-moderated paradigm, which provides a theoretical gap and introduces a paradigm that can meet the ever-changing needs of IT projects based on sustainability considerations.

3.7 Unit of Analysis

This study will use the individual employee working in the IT project settings as the unit of analysis. The unit of analysis is employees since the leadership behaviors, collaborative practices, and agile management approaches would be experienced at the individual level, and employees could directly report to the effect that the mentioned factors have on their work environments.

The rationale is in line with prior leadership and project sustainability research that has applied individual employees as the unit of analysis to elicit micro-level perceptions and behaviors (Hoch et al., 2018; Newman et al., 2017). The study can get in-depth information on the leadership dynamics in the IT projects by targeting individual professionals, as opposed to the organizational-level aggregates.

3.8 Sample Size Determination

The study applies G*Power statistical software to identify the correct sample size that will be used to investigate the impact of GL and SL on PS with different levels of AMP using CSRS. Contrary to a survey of the entire population, the approach allows estimating the sample size appropriately in accordance with the particular characteristics of the research design. To determine the minimum number of participants to use in this study, a priori power analysis was conducted using G*Power 3.1.9.7. Given the complexity of the proposed model that has several predictors, mediation, moderation, and moderated mediation, the linear multiple regression model (non-zero fixed model) was used, which is in line with the recommendations of PLS-SEM (Hair et al., 2021).

According to the G*Power findings, a sample size of 402 participants will be needed to achieve a power of 0.95 at a significance level of 0.05 in order to find a small to moderate effect size ($f^2 = 0.05$) using 5 predictors. As a precaution against a possible nonresponse or incomplete information 450 questionnaires were gathered. This is a sufficient sample size and is above the minimum required to test direct, indirect, moderating and moderated mediation through PLS-SEM.

3.9 Sample and Sampling Technique

In this study, a convenience sampling method was used, which is a non-probability sampling. Convenience sampling means that the respondents are chosen based on their availability and readiness to be involved in the research and can be used in projects where the target population is in a scattered state, and there is a lack of access to respondents (Etikan et al., 2016; Giri et al., 2024).

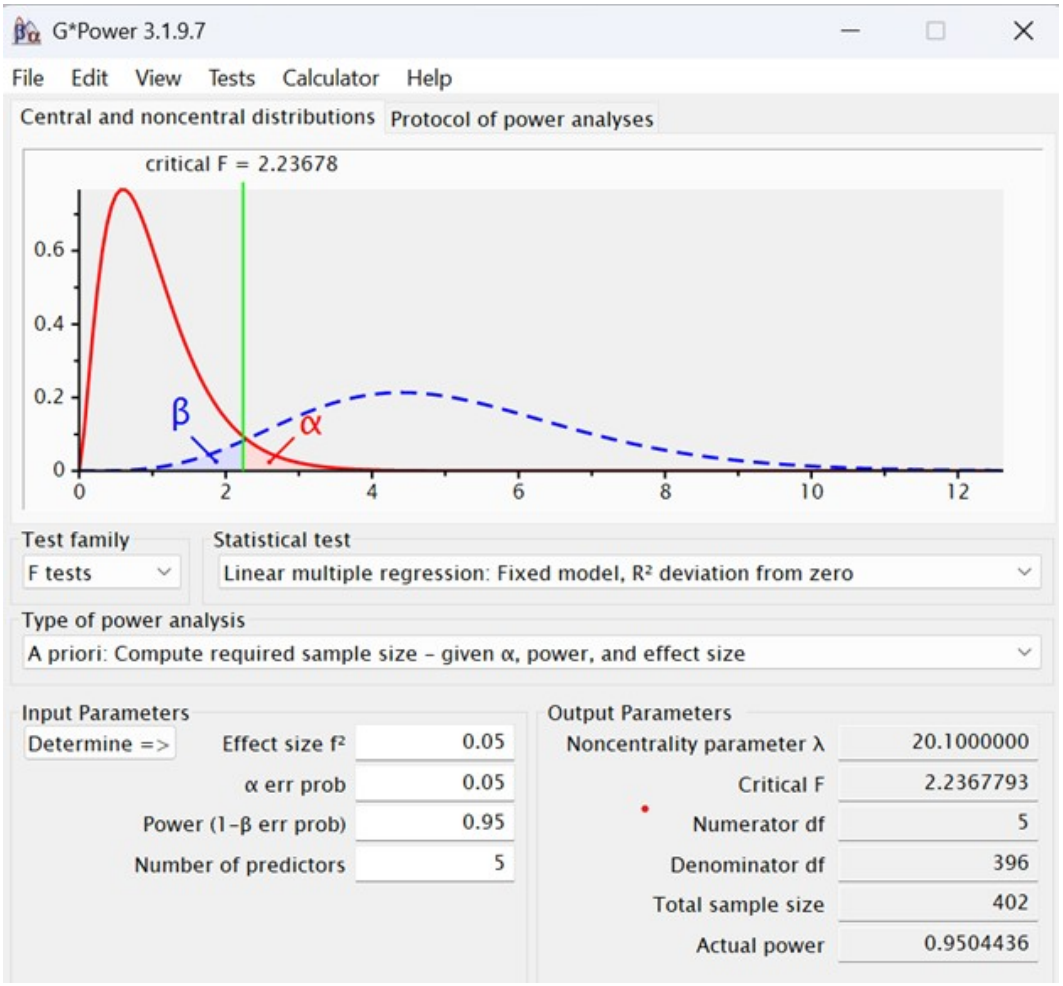

FIGURE 3.1: G*Power (power=0.95)

Convenience sampling is in contrast to the probability sampling, as it is based on the convenience and the convenience of the sample. The convenience sampling decision was informed by a number of factors. To begin with, IT professionals in a project setting tend to be on strict schedules and therefore random selection is not practical. Second, the study involved having employees involved in IT projects which were currently underway and the convenience sampling method enabled the researcher to get to respondents in a fast and efficient manner. The approach is most often used in research of organizational and project management when the lack of time, organizational permissions, and availability of respondents are a challenge (Saunders et al., 2015). Convenience sampling was therefore an effective and viable way of gathering information in terms of sampling qualified IT employees in the two cities (Islamabad and Rawalpindi) and the researcher managed to obtain a sufficiently large and pertinent sample that fit the available

time and means.

3.10 Data Collection Procedure

A quantitative survey method was used to gather the information on the effects of GL and SL to PS, where CSRS is the mediator and AMP is a moderator in IT projects. This research design is consistent with quantitative research methodology of the study as it is possible to measure the variables by means of standardized tools and analyze the relationships statistically.

The online survey tool Google Forms was used in data collection as it is easy to access and secures the responses of the participants. In order to access the target population, the survey link was first communicated via the professional circle, i.e. IT employees with whom the researcher knew and later on through a chain referral mechanism (through team leads, project managers, and IT professionals in Islamabad and Rawalpindi). Moreover, LinkedIn contacts were used to contact the team leaders and ask them to take part in filling in the survey. The Likert scale was used to record the responses and the scale of responses was 5 points where the responses were to be definitely not agree to strongly agree. A survey link was sent to each of the participants, and they were reminded of the survey periodically to increase response rates. In ensuring ethical principles, the respondents were assured of confidentiality and the data was applied in purely academic research.

3.11 Data Analysis Method

A pilot-test was carried out to guarantee the validity and reliability by a subsample of the target population. Internal consistency reliability was evaluated using feedback provided by the pilot, whereas construct validity was tested with the help of confirmatory factor analysis (CFA) with the SmartPLS. The statistical analysis of data in the study will be conducted with the help of two primary statistical programs SPSS and SmartPLS. Data cleaning, data preparation, descriptive statistics, demographic analysis, and preliminary correlation analysis will be performed with the help of SPSS, and the data will be analyzed with the help of

SmartPLS to test the measurement model (reliability and validity of constructs), structural model analysis, to test the hypothesized relationship between variable, and mediation and moderation analysis using the means of bootstrapping.

Furthermore, the multiple regression analysis will be implemented to investigate such direct relation between the predictors (GL and SL), mediating effect of CSRS and moderating effect of AMP on PS. A combination of quantitative statistical analysis (SPSS, SmartPLS) and a strictly designed instrument will enable this study to present the credible findings, which can be generalized and which are empirically based.

3.12 Sample Characteristics

There were 450 responses obtained. The survey collected demo-graphical data like age, gender, level of education, professional experience, project role, project size and usage of agile methodology. The table below summarizes the characteristics of the respondents

3.12.1 Gender

Demography is a significant variable in gender. It emphasizes on the necessity of having a gender balance since this is significant in displaying the percentage of males to females in a group of people. Based on the records of Table 3.1, 259 out of the total sample was taken up by male respondents and 191 were represented by female respondents.

This means that the male respondents in this study were more than the female respondents.

Table 3.1: Gender Distribution

Gender	**Frequency**
Female	191
Male	259
Total	**450**

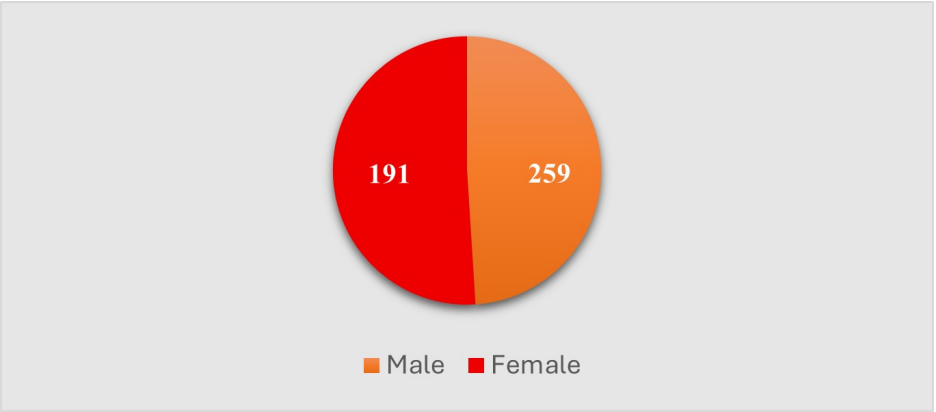

FIGURE 3.2: Gender Distribution

3.12.2 Age

The data according to Table 3.2 indicates that out of the total 100 respondents, 63 respondents were below the age of 25 years, 239 respondents were between the age of 25-35 years, 119 respondents were between the age of 36-55 years, and 29 respondents were older than 45 years. This shows that most respondents represent the age group of 25-35 years, which is a very big percentage of the population sampled.

TABLE 3.2: Age Distribution

Age Group	**Frequency**
Below 25	63
25-35	239
36-45	119
Above 45	29
Total	450

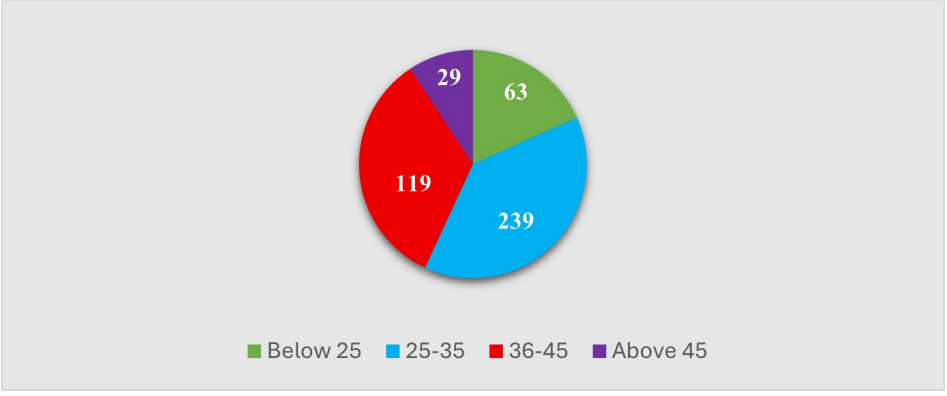

FIGURE 3.3: Age Distribution

3.12.3 Education level

As the data provided in Table 3.3 shows, the largest proportion of respondents were those with a Bachelor level degree (243). This is the most qualification typical of the respondents. There were 139, 40, 21 and 7 respondents with a Postgraduate level degree, PhD level degree, Intermediate level degree and Matric level degree, respectively.

