

EFFECT OF GREEN HUMAN RESOURCE MANAGEMENT ON FIRM
PERFORMANCE THROUGH REVERSE LOGISTICS ADOPTION:
MODERATING ROLE OF CORPORATE SOCIAL RESPONSIBILITY



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To my beloved mother and father

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ABSTRACT

The goal of this study is to test a theoretical frame work to conduct a thorough examination of the processes in order to evaluate green human resource management impact on firm performance through the mediating role of reverse logistics adoption and moderating role of corporate social responsibility. The conceptual framework of this study is based on two theories i.e. resource based view theory and institutional theory. The hypothesis is evaluated by taking 250 samples from Pakistan's telecom sector and adopted the single-respondent questionnaire. For analysis, SPSS technique is utilized. Green human resource management is positively related to Firm Performance. It was revealed that corporate social responsibility moderates the relationship between green human resource management and reverse logistics adoption. Moreover, reverse logistics adoption mediates the relationship, between green human resource management and firm performance. It is important that executives must focus on green human resource development for increasing expertise and understanding through the implementation of appropriate training programs. Also the organizations must need to focus on the reverse logistics adoptions and finally the managers must focus on corporate social responsibility commitments with in the organizations as these are external pressures which organizations need to follow for environment protection and to comply with social obligations. The results emphasize the importance of green human resource management for the reverse logistics adoption and helps the practitioners understand the logic of corporate social responsibility that organization need to follow in and to use the same to maximize operational output of green human resource management and for the adoption of reverse logistics to increase firm performance in the telecom sector of Pakistan.

Key words: Green Human resource Management, Reverse Logistics, Corporate social responsibility,

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CHAPTER 1:

INTRODUCTION

1.1. Background

Green Human resource management aims to influence employee green workplace behavior and it is new awareness (Dumont et al., 2017). Developing economies are facing internal and external pressures because of global competition, especially in the area of firm performance and green management. The rapid increase in labor cost and global competition are harming the developing markets (Choi & Lim, 2017). One of the key features that connect most of the Sustainable Development Goals is environmental sustainability. Firms are now regularly making more efforts towards the development of sustainable strategies because of destruction caused by pollution and climate change. Therefore, with the growing importance of sustainability, firms are now incorporating environmental concerns in to their policies of all operational areas including human resource management (Tsymbaliuk, Vasylyk & Stoliaruk, 2021). As a result, green human resource management attempts to influence employee attitude towards greenness. Green selection of employees, green training and development, green incentives, and green evaluations are part of green human resource management (Malik et al., 2021). Green human resource management helps the practices of

environmental friendly management such as green supply chain management that includes the Reverse logistics to attain sustainability (Jabbour et al., 2019). Green human resource management integrates the employees output with environmental management practices (Gardas , 2019).

The process of hiring individuals who have a competitive advantage in the form of green skills and are committed to the development of economic value could aid in to the reverse logistics adoption (Longoni, Luzzini & Guerzi, 2018). When a company's environmental concerns and human resource objectives are aligned, it is referred to as "green human resource (Yong et al., 2020). In addition, the Human aspects/factors can cause the issues to reverse logistics adoption (Matsumoto et al., 2016). There is a lack of integration between human resource management and environment management. Human resource management is for implementation of environmental management policies (Anwar, 2020). The relationship between green supply chain and green human resource was made which opened up the possibility of further research (Jabbour and de Sousa Jabbour, 2016). The emphasis of this research is to assimilate the green human resource management and reverse logistics adoption so before we discuss the problem, there is a need to understand that green programs such as reverse logistics adoptions which really matters for the firm performance. Research shows that green practices are important for a variety of reasons, but employees primarily want managers to make environmentally friendly decisions (Jabbour et al., 2019) Rather than drawing continually from the environment, business actions must use all available resources wisely and focus on reducing, reusing, and recycling to the greatest extent possible (Bag & Gupta, 2019). Green human resource management makes the employees happy (Anwar, 2020).

Reverse logistics adoption through efficient way of handling the product return is important for firm success (Lakhmi, Sahin & Dallery, 2019). The firm's competitive advantage can also be strengthened by the efficient and reliable reverse logistics system (Kabak, Ekici, Ülengin, 2019). Because of the tight laws and regulations for proper disposal of waste proper attention need to be given for the adoption of reverse logistics and developed countries are working for the same .The reverse logistics adoption on the other hand, is in its early stages in developing countries (Dutta,Mishra, Khandelwal& Katthawala , 2020). There

are many hurdles for the adoption of reverse logistics including the lack of government support and firms reluctance towards Reverse logistics adoption due to lack of knowledge and interest (Agrawal and Singh, 2019). Reverse logistics adoption may have an impact on expenses and, as a result, on the firm's performance. Researchers have long been concerned in measuring the performance of systems and programs in reverse logistics (Li, Wang, Jiang & Kim, 2017). Previous study indicates that reverse logistics processes should be regulated to ensure that advantages are obtained (e.g. lower costs, high revenues, better customer satisfaction) (Genchev et al., 2011