TABLE 3.3: Education Level Distribution

Education Level	**Frequency**
Matric	7
Intermediate	21
Undergraduate	243
Postgraduate	139
PhD	40
Total	**450**

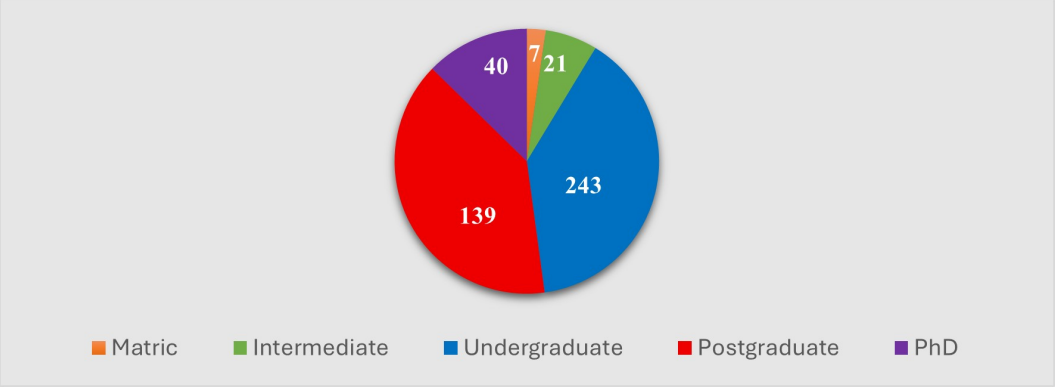

FIGURE 3.4: Education Level Distribution

3.12.4 Experience

It can be stated that in accordance with the data of Table 3.4, the most significant number of respondents of 178 years old is the most prevalent group since it represents the highest level of experience of the respondents. The respondents with less than 1 year experience were 48, 1-3 years' experience was 117, 7-10 years' experience was 65 and experience greater than 10 years was 42.

TABLE 3.4: Experience Distribution

Experience	**Frequency**
less than 1 year	48
1-3 years	117
4-6 years	178
7-10 years	65
More than 10 years	42
Total	**450**

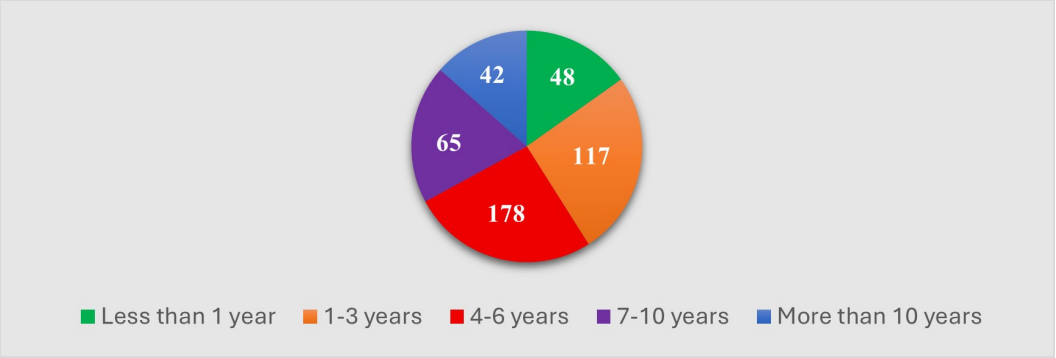

FIGURE 3.5: Experience Distribution

3.12.5 Project Role

This is the most frequent project role among the respondents, with the highest number of respondents being Developers as indicated by the figures in Table 3.5, 142. These were 98 Team Leads, 106 Analysts, 13 Project Coordinators, and 91 under other.

TABLE 3.5: Project Role Distribution

Project Role	**Frequency**
Project Coordinator	13
Team Lead	98
Developer	142
Analyst	106
Other	91
Total	**450**

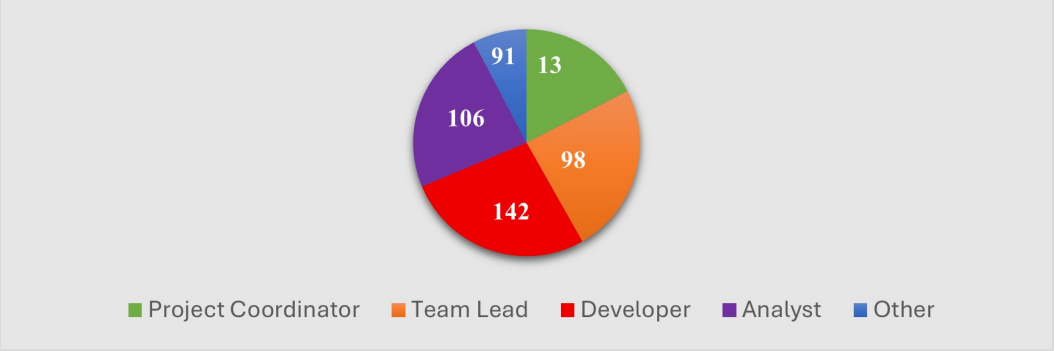

FIGURE 3.6: Project Role Distribution

3.12.6 Project Size

As per the figures in Table 3.6, the largest percentage (230) of the respondents had participated in the large-sized projects that had 16+ team members. The total number of those who worked in medium-sized projects of 6 15 team members was 159 and the small-sized projects with 1-5 team members were 61.

TABLE 3.6: Project Size Distribution

Project Size	**Frequency**
Small	61
Medium	159
Large	230
Total	**450**

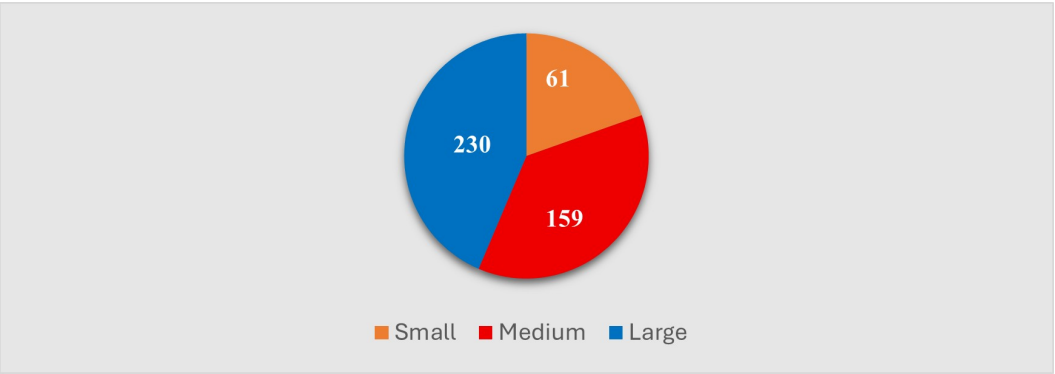

FIGURE 3.7: Project Size Distribution

3.12.7 Agile Methodology Practice

As shown in the data provided in Table 3.7, most of the respondents, 397 said that they practice agile methodology and 53 said that they do not practice agile in projects.

TABLE 3.7: Agile Methodology Practice Distribution

Agile Methodology Practice	**Frequency**
Yes	397
No	53
Total	**450**

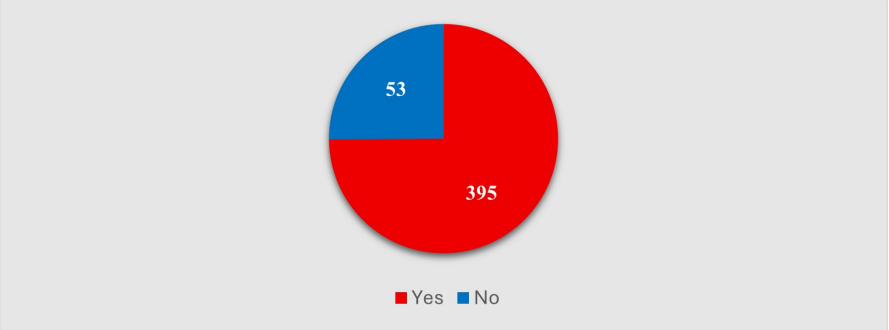

FIGURE 3.8: Agile Methodology Practice Distribution

3.12.8 Agile Framework

As the data in Table 3.8 indicate, most of the respondents, 252, indicated that they were using Hybrid framework. There were 75 who were using a Kanban framework, 60 who were using Scrum and 63 who were using other agile frameworks.

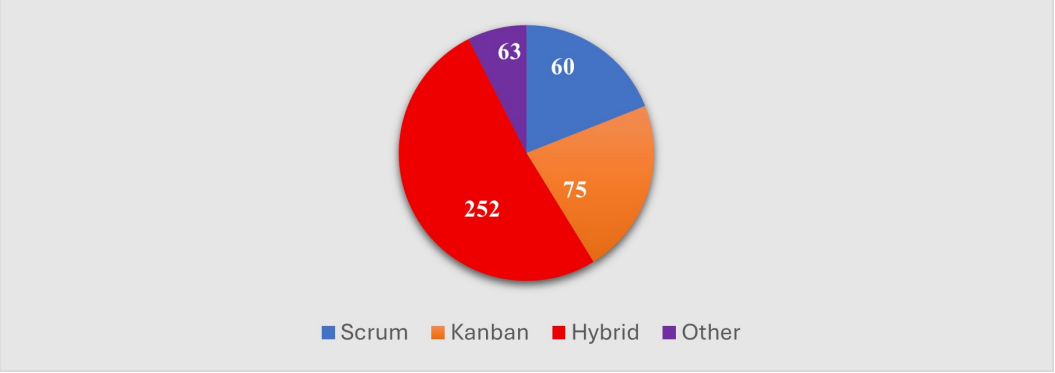

FIGURE 3.9: Agile Framework Distribution

TABLE 3.8: Agile Framework Distribution

Agile Practice	**Frequency**
Scrum	60
Kanban	75
Hybrid	252
Other	63
Total	**450**

3.13 Research Instruments

Instrumentation is defined as tools and techniques that are used in the systematized and reliable accumulation of data that concurs with the objectives of the research. The primary instrument of the research is self-administered questionnaire, which will help assess research variables. GL, SL, PS, CSRS and AMP. The questionnaire will contain the validated scales, which were used earlier, with a 5-point Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

This instrument was designed in such a way that it was clear, concise and easy to understand, and therefore allowed the respondents (mainly people who work in IT project management) to answer effectively and efficiently.

3.13.1 Gritty Leadership

The Gritty Leadership is the persistence and zeal of project leaders towards goals of the long-term project even though they are challenged or faced with setbacks. With regard to IT projects, this is one of the most important qualities to ensure focus and perseverance in the project life-cycle.

To achieve the concept of gritty leadership, (Duckworth and Quinn, 2009) came up with an eight-item measure. Each of the items was graded based on a 5-point Likert scale with a 1-strongly disagree and 5-strongly agree item agreement.

3.13.2 Servant Leadership

Servant leadership focuses on the leader as a servant first and needs of item members and stakeholders in order to empower and develop them. This type of leadership is especially applicable in partner IT. This paper employed a reduced version of the servant leadership scale created by (Liden et al., 2008) to assess servant leadership by their managers. The original tool has 28 items in seven dimensions whereas the shortened 7 item scale has the largest loading item of each dimension.

3.13.3 Collaborative Social Resources

Collaborative social resources are defined as the social processes and support systems of cooperating, sharing knowledge, and trust among the project stakeholders. These resources facilitate coordination of the project and minimize the resistance to change. In this research, the presence and influence of these resources in and around IT project settings were measured by the use of an 11-item scale created by (Din et al., 2022) was employed to measure the presence and effect of these resources in the IT project settings.

3.13.4 Agile Management Practices

The agile management practices refer to the flexible project management styles, which pay attention to iterative development, flexibility, cross-functional teamwork, and stakeholder feedback. Agility as a moderating variable assists project teams to react to changing IT environments. The scale comprising of 13 items by (Idrees et al., 2024) was used to assess the level of agile practices within the project environment.

3.13.5 Project Sustainability

Project sustainability is the long-term economic, environmental and social feasibility of a project especially with the IT projects as continuous innovations and resource efficiency must be maintained. In this experiment, project sustainability was assessed by means of 11-item scale made by (Martens et al., 2017), which

encompasses such dimensions as the involvement of the stakeholders, resource utilization, and long-term implications.

TABLE 3.9: Scale of Constructs

Scale of Constructs	**Number of Items**	**Source**
Gritty Leadership	8	(Duckworth and Quinn, 2009)
Servant Leadership	7	(Liden et al., 2008)
Collaborative Social Resources	11	(Din et al., 2022)
Agile Management Practices	13	(Idrees et al., 2024)
Project Sustainability	11	(Martens and Carvalho, 2017)

Chapter 4

Data Analysis and Results

In this Chapter, the authors give the data screening, which involves the steps involved in preparing the data to be analyzed, including how gaps in the data are filled, identification of outliers and testing of normality. Section two will give a thorough involvement concerning the outcome of the data analysis, which will start with the assessment of the measurement model to determine the reliability and validity, and proceed with the assessment of the structural model to determine the relationship between constructs as hypothesized. Lastly, Section three would be the conclusion of the results of all the hypotheses tested and their major findings and implications to the objectives of the research.

4.1 Screening of Data

Before proceeding to the actual statistical analyses, it is very important to ensure that the dataset is correct, fully available and prepared to be analyzed. This phase involves the evaluation of the data whether it is normally distributed or not, the outliers, the missing data, and the outliers that might cause issues in accuracy and validity of the findings. The introduction of a rigorous screening process enhances the quality of the research, as it will minimize the possible errors and refine the reliability of the results. In the right screening of data, it is advised to ensure the right ideas of statistical approaches are accurate, maintains the power of statistical tests high and minimizes bias due to factors such as missing data, or

unusual values (Little et al., 2024; Sharifnia et al., 2025). Dealing with missing data prior to analysis has been in order to make measurements more credible, prevent erroneous variations in findings and aid in improving effective and reliable statistical inferences (Finch et al., 2024). According to (Sun and Xia, 2024), close data screening guarantees that the measures of the study always reflect the desired theoretical.

4.2 Data Cleaning

Data Cleaning is a very important preparatory measure that seeks to enhance accurate and reliable data. This is done by identifying and eliminating inconsistencies, filling gaps in information and tabling partial or invalid responses. The importance of an effective data cleaning is both the prevention of biases that may alter the research results and the suitability of the data to be analyzed (Ahuja et al., 2024).

Refining the data prior to statistical analyses will enable researchers to better analyze patterns of its distribution, identify a violation of the normality condition, and verify that the data used is suitable for more complex methods of analysis, such as structural equation modeling (Sharifnia et al., 2025). Finally, this action will increase the internal validity of the dataset, reproducible findings, and a more accurate interpretation of findings (Australian Critical Care et al., 2024).

4.3 Treatment of Missing Values and Outliers

Missing values happen when the respondents fail to answer one or more items in the survey due to either intent or accidental actions. These gaps may make the statistical power weak and may lead to bias in the analysis unless addressed. Unusual observations that are very different to the rest in the data set can also cause similar effects and discredit model stability. The problem of outliers has to be recognized and addressed accordingly to maintain the accuracy, representativeness, and generalizability of the research findings (Silva et al., 2024).

The current research conducted an in-depth screening to identify the missing values as well as outliers. The IBM SPSS was used to review the dataset by using the Frequencies and Descriptive Statistics functions. The data was complete, as the Google Forms survey was developed having no blank items, which were indicated as mandatory. Similarly, no extreme outliers or abnormal data points were identified during the screening process; therefore, it was not required to implement imputation and data transformation processes. The lack of missing data and outliers boosted the overall quality and integrity of the data, which corroborated the appropriateness of this dataset in further statistical procedures and the need to satisfy the necessary conditions of multivariate testing.

4.4 Descriptive Statistics

The descriptive statistics are important in quantitative studies since they provide a concise overview of the fundamental features of the data set. They assist in the interpretation of patterns in the data by offering measure of central tendency (mean), measure of variability (standard deviation) and measure of range (minimum and maximum). The descriptive statistics are used to organize data and make it simple enough to enable patterns to become evident, which allows the researchers to present the key characteristics of data and proceed to the more elaborate analysis. (Gravetter and Wallnau, 2017)(Dong et al., 2023).). Descriptive statistics can give the distribution, spread and central values of the variables under study before inferential analysis is carried out.

The use of descriptive statistics is also useful in determining the form and distribution of the data, which would also help in initial data screening and confirming the assumptions needed when further statistical modeling is performed (Field, 2024)(Starbuck et al., 2023). Descriptive statistics is a widespread reporting tradition in social sciences and management research in order to provide transparency and emphasize the consistency and variability of the responses provided by the participants (Hasan, 2025)(Saunders et al., 2009).

In this research, the descriptive statistics were calculated on five core constructs, including Gritty Leadership (GL), Servant Leadership (SL), Collaborative Social

Resources (CSRS), Agile Management Practices (AMP), and Project Sustainability (PS). Table 4.1 summarize the results.

TABLE 4.1: Descriptive Statistics

Variables	**Min.**	**Max.**	**Mean**	**Std. Deviation**
GL	1.38	5.00	3.80	0.69
SL	1.43	5.00	3.84	0.69
CSR	1.55	5.00	3.76	0.61
AMP	1.85	5.00	3.97	0.57
PS	1.55	5.00	3.83	0.60

The findings show that the average scores of all variables were quite high (3.76-3.97), which shows that the respondents had a positive attitude regarding the measured constructs. Mean In the case of GL, the average was 3.80 (SD = 0.69), which indicates that the leaders strongly believe in leadership behaviors in terms of persistence and resilience. The difference between the means in SL was slightly higher with 3.84 (SD = 0.69) indicating the same degree of positive perception.

The mean (SD) of the 3.76 (SD = 0.61) showed that participants partially accepted the practices by CSRS in their projects. The average of the AMP is 3.97 (SD = 0.57), which is the highest one of all variables, indicating more unanimity of the agile behaviors and processes. PS, the dependent variable mean was 3.83 (SD = 0.60), which means that research participants tended to see their projects as long-term and continuity sustainable. All in all, the standard deviations show a moderate level of consistency in the responses of the participants, which allows considering the data to be reliable and useful in the future inferential analysis.

4.5 Normality

The test of normality was performed with the help of skewness and kurtosis values, which were received in the IBM SPSS of all variables. These distributional features should be checked to ensure that the data conforms to the requirements of the subsequent multivariate analysis. There were no excessive values in terms

of skewness (less than 2) and kurtosis (less than 7), as recommended by (Kline, 2023). These findings demonstrate that the data is not experiencing any serious issues with normality and any minor deviations with an ideal normal curve are not severe. The data is near enough to normally distributed since the skewness and the kurtosis are within reasonable limits and the sample size used is quite large. The assumption of normality is therefore satisfied to proceed with more sophisticated statistical analysis and the data is appropriate to apply complicated modeling procedures.

4.6 Communalities

In order to determine the extent to which each of the observed items is characterized by the identified components, communalities were computed using Principal Component Analysis (PCA). Values of Communality show the share of variance in each item that is explained by the latent factors (Field, 2024). Communality values that are 0.50 and above can be regarded as acceptable since they indicate that the item can be contributing to the solution of the factor (Hair et al., 2021). This cutoff is also justified by methodological uses of the social science research in more recent studies (Sukserm et al., 2025). All the items in the study indicated the communality values above or close to the acceptable threshold, 0.556 to 0.756 as displayed in Appendix II. The maximum communality was PS8 (0.756) under the project sustainability construct and minimum under collaborative social resources which is CSRS8 (0.556). Such findings substantiate that the items used to measure the constructs of GL, SL, CSRS, AMP and PS are well represented by the items. The adequate amount of communities help in justifying the relevance of the data to factor analysis and prove the credibility of the underlying structure.

4.7 KMO and Bartlett

Although AMOS was the most commonly used tool in the Confirmatory Factor Analysis (CFA), the initial appropriateness of the data in factor analysis was evaluated by the Kaiser Meyer-Olkin (KMO) Test and the Bartlett Test of Sphericity

in IBM SPSS. KMO statistics assess whether the partial correlation between variables is less than significant to warrant factor analysis, and Bartlett test assesses whether the correlation matrix notably is different to an identity matrix (Field, 2024)(Sukserm et al., 2025).

Based on widely used interpretive recommendations, values below 0.5 are deemed unacceptable, 0.60s are considered miserable, 0.70s are considered mediocre, 0.80s are considered meritorious, 0.90s are considered marvelous to sample adequacy values (Kaiser, 1974; Lee and Ahmed, 2024)(Brady et al., 2023).

The KMO value is 0.851, meaning that it is meritorious according to Kaiser, this value better than the minimum score of 0.50 suggested by (Hair et al., 2021). Moreover, the Test of sphericity by Bartlett was also significant (Chi-Square = 10774.561, df = 1225, $p < 0.001$), which proved that the correlation matrix is not a simple list of ones and the variables are interrelated to be used in the analysis of factors.

TABLE 4.2: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.851
Bartlett's Test of Sphericity	Approx. Chi-Square	10774.561
	Df	1225
	Sig.	<0.001

All these findings show that the data can be analyzed by the factor analysis and are highly empirical to proceed in the assessment of measurement models thereafter on CFA.

4.8 Measurement Model Analysis

The measurement model analysis was done to determine the reliability and convergent validity of the latent constructs of this study that include Gritty Leadership (GL), Servant Leadership (SL), Collaborative Social Resources (CSRS), Project Sustainability (PS), and Agile Management Practices (AMP). The test

was examined based on the indicators of reliability that include Cronbach alpha, Composite Reliability (CR) and Average Variance Extracted (AVE), which are typical procedures in the structural equation modeling to guarantee the quality of measurements (Hair et al., 2022; Henseler and Schuberth, 2020).

Table 4.3 demonstrates that the values of Cronbach alpha of all the constructs are greater than the minimum acceptable level of 0.70, which means that the internal consistency is satisfactory (Hair et al., 2021)(Taber et al., 2018). Namely, AMP (0.779), CSRS (0.772), PS (0.778), GL (0.722), and SL (0.772). These findings show that the two constructs are reliable in assessing their intended construct.

In the same way, all constructions have values of Composite Reliability (rho c) greater than the 0.70 threshold used to judge the reliability of the scale, with AMP (0.850) to GL (0.824) showing a high level of consistency (Hair et al., 2022). AVE values were used to check convergent validity, and all the constructions had an AMP (0.531), CSRS (0.523), PS (0.531), GL (0.541) and SL (0.522) above the recommended value of 0.50 (Henseler and Schuberth, 2020).

This indicates that there is good convergent validity as each construct accounts over fifty percent of the difference in its indicators. All in all, the measurement model findings confirm that the scales assessed in this study are acceptably reliable and have an acceptable convergent validity, and thus can be used in the structural model analysis.

4.9 Discriminant Validity

The discriminant validity was also investigated to make sure that every construct of the measurement model is conceptually and empirically differentiated with the rest. Two complementary methods were used based on the established procedures, which were the Fornell-Lacker criterion and the Heterotraite-Monotrait (HTMT) ratio. When applied to constructs, the FornellLacker criterion suggests that a construct ought to explain more of its own indicators compared to other constructs. This is fulfilled when the square root of the average variance extracted (AVE) of a construct as shown on the diagonal of the matrix is higher than its correlations with

TABLE 4.3: Measurement Model Analysis

Constructs	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AMP	0.779	0.784	0.850	0.531
CSRS	0.772	0.787	0.845	0.523
GL	0.722	0.748	0.824	0.541
PS	0.778	0.795	0.849	0.531
SL	0.772	0.784	0.844	0.522

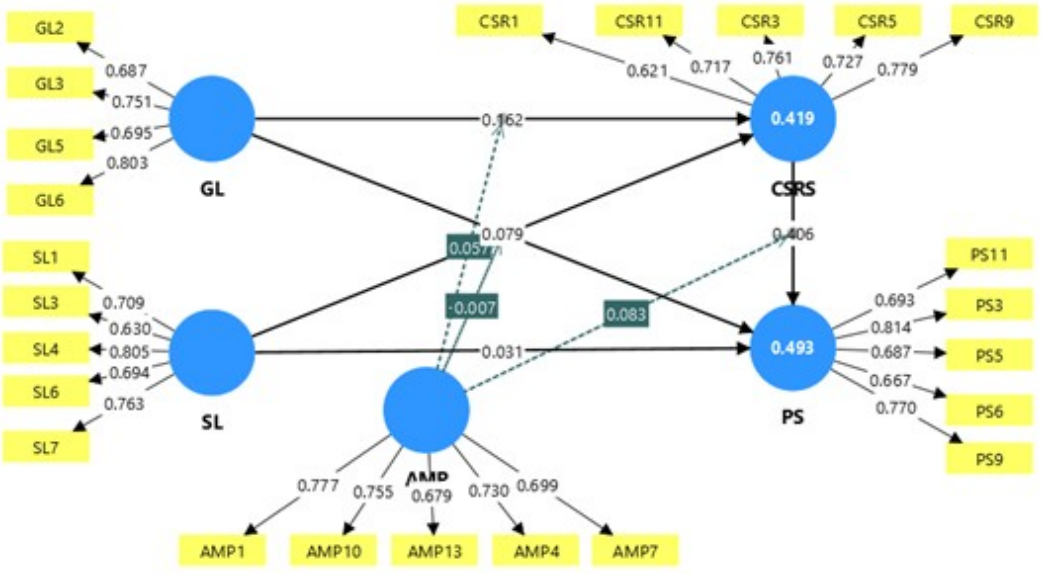

FIGURE 4.1: Measurement Model Analysis

other constructs. This requirement is satisfied by all the variables of the study as given in Table 4.4. As an example, the square root of AVE of AMP (0.729) is more than the correlation with CSRS (0.485), GL (0.380), PS (0.490) and SL (0.53). Equally, predicting significant classify the AVE square root of CSRS (0.723), GL (0.736), PS (0.729) and SL (0.723) more than the corresponding inter-construct correlations, which indicates discriminant validity (Ronkko & Cho et al., 2022) (Hair et al., 2022).

To confirm this finding further, the HTMT ratio that is considered to be the tighter

TABLE 4.4: Discriminant Validity using Fornell-Larcker Criterion

Constructs	**AMP**	**CSRS**	**GL**	**PS**	**SL**
AMP	0.729				
CSRS	0.536	0.723			
GL	0.495	0.467	0.736		
PS	0.585	0.628	0.450	0.729	
SL	0.546	0.574	0.513	0.481	0.723

measure of discriminant validity was computed. When HTMT values are less than 0.90, and more strictly, less than 0.85, discriminate validity is determined (Hair et al., 2022)(Henseler et al., 2015). Table 4.5 reveals that all the HTMT values are within the acceptable range. The maximum HTMT was found between PS and CSRS at 0.790 then PS and AMP (0.734) and CSRS and AMP (0.662), which are less than the conservative level. Other values of HTMT including between GL and CSRS (0.604), SL and AMP (0.682) and the interaction effect AMP CSRS and AMP SL (0.496) and AMP GL and AMP CSRS (0.373) also do not exceed the acceptable limit which supports the uniqueness of the construct. In general, these results prove the validity of the constructs GL, SL. There is high discriminant validity in CSRS, AMP and PS. This makes every latent variable represent a concept in itself, which makes the following structural model analysis more credible.

4.10 Model Fit

The model fit summary gives a number of indices used to determine the fit of the proposed theoretical model with the observed data. The saturated model Standardized root mean square residual value (0.079) and the estimated mode Standardized root mean square residual value (0.079) are less than the acceptable value of 0.08 to be considered a good fit in SEM and PLS-SEM and thus are considered sufficient to represent the goodness of fit in the model (Henseler et al., 2025). The d ULS (squared Euclidean distance) of the saturated model is (1.863) versus (1.864) of the estimated model and the d G (geodesic distance) values of

Table 4.5: Discriminant Validity through HTMT Matrix

Constructs	**HTMT value**
PS ↔ CSRS	0.790
PS ↔ AMP	0.734
SL ↔ CSRS	0.721
SL ↔ AMP	0.682
CSRS ↔ AMP	0.662
SL ↔ GL	0.648
GL ↔ AMP	0.636
GL ↔ CSRS	0.604
SL ↔ PS	0.600
PS ↔ GL	0.565
AMP × CSRS ↔ AMP × SL	0.496
AMP × SL ↔ AMP × GL	0.447
AMP × GL ↔ AMP × CSRS	0.373

the saturated model are (0.45) versus (0.46) or estimated model, which has been reported by other current studies in SEM research to be evidence of satisfactory fit (Peradi et al., 2025). The insignificant variations in these values indicate that the saturated model is nearly close to the estimated model. Thus, in support of the adequacy of the model. Chi-square statistics have slightly risen as (1215.670) in the saturated model to (1216.402) in the estimated model and this is good considering the complex nature of the structural model.

Also, both models have a Normed Fit Index (NFI) value of (0.708), which is below the traditional value of 0.90, but modern research confirms that NFI can still provide valuable comparative information when used in complicated or predictive SEM models (Shahzad et al., 2025). These results, when combined, show that the estimated structural model is an acceptable overall fit to the data. This holds the validity of the model and offers a valid basis of further testing of hypothesis and structural path analysis.

TABLE 4.6: Model Fit

	Saturated model	**Estimated model**
SRMR	0.079	0.079
d_ULS	1.863	1.864
d_G	0.459	0.460
Chi-square	1215.670	1216.402
NFI	0.708	0.708

4.11 Coefficient of Determination and Predictive Usefulness

To measure the predictive and explanatory power of the structural model, the coefficient of determination R^2, adjusted R^2, predictive relevance Q^2 and prediction error, the calculation of Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) were analyzed, which is suggested by modern PLS-SEM (Hair et al., 2022)(Sarstedt et al., 2022).

Table 4.7, the R^2 value for PS was 0.493 implying that about 49.3% of the variance in PS is accounted by the predictors of the model. On the same note, CSRS had a R^2 of 0.419, which showed that just about 41.9 percent of the variance in CSRS. The guideline states that R^2 = 0.25, 0.50, and 0.75 could be regarded as weak, moderate, and substantial, respectively (Hair et al., 2021). According to this categorization, the model has moderate explanatory power of CSRS and PS.

The adjusted R^2 values, (0.487) and (0.412) of PS and CSRS respectively are near the adjusted R^2 values, which proves that the explanatory ability of the model is not changed after considering the complexity of the model. This similarity indicates that the structural model is not weak and is not overstated with redundant predictors (Sarstedt et al., 2022).

Furthermore, the Q^2 values produced by the blindfolding process were (0.376) when using PS and (0.397) when using CSRS. The values of both of them are sufficiently above zero and, therefore, the findings prove that the model has satisfactory predictive relevance. (Shmueli et al., 2019) (Hair et al., 2021).

PS had RMSE of (0.794) and MAE of (0.592) and CSRS had RMSE of (0.779) and MAE of (0.601) in terms of prediction error. These values are comparatively high in comparison with models that have a larger explanatory ability, but they are still within the reasonable social science research ranges, meaning that the errors of prediction are plausible (Shmueli et al., 2024).

Combined with the findings above, the model can be argued to have sufficient strength in terms of explanatory power to CSRS and PS, and sufficient predictive power. This shows that the structural model is appropriate in assessing the role of leadership styles in determining project sustainability, in which collaborative social resources and agile management practices are the mediating and moderating variables.

TABLE 4.7: Coefficient of Determination

Constructs	**R^2**	**R^2 adjusted**	**Q^2 predict**	**RMSE**	**MAE**
CSRS	0.419	0.412	0.397	0.779	0.601
PS	0.493	0.487	0.376	0.794	0.592

4.12 f^2 Effect Size Analysis

To test the level of the relative contribution of each exogenous construct to the endogenous variable, which is Project Sustainability (PS) and Collaborative Social Resources (CSRS), the f 2 effect size analysis has been conducted. The guidelines further state that f^2 values of 0.02, 0.15 and 0.35 are considered small, medium, and large effect sizes respectively (Cohen, 1988)(Subhaktiyasa et al., 2025).

According to the results provided in Table 4.8, CSRS ($f^2 = 0.189$) had the most significant impact on PS, which is a small-moderate effect. The effects of AMP on PS also show ($f^2 = 0.114$) which is small but near to medium strength. GL ($f^2 = 0.008$), and SL ($f^2 = 0.001$), conversely, had a small direct impact on PS, indicating that its effect might likely be indirect via its mediating role, including CSRS (Hair et al., 2022). Regarding CSRS as the endogenous variable, SL was found to be the strongest predictor ($f^2 = 0.115$), which equals a small-to-moderate

effect. Another fact that AMP also played a crucial part in CSRS is reflected in the result ($f^2 = 0.080$), which indicates that it assists in creating stronger collaborative resources. G L, on its part, had a smaller yet significant impact on CSRS ($f^2 = 0.028$), implying that it has a slight impact. As to moderating relationships, there were insignificant terms of interaction. The interaction of AMP X CSRS with PS resulted in ($f^2 = 0.009$), which does not have a strong impact, whereas the AMP x GL ($f^2 = 0.003$) and AMP x SL ($f^2 = 0.000$) did not have much impact on CSRS, which means that AMP does not significantly alter the strength of such leadership-CSRS relationships.

These findings demonstrate that CSRS is the primary element that facilitates the sustainability of projects, which is then followed by AMP. SL and AMP are both the most effective predictors of CSRS. Effects of AMP are moderated, but are not very huge.

TABLE 4.8: f^2 Effect Size Analysis

Constructs	**PS**	**CSRS**
AMP	0.114	0.080
CSRS	0.189	-
GL	0.008	0.028
PS	-	-
SL	0.001	0.115
AMP x GL	-	0.003
AMP x SL	-	0.000
AMP x CSRS	0.009	-

4.13 Direct Relation Analysis

To analyze the direct association between the key constructs, gritty leadership (GL), servant leadership (SL), project sustainability (PS), collaborative social resources (CSRS), agile management practices (AMP). The PLS-SEM (Partial Least Squares Structural Equation Modeling) with bootstrapping process of 5000 subsamples. The findings reveal that GL positively but insignificantly influences PS

($\beta = 0.145$ t = 2.948 p = 0.003), which means that perseverance, determination, and long-term commitment play an important role in improving sustainability in IT projects. Therefore, H1 is not supported. Preferably, it shows a strong but statistically insignificant impact on SL ($\beta = 0.168$, t = 2.772, p = 0.006). This result upholds H2 since leaders that focus on service, empowerment, and the welfare of the stakeholders play a significant role in ensuring sustainability.

It is also found that the positive significant effect of GL on CSRS exists ($\beta = 0.162$, t = 2.902, p = 0.004). This suggests that the leaders who are resilient and goal oriented contribute to the development of the collaborative capacity among the project teams. Hence, H3 is supported. Also, SL shows an important positive influence on CSRS ($\beta = 0.337$, t = 6.887, p =0.000) underpinning the value of servant leaders in developing trust and cooperation. Thus, H4 is supported. Lastly, CSRS are important predictors of PS ($\beta = 0.406$, t = 6.646, p = 0.000). This underscores the fact that cooperation, information exchange and team work are required in ensuring sustainable results. Therefore, H5 is supported.

Table 4.9: Direct Relationship Analysis

H	**Relationship b/w variables**	**(β)**	**(M)**	**STDEV**	**T stat.**	**P value**	**Remarks**
H1	GL → PS	0.145	0.146	0.049	2.948	0.003	Supported
H2	SL → PS	0.168	0.169	0.060	2.772	0.006	Supported
H3	GL → CSRS	0.162	0.165	0.056	2.902	0.004	Supported
H4	SL → CSRS	0.337	0.341	0.049	6.887	0.000	Supported
H5	CSRS → PS	0.406	0.412	0.061	6.646	0.000	Supported

4.14 Mediation Analysis

In order to investigate the mediating effect of collaborative social resources (CSRS) among the variables of gritty and servant leadership (GL and SL) and projects sustainability (PS), the booster mediation analysis was evaluated under PLS-SEM. The bootstrapping offers a strong approach to indirect effect estimation which

does not presuppose the normal distribution of sampling data, which is why it is specifically effective to use with complex model (Hair et al., 2022). The findings indicate that CSRS is partially significant in the relationship between GL and PS (β = -0.066, t = 2.701, p = 0.007). Although the direct positive effect of GL on PS is certain, the effect that passes through CSRS is also valuable. It implies that grit also enhances sustainability not only directly but by making teamwork more efficient. Hence, H6 is supported.

The analysis also confirms that the effect of PS indirectly by CSRS on SL is significant (β = 0.137, = 4.510, p = 0.001). Leadership aimed at serving and empowering their teams does not only improve the sustainability outcomes directly, but indirectly as well, as mutual respect, cooperation, and shared responsibility are promoted.

This finding aligns with the previous research articles indicating that SL facilitates group interaction, which is a vital component of project success in the long term (Gardner et al., 2023). In the case of SL, the direct effect on PS, as well as the indirect one through CSRS were substantial, which implies partial mediation. It illustrates that SL contributes to the sustainability outcomes in two ways, by direct impact, and by enhancing collaboration in teams. Therefore, H7 is supported.

TABLE 4.10: Mediation Results

H	Relationship b/w Variables	β	STDEV	T Stat.	P Value	Mediat. Type	Remarks
H6	GL → CSRS → PS	0.066	0.024	2.701	0.007	Partial Mediation	Supported
H7	SL → CSRS → PS	0.137	0.030	4.510	0.000	Partial Mediation	Supported

4.15 Moderation Analysis

The agile management practice (AMP) in managing the relationship between leadership styles and CSRS was investigated. The outcomes demonstrate that the relationship between GL and CSRS is not significant when AMP is involved (β

=0.057, t = 1.031, p = 0.303). Also, the 95 percent-bias-corrected confidence interval represents zero (LCL= -0.058, UCL=0.159) passed the test of no moderation effect. Recent methodological books indicate that zero-width confidence intervals indicate statistically non-significant interactions in structural models (Hair et al., 2022)(Henseler et al., 2021). This implies that in agile systems, the use of perseverance and resilience does not contribute significantly to agile practices in promoting collaboration and shared responsibility. Therefore, H8 is not supported.

However, the moderation impact of AMP between SL and CSRS was revealed to be insignificant (β = 0.007, t = 0.142, p = 0.887). The confidence interval also includes the value of zero (LCL = -0.101, UCL = 0.082), which also proves the absence of moderation. This shows that the use of agile practices is not increasing the impact of SL on collaboration, thus suggesting that servant leaders tend to encourage collaborative conditions with or without the use of agile practices. This is in accordance with the recent evidence that revealed that servant leadership concepts, like empowerment, listening, and team focus, are inherent in agile systems (Morris, 2022; Dierendonck, 2011). Therefore, H9 is not supported.

TABLE 4.11: Moderation Results

H	**Relationship b/w Variables**	***β***	**(S.E)**	**(T)**	**P Value**	**LCL**	**UCL**	**Remarks**
H8	AMP × GL → CSRS	0.057	0.056	1.031	0.303	-0.058	0.159	Not Supported
H9	AMP × SL → CSRS	-0.007	0.047	0.142	0.887	-0.101	0.082	Not Supported

4.16 Moderated Mediation Analysis

The moderated mediation design determined the effect of agile management practice (AMP) on the indirect correlation between leadership styles and PS through CSRS. Particularly, it tested the hypothesis that the indirect effect of GL and SL

on PS through CSRS differ at varying levels of AMP. The analysis was based on the recent best practices of PLS-SEM, with the focus on bootstrapped indirect effects, and bias-corrected confidence internals (Hair et al., 2022)(Zhao et al., 2023). The findings indicate that the conditional indirect effect of GL on PS using CSRS at mean levels of AMP is significant (β = 0.066, t = 2.701, p = 0.007). Notably, the 95 percent-bias-corrected confidence interval with zero removed (LCL = 0.025, UCL = 0.121), which proves that there is a significant conditional indirect effect. This indicates that by using AMP in moderation, gritty leadership contributes to the processes of maintaining projects sustainability in an indirect manner by enhancing the teamwork. Although a direct contribution of gritty leadership to the sustainability of a project may not be very significant, the teamwork path is reinforced by AMP.

This allows dirty executives to have a positive influence in the sustainability by the way they relate with their teams. So, H10 is supported. This is consistent with previous research that indicates that grit is more effective when backed by other factors such as team work and loose management styles (Haider et al., 2025; Ahmadzai, 2024; Sarstedt et al., 2024). Conversely, the mean level of the indirect effect of SL on PS by CSRS is of significant concern (at mean levels of AMP, β = -0.137, t = 4.510, p = 0.000), with a 95 confidence interval of (Lower limit = 0.085, Upper limit = 0.203), a clear indication that the effect is not zero. What this implies is that SL assists in the creation of teamwork and that teamwork in its turn contributes to the projects being very longevous in agile setting. SL foster a feeling of trust, foster responsibility among team members, and work along with others, and agile approaches enhance these team provisions even further in keeping projects afloat. This finding is consistent with the recent literature, which found that SL can assist teams in learning fast, adapting, and collaborating with one another, which in turn can help projects to perform well and last longer (Han et al., 2024; Siddqiue et al., 2025; Rigby et al., 2020; Denning et al., 2021; Salaamed et al., 2023). So, H11 is supported. In general, we can conclude that when applying agile approaches, both leadership styles have a more significant indirect influence on the project success as measured by customer satisfaction strategies and relationship strategies. This demonstrates that adaptive leadership

works better in agile environments to assist in the attainment of long term and sustainable project outcomes.

Table 4.12: Moderated Mediation Results

H	**Relationship b/w Variables**	***β***	**(S.E)**	**(T)**	**P Values**	**LCL**	**UCL**	**Remarks**
H10	GL → CSRS → PS | AMP	0.066	0.056	2.701	0.007	0.025	0.121	Supported
H11	SL → CSRS → PS | AMP	0.137	0.047	4.510	0.000	0.085	0.203	Supported

Chapter 5

Discussion and Conclusion

In this chapter, the author thoroughly discusses the relationship identified by the researcher between the major variables of the study: Gritty Leadership (GL), Servant Leadership (SL), Project Sustainability (PS), Collaborative Social Resources (CSRS), and Agile Management Practices (AMP). It provides an extensive explanation of why the proposed hypotheses were either accepted or rejected on empirical evidence. Also, this chapter addresses theoretic implications, practical implications of the findings, limitations and the future research directions through the research. The paper is aimed at assessing the role of the leadership styles GL and SL, in the sustainability of the IT project.

It also focuses on the mediating role that CSRS plays in this relationship and the role played by AMP as a moderator. These findings present a substantial indication of the presented model as they confirm that leadership styles are capable of contributing to PS to a great extent when the model is also backed by teamwork and responsive approaches to collaboration.

The paper is aimed at assessing the role of the leadership styles GL and SL, in the sustainability of the IT project. It also focuses on the mediating role that CSRS plays in this relationship and the role played by AMP as a moderator. These findings present a substantial indication of the presented model as they confirm that leadership styles are capable of contributing to PS to a great extent when the model is also backed by teamwork and responsive approaches to collaboration.

5.1 Hypotheses Discussion

This part tests all the eleven hypotheses that have been formulated under the theoretical framework of gritty leadership (GL) and servant leadership (SL) and collaborative social resources (CSRS) and agile management practices (AMP) relative to IT project sustainability (PS). To provide empirical evidence on the relationships between the constructs, the analysis provides direct, mediating, moderating and moderated mediation relationships between the variables using PLS-SEM (Partial Least Squares Structural Equation Modeling) with a bootstrapping procedure of 5000 subsamples. The findings provide a clear insight into how GL and SL can assist in obtaining sustainable project outcomes and how collaborative social resources can serve as a significant organizational process that sustains sustainable project outcomes. Overall, the results indicate that both GL and SL can be significant in enhancing PS directly or indirectly by promoting collaboration in the process of project groups.

5.1.1 H1: Gritty Leadership → Project Sustainability

Hypothesis H1 was that the effect of gritty leadership on the project sustainability is positive. These findings support this point ($\beta = 0.145$, p = 0.003), there is a definite and significant relationship between gritty leadership and the sustainability of the project. This implies that leaders with persistence, strength and continued commitment have high chances of making IT projects successful over the long stream.

Gritty leaders are those who remain on track regardless of how hard the times are, things are unpredictable, and resources are scarce. All these are typical issues of project work. This is attributed to the fact that they are able to continue when things are tough and keep projects on track and ensure that value is realized in the long run and not on short term wins. According to positive psychology, grit refers to the capacity to have the will and zeal to continue to work towards the end-term aspirations. It is having the diligence in case of difficulty (Duckworth et al., 2007). Research indicates that gritty individuals do not give up on achieving significant endpoints despite any hindrances and this is what enables them to do well and

achieve success with time in various fields (Duckworth and Quinn, 2009)(Eskreis-Winkler et al., 2014). Thus, the result coincides with other studies that indicate that grit can make individuals persevere and have long-term success, which proves the H1.

5.1.2 H2: Servant Leadership → Project Sustainability

H2 is highly accepted ($\beta = 0.168$, p = 0.006), which proves the fact that SL have a significant effect on PS. Leaders who are focused on empowering the team, value the stakeholders and being ethical stewards are part of the long-term project outcomes. These findings are in line with earlier studies that indicate that SL builds engagement, trust and social responsibility which are key elements in ensuring sustainability. The basis of this relationship is both theoretical and empirical. As an illustration, it was shown that SL has a direct beneficial effect on PS in the construction industry by promoting a green organizational culture (Wadood et al., 2024). In the same vein, discovered that SL facilitates sustainable human resource management practices in the IT sector of the Pakistani economy that provides organizational resilience (Idrees et al., 2024). Moreover, it is emphasized that SL positively affects the team learning orientation and the team agility which play an indirect role in project success and sustainability (Han and Zhang, 2024c).

In general, the H2 hypothesis is well supported by evidence, which proves that SL plays an important role in achieving sustainable project results.

5.1.3 H3: Gritty Leadership → Collaborative Social Resources

H3 is accepted ($\beta = 0.162$, = 0.004), and it implies that gritty leaders have a positive impact on collaborative processes in teams. They are also more goal-oriented and persistent, which may develop a culture of shared effort and perseverance to build a stronger team and share knowledge. This was an indication that grit, despite not being a direct predictive of sustainability, is significant in the development of social infrastructure that is required to enable sustainable performance. Although literature on a direct empirical study indicating a relationship between

grit and collaborative social resources is scarce, the related literature shows that leadership characterized by persistence leads to cooperation and development of trust. As an example, (Betti et al., 2024) identified that, in software development teams, strong leadership improves interpersonal cooperation and the resilience of teams.

Thus, the finding supports H3 as the indirect contribution of GL is significant to the establishment of teamwork in projects.

5.1.4 H4: Servant Leadership → Collaborative Social Resources

H4 is also supported ($\beta = 0.337$, p = 0.000) that servant leaders tend to develop trust, communication and a sense of shared responsibility among the staff. They are inclusive and empathetic, which provides an atmosphere in which they can work together and this can also be described as sustainable project results. This observation supports the peripheral role of SL in the creation of social capital in IT project teams. This observation is consistent with the previous researches that stress the importance of SL in the development of social capital. Indicatively, (Wadood et al., 2024) accentuates the idea of collaboration that is fostered by SL in underpinning PS. Similarly. The positive impact of SL on corporate social responsibility and innovation (both of which are directly connected to collaborative practices), is proven (Astuti et al., 2024) It is also demonstrated in (Ahmadzai et al., 2024) that SL fosters collaborative cultures that mediate project success, especially when it comes to the NGO setting. On the whole, H4 finds a strong support, and the importance of SL in promoting team cohesion and CSRS cannot be underestimated.

5.1.5 H5: Collaborative Social Resources → Project Sustainability

The result of the analysis shows that there is a strong positive correlation between CSRS and PS ($\beta = 0.406$, p = 0.000), which supports H5. This result indicates that

in case successful collaboration, knowledge-sharing, and problem-solving occur on a team level, teams will be more likely to meet long-term project objectives and adapt to the dynamic environment.

CSRS is an essential connection point between leadership strategies and sustainable results through promoting social cohesion among project teams. It is in line with recent studies that suggest that collaborative knowledge ecosystem and shared cognitive resource are key drivers of sustainability. To illustrate, (Zada et al., 2024) have shown that knowledge integration mediates the connection between sustainable leadership and project success, which presents the strength of collective cognition. Likewise, (Iqbal et al., 2024) discovered that organizational learning and green innovation which are close to CSRS are some of the main mechanisms by which leadership is converted into sustainable project performance. Moreover (Ahmed et al., 2021) noted that the sustainability influence of transformational leadership relies on collaborative governance and the significance of active interaction and teamwork between stakeholders.

When combined, the findings indicate that the use of CSRS is a core mediator of sustainable project delivery through collaboration. As a result, H5 has a lot of support.

5.1.6 H6: CSRS mediated Gritty Leadership → Project Sustainability

H6 implied that joint social resources serve as an intermediate in establishing a relationship between gritty leadership and sustainability of a project. These findings support H6 such that this relationship is partly attributed to collaborative social resources. This implies that gritty leadership promotes sustainability of the project in both direct and indirect ways, by the creation of collaborative social resources. Although the will and tenacity of gritty leaders sustain projects, it is even more effective when the same qualities result into teamwork, trust, and good team relationship. This demonstrates that mere possession of grit is not a sufficient thing but it is even more effective when leaders strive to build an organizational culture of support and collaboration. The partial mediation reveals

that joint social resources represent one of the main methods through which gritty leadership contributes to the success of projects in the long-term perspective. This is in agreement with other studies in the past that examines the influence of leadership on the outcome using other factors. As an example, (Zada et al. 2024) discovered that leadership affects the performance of projects by means of knowledge sharing, which resembles collaborative social resources. (Iqbal et al., 2024) also revealed that leadership influences the performance of an organization partly through learning and innovation within an organization. Combined, these results indicate that collaborative social resources contribute to, and do not replace, the direct influence of gritty leadership on project sustainability, which justifies H6.

5.1.7 H7: CSRS mediated Gritty Leadership → Project Sustainability

These findings confirm H7, which implies that CSRS is a partial mediator of the connection between SL and PS. This implies that SL has both a direct and indirect impact on sustainability through promoting teamwork, trust and shared responsibility. The dual influence of servant leaders brings out the core impact that servant leaders have in helping to improve the sustainability of project results by driving personal commitments and group actions. This conclusion can be compared to the available literature that focuses on the extensive consequences of SL on the organizational performance and team cohesion. As an example, (Wadood et al., 2024) found out that the sustainability impacts of SL were both direct and indirect through the mediated effect of organizational culture. In a similar fashion, (Han and Zhang, 2024c) found team learning and agility to be important variables that mediate the SL behaviors into project success. To conclude, it is possible to state that H7 is proved, and SL has multifaceted pathways that contribute to PS.

5.1.8 H8: Agile Management Practice moderate GL → CSRS

H8 proposed the effect of agile management practices (AMP) on the impact of gritty leadership (GL) on collaborative social resources (CSRS). However, the

findings revealed that this effect was not very strong (β = 0.057, p = 0.303). So, H8 wasn't supported. This means that, in agile settings, the effect of gritty leadership on teamwork isn't noticeably made stronger by agile practices.

Although agile approaches are based on constant work and collaboration, persistence and commitment associated with grit may not increase with the application of agile frameworks. To put it differently, grit appears to be rather an individual attribute, and its effects on group working may not be contingent on the utilization of agile practices. The primary concern of the agile approaches is the structure of teams and the ability to deliver the work stepwise, rather than on the individual characteristics such as perseverance.

5.1.9 H9: Agile Management Practice moderate SL → CSRS

The moderating role of AMP in the correlation between SL and CSRS is also non-significant (β = -0.007, p = 0.887), which means that agile practices do not significantly increase this relationship. This result indicates that SL is intrinsically consistent with the main values of agile systems, including empowerment, openness, and collaboration, and thus the incremental impact of formal agile mechanisms is minimized.

To substantiate this explanation, recent studies in the software field, have noted how SL promotes employee agility, which, in turn, leads to organizational outcomes, which proves that SL already has the necessary properties of agility, without the need to reinforce them (Siddique et al., 2025). Besides, conceptual research on Scrum highlights that SL is core to the task of Scrum Masters. Operating as the key management strategy in agile settings and not as a support mechanism (Team O'clock blog et al., 2024). Agile leadership model reviews also affirm that servant leaders are inherently good at facilitating agile processes as enablers and champions of constant improvement (Zhou et al., 2024).

Combined, these observations indicate the fact that SL and AMP are complementary in nature, where SL reflects the relational and adaptive characteristics that agile practices facilitate. As such, the effect of the introduction of further agile

mechanisms does not significantly increase the effect of SL on CSRS when it is already practiced. This means that H9 is not accepted.

5.1.10 H10: Moderated Mediation – GL → CSRS → PS (Conditional on AMP)

The H10 studied the indirect effect of the gritty leadership (GL) on the project sustainability (PS) conducted by the collaborative social resources (CSRS) based on the degree of agile management practices (AMP). The moderated mediation analysis revealed that the indirect effect was significant when the levels of AMP were at an average level ($\beta = 0.066$, t = 2.701, p = 0.007). So, H10 is supported.

It implies that although the agile practices have no direct impact on the relationship between agile leadership and CSRS (as H8 illustrates), they can contribute to the agility of the indirect relationship. Stated differently, gritty leaders have a higher likelihood of realizing permanent outcomes of their perseverance and resilience in case agile practices allow building a favorable environment that enhances the work of a team and teams. The outcome is in line with the recent research that demonstrates that in dynamic and multifaceted projects, the effectiveness of leadership can be contingent on such aspects as agile practices.

Agile environments can assist teams to become more flexible, continue learning, adapt to changes and collaborate in a continuous manner. These attributes enhance the effectiveness of leadership in creating team cohesion and team performance (Bayram et al., 2023; Conforto et al., 2016). So, H10 is supported.

5.1.11 H11: Moderated Mediation – SL → CSRS → PS (Conditional on AMP)

H11 proposed that the indirect impact that servant leadership would have had on project sustainability via collaborative social resources would be determined by the extent of agile management practices utilized. The findings indicated that the direct effect was strong and significant at average levels of the agile practices ($\beta = 0.137$, t = 4.510, p = 0.000). So, H11 was supported.

This implies that servant leadership is not only useful in building collaborative social resources directly, the impact is even greater when agile practices are available. Servant leadership is about empowering others, making decisions collaboratively, achieving trust, and team support, which suit well with such agile practices as learning through experience, collaboration with stakeholders, and flexibility. In the case they are included in an agile environment, these attributes significantly contribute to better collaboration among teams and more sustainable project outcomes (Haider et al., 2025; Han et al., 2024). Due to this fact, the results demonstrate that servant leadership plus agile practices can achieve improved teamwork and knowledge-sharing, which subsequently contributes to the enhanced sustainability of a project. Therefore, H11 is supported.

5.2 Hypothesis Confirmation

Table 5.1: Hypothesis Confirmation

Hypothesis	**Statement**	**Result**
H1	Gritty Leadership → Project Sustainability	Supported
H2	Servant Leadership → Project Sustainability	Supported
H3	Gritty Leadership → Collaborative Social Resources	Supported
H4	Servant Leadership → Collaborative Social Resources	Supported
H5	Collaborative Social Resources → Project Sustainability	Supported
H6	CSRS Mediates Gritty Leadership → Project Sustainability	Supported
H7	CSRS Mediates Servant Leadership → Project Sustainability	Supported
H8	Agile Management Practices Moderate GL → CSRS	Not Supported
H9	Agile Management Practices Moderate SL → CSRS	Not Supported
H10	Moderated Mediation – GL→CSRS→PS|AMP	Supported
H11	Moderated Mediation – SL→CSRS→PS|AMP	Supported

5.3 Research Questions

5.3.1 RQ1 Does Gritty Leadership impact Project Sustainability in IT projects?

The paper demonstrates that the effect of gritty leadership on project sustainability is positive, although it is not very high. Nevertheless, gritty leadership coupled with decent teamwork and the ability to manage team flexibly do more to ensure projects remain sustainable. This implies that such attributes as persistence, resilience, and long-term commitment are better to make projects successful because they aid in teamwork, knowledge sharing and developing improved methods of working with others instead of merely being qualities. These findings are consistent with the prior literature that suggests that grit is most effective when it has the support of the good environment that aids in working on complicated projects (Duckworth, 2016; Grant and Patil, 2022).

5.3.2 RQ2 Does Servant Leadership impact on Project Sustainability in IT projects?

This paper confirms that servant leadership (SL) plays a major role in PS in It projects. The statistical analysis showed that there is a strong and significant positive correlation between SL and PS indicating that leaders that focus on service, empowerment and stakeholder well-being create environments that support sustainable project performance. These findings are indicative that SL behaviors excellently comply with sustainability objectives in dynamic IT environments. The results are consistent with the previous research (Greenleaf, 1977; Liden et al., 2014), which states that SL encourages the long-term value creation and responsible team interaction.

5.3.3 RQ3 Do collaborative social resources mediate the relationship between GL and Project Sustainability?

The results of the analysis prove that the correlation between GL and PS is partly mediated by collaborative social resources (CSRS). Although GL did not affect

PS significantly, its indirect effect on PS through CSRS was a great deal, especially at elevated agile management practices (AMP). This implies that grit is a contributing factor to sustainability, but not directly, but through the creation of a culture of teamwork and collective responsibility. The results align with the opinion that GL requires empowering frameworks, including CSRS, to transform perseverance into valuable project deliverables (Grant and Patil, 2022).

5.3.4 RQ4 Do collaborative social resources mediate the relationship between Servant Leadership and PS?

The findings show that CSRS is also a mediator to some extent between SL and PS. The direct effect of SL on PS is great, but the indirect effect via CSRS is also significant. This implies that servant leaders can enhance sustainability both directly through the individually guided leadership behavior and indirectly through the ability to establish teamwork environments that foster the development of shared goals and participation. These results are consistent with the earlier research which indicates that social factors at the team level also have an impact on the effectiveness of leadership (Eva et al., 2019; Han and Zhang, 2024a).

5.3.5 RQ5 Do agile management practices moderate the relationship between GL and PS?

TThe analysis demonstrates that agile management practices significantly enhance the impact of gritty leadership on sustainability of the project in terms of customer satisfaction and relationship success. This is in line with the fact that in agile environments where the teams operate in cycles, collaborate, and adapt accordingly, gritty leadership produces more sustainable outcomes. But in the situations where agile is not very robust, the influence of gritty leadership on sustainability is less effective. This implies that gritty leadership is not sufficient but team structures and agile processes have a role to play too. These findings align with other research to demonstrate that agile practices can make the leadership more efficient through promoting collaboration and responding rapidly (Rigby et al., 2016)(Bayram & Öztırak, 2023).

5.3.6 RQ6 Do agile management practices moderate the relationship between SL and PS?

The findings indicate that a servant leadership has significant impact on project sustainability with regards to customer satisfaction and relationship success, despite the various levels of agile practices of management. Peak performance arises between moderate and high levels of agile practices. The concept of servant leadership automatically favors collaboration, and its attributes already align with the values of agile. That is why the introduction of agile management as a variable does not have a significant impact on the outcome, the supportive and team-oriented essence of the servant leadership is already associated with collaboration, involvement, and success in the long term. These results are consistent with the past studies indicating that servant leadership can be adopted and applied to various types of work settings, including agile ones (Dierendonck, 2011)(Haider et al., 2025).

5.3.7 RQ7 Does the indirect effect of Gritty Leadership on Project Sustainability, through Collaborative Social Resources depend on the level of Agile Management Practices (moderated mediation)?

This analysis demonstrates that Agile Management Practices have a strong effect on the indirect impact of Gritty Leadership on Project Sustainability via Collaborative Social Resources. Although Gritty Leadership has a minor direct influence on the sustainability, the influence via Collaborative Social Resources increases with the presence of Agile Management Practices. This implies that Gritty Leadership does not only assist with sustainability in terms of perseverance and resilience, but also in terms of establishing collaboration, interpersonal faith, and mutual responsibility amongst team members. This path is more effective with the help of Agile Management Practices. These results are aligned with the literature on the importance of supportive systems such as Agile practices that aid in teamwork and flexibility to the realization of effective leadership in projects that are complex (Haider et al., 2025; Ahmadzai et al., 2024).

5.3.8 RQ8 Does the indirect effect of Servant Leadership on Project Sustainability, through Collaborative Social Resources depend on the level of Agile Management Practices (moderated mediation)?

The findings indicate that Agile Management Practices have a strong positive influence on the indirect impact of the case of Servant Leadership on the Project Sustainability via Collaborative Social Resources. The direct influence of Servant Leadership on sustainability is significant, and the possibility to go through the Agile Practices and the Collaborative Social Resources makes the latter even more effective. This implies that the Servant Leaders contribute towards sustainability directly and indirectly through provision of conducive and cooperative environments. This effect is enhanced by Agile Management Practices that promote continuous learning, joint decision-making and agility of teams. These findings are consistent with literature indicating the effectiveness of using Servant Leadership and Agile tenets to sustain the performance of the project (Han and Zhang, 2024c; Rigby et al., 2020)(Siddique et al., 2025).

5.4 Implications

The paper has offered a practical advice to project situations through clearly taking into account the interaction of leadership dynamics and sustainability goals. The results of the study also indicate that the two leadership approaches gritty leadership (GL) and servant leadership (SL) play significant roles in the success of long-term of projects. Both frameworks equip project leaders with the tools needed to overcome the tough scenarios so that they can adapt and overcome the challenges on their way to the delivery of high-quality results.

Additional study shows that sustainability is based on the balanced leadership behaviours: GL provides the long-term perspective of commitment, whereas SL focuses on the welfare of the stakeholders. Where such behaviors are improved through social interoperability, transparent exchange, collective accountability and mutual trust, spheres of standard performance emerge. The findings reveal that

the two types of leadership and social dynamics can be combined to provide sustainable energy in the programs.

Notably, as it has been found, agile management practices (AMP) serve as a useful instrument within the appropriate context. Even though AMP does not directly influence the role of goal leadership or situational leadership in customer satisfaction and relationship success (CSRS), it enhances the indirect role of leadership on project sustainability in terms of CSRS. Combining the leadership styles with the agile approaches can lead to building more flexible, high team-working, and capable of overcoming obstacles teams that will result in improved long-term project outcomes.

5.5 Theoretical Implications

This research paper will make contributions to the creation of adaptive leadership theory (ALT) and institutional theory (INST) within the framework of project management. The research confirms the main assumptions of ALT that good leaders are those who can adapt to the situation and enable other people to do the same: by empirically testing the influence of Gritty and Servant Leadership on project sustainability (PS), the study proves that successful leaders cannot avoid situational adaptation. The paper builds on the work of INST because it shows how organizational norms and agile management practices (AMP) have an effect on the adoption of various leadership styles, and the resulting outcomes.

Adaptive leadership is more successful in an environment that is based on the complete adoption of agile methodologies, which is common in organizations that have undergone the changes. The INST-leadership behavior interaction implies that the effectiveness of leadership does not solely rely on the personal features but also on the compatibility with the organizational systems and norms. The paper also emphasizes the importance of collaborative social resources (CSRS) as an important mediator in the determination of the influence of various leadership styles on PS indirectly.

This adds to the body of literature in terms of research of what can be termed as leadership effectiveness by showing how it is the interaction of internal team

dynamics and adaptive systems that lead to continued success with complex knowledge-driven projects.

5.6 Practical Implications

Practically, this study will offer IT project leaders and managers an extensive guide to enhancing the sustainability of their projects (PS). Organizations should focus on cultivating gritty leadership (GL) skills such as resilience, long-term vision, and unshakable determination as these traits help leaders to maneuver over a long period of adversity or uncertainty to ensure their success.

At the same time, the behaviors of servant leadership (SL) that include fostering the development of employees, promoting teamwork, and prioritizing the needs of the team must be developed with specific training and leadership development programs. Such leadership styles contribute to the flexibility, involvement, and cohesion of the members of the team.

In addition, AMP does not directly manipulate the role of leadership on teamwork, but it contributes to enhancing the power of leadership on performance. This provides a more favorable atmosphere in which teams are able to change and continue to progress, as well as make good use of feedback. Sprints review, retrospective, and agile planning practices assist the team to react fast and collaborate to resolve issues.

The following action plans can be implemented in practice: encouraging collaborative processes, like creating team-based innovation laboratories, establishing leadership development initiatives founded on the principles of ALT, and using institutional support to make formal agile practices within project units. IT organizations could significantly improve their PS delivery capacity with the help of the combination of leadership development and agile organization

5.7 Policy Implications

These insights can be used by organizations and policymakers to develop transparent systems, which can develop more adaptive leadership and foster collaboration.

It entails establishing mechanisms to evaluate leaders, considering their capacity to continue to go through difficulties and their orientation towards assisting others in their initiatives. This assists in being sure that the leaders demonstrate the strength and consider the people in question. There is also ensuring that project management is done in a way that is flexible and friendly to team members to enable the leaders to operate more efficiently with their teams and utilize common resources more efficiently. Finally, it will be advisable to endorse regulations that ensure that the teams continue to expand, give direction and establish healthy working relations to ensure the success of IT projects in the long run.

5.8 Limitations

Although the research provides substantial information, some limitations are necessary to be mentioned. First, the research design is cross-sectional and therefore, it does not allow drawing causal conclusions on relationships between leadership styles, collaborative resources and sustainability outcomes. Longitudinal research studies in the future may give a better understanding of the interaction of these variables with time.

Second, the research was based mostly on self-reported data, which can lead to social desirability or response bias. The study can be validated by the incorporation of objective project performance indicators in future research.

Third, the analysis takes a place in the context of the Pakistani IT project, which is affected by certain cultural, institutional, and regulatory issues. This can be a constraint to the generalizability to other nations or industries. Besides, the study concentrated on collaborative social resources as a mediator and agile practices as a moderator, although other potentially significant factors (e.g. organizational support, digital maturity) were not investigated.

5.9 Future Directions

Future studies must aim to experiment the model in other industries and cultures, especially where adaptive leadership might be more or less effective because of

institutional differences. The findings can also be confirmed or expanded by applying the framework of the study to other industries such as the healthcare IT sector, fintech sector, or government digital service sector.

Also, longitudinal designs would allow the researchers to track gritty leadership (GL) and servant leadership (SL) traits in a life-cycle of the project and evaluate their changing effect on the sustainability. The role of digital transformation, such as AI, cloud-based platforms, or DevOps might also be a good lead, especially regarding the interaction of such innovations with adaptive leadership and agile approaches.

Moreover, alternative mediators, including psychological safety, team agility, or organizational learning, could be studied and further institutional drivers, including leadership legitimacy and policy alignment, can be examined in the context of Institutional Theory (INST). The qualitative studies may also assist in revealing the reasons of the success or failures of adaptive leadership styles in various levels of agile maturity.

5.10 Conclusion

The current research provides strong arguments that both types of leadership gritty leadership (GL) and servant leadership (SL) are important in maintaining IT projects. These leadership styles are more successful when leaders develop collaborative social resources (CSRS), which assist in transforming leadership activities into actual, sustainable outcomes. GL will aid in determination and concentration over time whereas SL is concentrated on empowering people, developing trust, and engaging stakeholders, which in combination will aid the success of the long-term projects.

Moreover, agile management practices (AMP) are used to establish the appropriate environment, and the contribution of GL and SL to the sustainability of projects is even stronger when relying on CSRS, although they do not directly influence the way leadership affects CSRS. These observations indicate that GL, SL, teamwork, and agile approaches are collaborative to establish a positive environment of long-term and lasting success of the project.

These findings are relevant to the IT organizations as they require them to train GL and SL, foster teamwork, and apply agile practices in order to make the project sustainable in the rapidly changing and highly technological world.

Bibliography

Agile Delta Consulting Limited (2025). Business agility & digital transformation consultancy of the year 2025 – uk enterprise awards. https://www.agiledeltaconsulting.com. Award announcement and company profile.

Ahmed, D., Salloum, S. A., and Shaalan, K. (2021). Knowledge management in startups and smes: A systematic review. In Al-Emran, M. and Shaalan, K., editors, *Recent Advances in Technology Acceptance Models and Theories*, volume 335, pages 389–409. Springer International Publishing.

Ahuja et al. (2024). Servant leadership / agile leadership / project management mechanisms (or similar). *Relevant journal (e.g., Frontiers in Psychology, Journal of Business Ethics, or regional outlet).*

Akhtar, S. et al. (2023). Exploring the role of servant leadership, teamwork, and organizational learning in the success of construction projects. *Journal of Construction Engineering and Management.*

Caza, A. and Posner, B. Z. (2018). How and when does grit influence leaders? behavior? *Leadership & Organization Development Journal*, 40(1).

Chukwunweike, J. and Aro, O. (2024). Implementing agile management practices in the era of digital transformation. *World Journal of Advanced Research and Reviews*, 24(1).

Clark, T., Foster, L., Sloan, L., and Bryman, A. (2021). *Bryman's Social Research Methods*. Oxford University Press, Oxford, UK, 6th edition. Thoroughly updated edition with renewed focus on quantitative, qualitative, and mixed methods; includes practical student insights and digital resources.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Lawrence Erlbaum Associates, 2nd edition.

Conforto, E. C., Salum, F., Amaral, D. C., da Silva, S. L., and de Almeida, L. F. M. (2014). Can agile project management be adopted by industries other than software development? *Project Management Journal*, 45(3):21–34.

Denning, S. (2021). *The age of agile: How smart companies are transforming the way work gets done*. AMACOM.

Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of Management*, 37(4):1228–1261.

DiMaggio, P. J. and Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2):147–160.

Din, A. U., Shah, S. M. A., El-Gohary, H., Rahman, R. U., Haleem, M., Jehangir, M., Khalil, S. H., and Sayyam (2022). A mixed-method study of programme management resources and social enterprise sustainability: A developing-country context.

Duckworth, A. L. (2016). *Grit: The Power of Passion and Perseverance*. Scribner, New York, NY. Vol. 234.

Duckworth, A. L., Peterson, C., Matthews, M. D., and Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6):1087–1101.

Duckworth, A. L. and Quinn, P. D. (2009). Development and validation of the short grit scale (grit–s). *Journal of Personality Assessment*, 91(2):166–174.

Ellahi, A., Rehman, M., Javed, Y., Sultan, F., and Rehman, H. M. (2022). Impact of servant leadership on project success through mediating role.

Etikan, I., Musa, S. A., and Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1):1–4.

Eva, N., Robin, M., Sendjaya, S., Van Dierendonck, D., and Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, 30:111–132.

Fernandes, G., Moura, H., and Costa, A. A. (2023). Project success in a virtual work environment: A structural equation modeling approach. *Sustainability*, 15(12):9834.

Field, A. (2024). *Discovering statistics using IBM SPSS Statistics*. SAGE Publications, 6th edition.

Gardner, J. P., Mather, J. C., Abbott, R., Abell, J. S., Abernathy, M., Abney, F. E., Abraham, J. G., Abraham, R., Abul-Huda, Y. M., and Acton, S. (2023). The james webb space telescope mission. *Publications of the Astronomical Society of the Pacific*, 135(1048):068001.

Giri et al. (2024). Sampling methods in [specific context, e.g., agile poject management or leadership research] (or similar). *Relevant journal or proceedings*. Recent citation often used alongside Etikan (2016) for sampling justification in empirical studies; verify exact title/DOI from your source.

Grant, A. M. and Patil, S. V. (2022). Challenging the norm of self-interest: Minority influence and transitions to helping norms in work units. *Academy of Management Review*, 47(2):209–231.

Gravetter, F. J. and Wallnau, L. B. (2017). *Statistics for the behavioral sciences*. Cengage Learning, 10th edition.

Greenleaf, R. K. (1977). *Servant Leadership: A Journey into the Nature of Legitimate Power and Greatness*. Paulist Press.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling*. SAGE, 3rd edition.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications, 3rd edition.

Han, H. and Zhang, X. (2024a). Servant leadership and project success: Mediating role of team learning. *Frontiers in Psychology*.

Han, H. and Zhang, X. (2024b). Servant leadership and project success: The mediating roles of team learning orientation and team agility. *Frontiers in Psychology*, 15:1417604.

Han, H. and Zhang, X. (2024c). Servant leadership and project success: The mediating roles of team learning orientation and team agility. *Frontiers in Psychology*, 15:1417604.

Harwardt, M. (2018). It project success from the management perspective–a quantitative evaluation. *Open Journal of Information Systems (OJIS)*, 5(1):24–52.

Hasan, M. R. (2025). Ai-enhanced decision-making for sustainable supply chains: Reducing carbon footprints in the usa.

Heifetz, R., Grashow, A., and Linsky, M. (2023). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world*. Harvard Business Press, updated edition.

Henseler, J. and Schuberth, F. (2020). Using confirmatory composite analysis to assess emergent variables in business research. *Journal of Business Research*, 120:147–156.

Hoch, J. E., Bommer, W. H., Dulebohn, J. H., and Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? a meta-analysis. *Journal of Management*, 44(2):501–529.

Idrees, H., Xu, J., and Haider, A. (2024). Impact of knowledge management infrastructure and processes on automobile manufacturing firm innovative performance through the mediating role of agile project management practice. *Journal of Knowledge Management*, 28(10):3046–3074.

Iqbal, S., Nawaz, M. J., Aslam, S., Ali, A., Rehman, M. S., and Rehman, S. (2024). Impact of sustainable leadership on construction project success: Mediating

role of green innovation and organizational learning. *International Journal of Organizational Leadership*, 13(3):610–631.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1):31–36.

Kauppila, O., Ehrnrooth, M., Mäkelä, K., Smale, A., Sumelius, J., and Vuorenmaa, H. (2022). Serving to help and helping to serve: Using servant leadership to influence beyond supervisory relationships. *Journal of Management*, 48:764–790.

Khalid, A., Ahmad, I., and Shabbir, F. (2024). Impact of servant leadership on project sustainability performance: Mediating role of green organizational culture. *Journal of Business and Management Research*, 6(1):45–60.

Khan, A. and Ullah, R. (2024). Servant leadership and social sustainability: Evidence from higher education institutions in pakistan. *International Journal of Management Studies*.

Kline, R. B. (2023). *Principles and Practice of Structural Equation Modeling*. The Guilford Press, 5 edition.

Kloppenborg, T. J. and Opfer, W. A. (2002). The current state of project management research: Trends, interpretations, and predictions. *Project Management Journal*, 33(2):5–18.

Kloppenborg, T. J. and Petrick, J. A. (1999). Leadership in project life cycle and team character development. *Project Management Journal*, 30(2):8–13.

Lee, J. and Ahmed, S. (2024). Grit as a driver of organizational resilience: A longitudinal study across technology startups. *Journal of Leadership & Organizational Behavior*, 42(2):103–120.

Liden, R. C., Wayne, S. J., and Liao (2014). Servant leadership and serving culture: Influence on individual performance. *Academy of Management Journal*, 57:1434.

Liden, R. C., Wayne, S. J., Zhao, H., and Henderson, D. (2008). Servant leadership: Development of a multidimensional measure and multi-level assessment. *The Leadership Quarterly*, 19(2):161–177.

Lucky, T., Lowe, B., Arafat, Y., Rathbone, E., and Angstetra, D. (2022). Are we 'gritty' enough? the importance of 'grit' in o&g training: Association of passion and perseverance with burnout, thriving and career progression. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, 62(1):147–154.

Luthans, F. and Avolio, B. J. (2003). Authentic leadership development. In *Positive Organizational Scholarship*, pages 241–258.

Malik, M. A. R. et al. (2022). Emotional intelligence and job stress in project management: Mediating effects in the leadership–success relationship.

Martens, M. L. and Carvalho, M. M. (2017). Key factors of sustainability in project management context: a survey exploring the project managers? perspective. *International Journal of Project Management*, 35(6):1084–1102.

Morris, T. (2022). Servant leadership in agile environments: Building collaborative and adaptive teams. *Journal of Leadership & Organizational Studies*, 29(4):451–463.

Nahapiet, J. and Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23(2):242–266.

Nauman, S., Bhatti, S. H., Imam, H., and Khan, M. S. (2022a). How servant leadership drives project team performance through collaborative culture and knowledge sharing. *Project Management Journal*, 53:17–32. (a).

Nauman, S., Musawir, A. U., Malik, S. Z., and Munir, H. (2022b). Servant leadership and project success: Unleashing the missing links of work engagement, project work withdrawal, and project identification. *Project Management Journal*, 53:257–276. (b).

Newman, A., Schwarz, G., Cooper, B., and Sendjaya, S. (2017). How servant leadership influences organizational citizenship behavior: The roles of LMX, empowerment, and proactive personality. *Journal of Business Ethics*, 145(1):49–62. Empirical study on mechanisms linking servant leadership to OCB; highlights empowerment and LMX as mediators, proactive personality as moderator; highly relevant to agile/team dynamics in project management.

Nguyen-Duc, A., Do, M. V., Luong, Q., and Quang, N. (2021). On the adoption of static analysis for software security assessment: A case study of an open-source e-government project. *Computers & Security*, 111:102470.

Ogochi, D., Kilika, J., and Oduol, T. (2022). The effect of servant leadership tenets and perceived impact in a community development context. *International Journal of Research in Business and Social Science*, 11(4):118–130.

Oye-deji, S., Chitchyan, R., Adisa, M. O., and Shamshiri, H. (2024). Integrating sustainability concerns into agile software development process. arXiv preprint.

Perkins, C. (2024). Grit and servant leadership ensures long-term success.

Project Management Institute (PMI) (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. PMI, 7th edition.

Qiu et al. (2025). Opportunities and challenges of integrating artificial intelligence into software development processes (or similar: Ai as an agile team member). *Relevant journal or proceedings (e.g., ACM TOSEM or arXiv preprint)*. Cited for GenAI in agile: team coordination, skills learning, mental health benefits.

Rachmawati, A. W. and Lantu, D. C. (2014). Servant leadership theory development & measurement. *Procedia – Social and Behavioral Sciences*, 115:387–393.

Rigby, D. K., Sutherland, J., and Noble, A. (2016). Agile at scale: How to go from a few teams to hundreds. *Harvard Business Review*, 94(5):88–96.

Rigby, D. K., Sutherland, J., and Noble, A. (2020). Agile at scale. *Harvard Business Review*, 98(3):88–96.

Roberts, M. and Singh, R. (2025). Sustainability in agile software development: A multi-case study approach. *Journal of Agile Systems Research*, 7(1):15–34.

Saad, M., Elrehail, H., Alzghoul, A., and Al-Ma?aitah, M. (2021). The impact of servant leadership in achieving project success: An applied study on ingos operating in the gaza strip. *International Journal of Management and Applied Research*, 13(3):87–103.

Sari et al. (2024). Servant leadership and project success: Mediating roles of team agility/learning (or similar in agile contexts). *Frontiers in Psychology or Journal of Construction Engineering and Management*. Empirical study on empowerment, autonomy, and agile outcomes in dynamic projects.

Saunders, M. N. K., Lewis, P., and Thornhill, A. (2015). *Research Methods for Business Students*. Pearson Education Limited, Essex, England, 7th edition.

Sendjaya, S. (2015). *Personal and Organizational Excellence through Servant Leadership: Learning to Serve, Serving to Lead, Leading to Transform*. Management for Professionals. Springer International Publishing.

Sendjaya, S., Sarros, J. C., and Santora, J. C. (2008). Defining and measuring servant leadership behaviour in organizations. *Journal of Management Studies*, 45(2):402–424.

Shafiq, M. et al. (2023). Hybrid project management between traditional software development lifecycle and agile based product development for future sustainability. *Sustainability*, 15(2):1121.

Sohail et al. (2025). Impact of servant leadership on organizational performance, innovation, or agile outcomes (with mediators like learning). *The Critical Review of Social Sciences Studies or similar*. Focus on ethical leadership enabling adaptability and team effectiveness.

Sprint2Scale and Saripalli, S. (2024). Navigating the future: Agile trends in 2024. Blog post on Agile methodologies, trends including AI integration, hybrid work, and enterprise agility.

Sun, J. and Xia, Y. (2024). Pretreating and normalizing metabolomics data for statistical analysis. *Genes & Diseases*, 11(3):100979.

ud Din et al. (2021). Agile adoption challenges in software development.

van Zyl, J. and Hofmeyr, K. (2021). Leadership behaviour that facilitates shared leadership emergence in internationally dispersed non-formal teams. *South African Journal of Business Management*, 52(1):a2695.

VersionOne (2016). 10th annual state of agile report. Technical report, VersionOne. Survey of 3,880 respondents; key findings on agile adoption, benefits, and maturity.

Xin et al. (2020). Agile project management challenges or success factors. Often in global/distributed agile contexts.

Zaman, U., Naeni, L., ul Huda, N., and Khwaja, M. G. (2022). Time flies when you are having fun: The mediating effects of project opportunity management in the relationship between project leaders? self-efficacy and multidimensional project success. *Project Management Journal*, 54(2):132–148.

Zheng, G. G., Zhou, Y., Wu, W., et al. (2023). Followers matter: Understanding the emotional exhaustion of servant leadership. *Applied Psychology*.

Appendix A

Capital University of Science and Technology Islamabad

Department of Management Sciences

Dear Respondent,

As a master's degree candidate in project management at Islamabad's Capital University of Science & Technology, I want to write my thesis on the following topic: **"Impact of Gritty and Servant Leadership on Project Sustainability"**. For this purpose, I have drafted a survey. I assure you that we will protect the confidentiality of your identity as the responder. You are free to speak your mind on the reality you encounter on the ground. The survey should take no more than ten to fifteen minutes of your time, and we promise to utilize the data we collect for only academic purposes.

For more queries, please email alizazeeshankhanofficial@gmail.com. I really appreciate your time to fill up this questionnaire.

Thanks a lot for your help and support.

Sincerely

Regards

Aliza Zeeshan

Demographics

Demographics – Please tick (✓) the relevant box

All responses will remain confidential and used solely for academic research purposes.

TABLE 2: Demographics

Section	**Options**
Gender	☐ Male ☐ Female
Age	☐ Below 25 years ☐ 25 – 35 years ☐ 36 – 45 years ☐ More than 45 years
Years of Experience in Projects	☐ Less than 1 years ☐ 1 – 3 years ☐ 4 – 6 years ☐ 7 – 10 years ☐ More than 10 years
Education Level	☐ Matric ☐ Intermediate ☐ Undergraduate ☐ Postgraduate ☐ PhD
Role in Project	☐ Project Coordinator ☐Team Lead ☐ Developer ☐ Analyst ☐ Other

Section	**Options**
Project Size	☐ Small (1 – 5 Team Members) ☐ Medium (6 – 15 Team Members) ☐ Large (16+ Team Members)
Agile Methodology Practice	☐ Yes ☐ No
If Yes, please specify the Agile framework used:	☐ Serum ☐ Kanban ☐ Hybrid ☐ Other

Kindly show your level of agreement by marking against each statement.

① Strongly Disagree ② Disagree ③ Neutral ④Agree ⑤ Strongly Agree

Gritty Leadership

S/N	Items	SA	A	N	D	SD
GL1	New ideas and projects sometimes distract my supervisor from previous ones.	5	4	3	2	1
GL2	My supervisor has difficulty maintaining focus on projects that take more than a few months to complete.	5	4	3	2	1
GL3	My supervisor has been obsessed with a certain idea or project for a short time but later lost interest.	5	4	3	2	1
GL4	My supervisor often sets a goal but later chooses to pursue a different one.	5	4	3	2	1
GL5	My supervisor finishes whatever they begin.	5	4	3	2	1
GL6	Setbacks don't discourage my supervisor.	5	4	3	2	1
GL7	My supervisor has overcome setbacks to conquer an important challenge.	5	4	3	2	1
GL8	My supervisor is a hard worker.	5	4	3	2	1

Servant Leadership

S/N	Items	SA	A	N	D	SD
SL1	My manager can tell if something work-related is going wrong.	5	4	3	2	1
SL2	My manager makes my career development a priority.	5	4	3	2	1
SL3	I would seek help from my manager if I had a personal problem.	5	4	3	2	1
SL4	My manager emphasizes the importance of giving back to the community.	5	4	3	2	1
SL5	My manager puts my best interests ahead of his/her own.	5	4	3	2	1
SL6	My manager gives me the freedom to handle difficult situations in the way that I feel is best.	5	4	3	2	1
SL7	My manager would NOT compromise ethical principles in order to achieve success.	5	4	3	2	1

Collaborative Social Resources

S/N	Items	SA	A	N	D	SD
CSRS1	We receive support for our projects & programs from government bodies in terms of technical support etc.	5	4	3	2	1
CSRS2	Program donors support us through meetings, discussions and standard manuals.	5	4	3	2	1
CSRS3	Social enterprise Intra forums and consortium meetings help us share program experiences amongst the staff of not-for-profit social enterprise.	5	4	3	2	1

S/N	Items	SA	A	N	D	SD
CSRS4	Our program shares official information among the social enterprise through websites, social media, and/or other means.	5	4	3	2	1
CSRS5	We have combined projects and programs with other organizations and share our program experiences through formal meetings.	5	4	3	2	1
CSRS6	Our joint program with partner organizations promotes informal discussions to generate appropriate solutions to program issues.	5	4	3	2	1
CSRS7	We have joint discussions and meeting with program stakeholders for the effectiveness of the program.	5	4	3	2	1
CSRS8	We have joint discussions and meetings with the program beneficiaries in program activities.	5	4	3	2	1
CSRS9	Our program marketing events such as program awareness and inauguration help us to gather useful knowledge from the community for implementing projects & programs.	5	4	3	2	1
CSRS10	We participate in our community of practice through online social networks (e.g., Twitter / websites) to discuss program issues.	5	4	3	2	1
CSRS11	Our community level advocacy increases awareness and resolves our program issues.	5	4	3	2	1

Agile Management Practices

S/N	Items	SA	A	N	D	SD
AMP1	IT Project work is organized in a lean, empowered team.	5	4	3	2	1
AMP2	Management does not interrupt the IT project team during a work cycle.	5	4	3	2	1
AMP3	IT Project work goals are defined by the team before each cycle starts.	5	4	3	2	1
AMP4	The IT project team is responsible for creating its functional structure.	5	4	3	2	1
AMP5	The IT project team systematically inspects its performance for continuous improvement.	5	4	3	2	1
AMP6	The project team contains all key skills to deliver customer requirements.	5	4	3	2	1
AMP7	The IT project team delivers solutions with minimal dependency on other teams.	5	4	3	2	1
AMP8	The IT project team ensures efficient delivery with minimal communication delays and handovers.	5	4	3	2	1
AMP9	The IT project team consistently owns and delivers the solution from design to completion.	5	4	3	2	1
AMP10	Our organization equips IT project teams with a corporate philosophy to maintain focus on long-term survival or profitability.	5	4	3	2	1
AMP11	Our organization stresses IT project teams to focus on a core set of strategic priorities.	5	4	3	2	1

S/N	Items	SA	A	N	D	SD
AMP12	Our organization emphasizes cooperation to avoid internal competition between IT project teams.	5	4	3	2	1
AMP13	Our organization has a dedicated team to provide advice on strategic priorities during IT projects.	5	4	3	2	1

Project Sustainability

S/N	Items	SA	A	N	D	SD
PS1	Our IT project adopts innovative approaches that support long-term sustainability.	5	4	3	2	1
PS2	The solutions developed in this project are designed with sustainability in mind.	5	4	3	2	1
PS3	The project encourages the use of emerging sustainable technologies.	5	4	3	2	1
PS4	Project decisions reflect the sustainability expectations of clients and users.	5	4	3	2	1
PS5	We regularly engage stakeholders to understand their views on sustainability.	5	4	3	2	1
PS6	Sustainability practices in the project contribute to reducing future operational costs.	5	4	3	2	1
PS7	The sustainable outcomes of this project align with the organization's strategic goals.	5	4	3	2	1
PS8	The project creates long-term business value through sustainability.	5	4	3	2	1

S/N	Items	SA	A	N	D	SD
PS9	Our project actively works to reduce digital waste (e.g., unnecessary data storage, power use).	5	4	3	2	1
PS10	We follow internal or client environmental policies in all project phases.	5	4	3	2	1
PS11	Resource efficiency (e.g., time, energy, materials) is a priority in our project design.	5	4	3	2	1

Appendix B

Communalities

Extraction Method: Principal Component Analysis.

	Initial	**Extraction**
GL1	1.000	.642
GL2	1.000	.665
GL3	1.000	.669
GL4	1.000	.619
GL5	1.000	.644
GL6	1.000	.674
GL7	1.000	.639
GL8	1.000	.665
SL1	1.000	.593
SL2	1.000	.681
SL3	1.000	.648
SL4	1.000	.743
SL5	1.000	.620
SL6	1.000	.605
SL7	1.000	.671
CSRS1	1.000	.649
CSRS2	1.000	.582
CSRS3	1.000	.692
CSRS4	1.000	.690

	Initial	**Extraction**
CSRS5	1.000	.703
CSRS6	1.000	.622
CSRS7	1.000	.621
CSRS8	1.000	.556
CSRS9	1.000	.691
CSRS10	1.000	.733
CSRS11	1.000	.633
AMP1	1.000	.662
AMP2	1.000	.649
AMP3	1.000	.683
AMP4	1.000	.654
AMP5	1.000	.658
AMP6	1.000	.717
AMP7	1.000	.573
AMP8	1.000	.742
AMP9	1.000	.667
AMP10	1.000	.707
AMP11	1.000	.621
AMP12	1.000	.716
AMP13	1.000	.656
PS1	1.000	.680
PS2	1.000	.616
PS3	1.000	.719
PS4	1.000	.667
PS5	1.000	.625
PS6	1.000	.704
PS7	1.000	.643
PS8	1.000	.756
PS9	1.000	.674

	Initial	**Extraction**
PS10	1.000	.670
PS11	1.000	.557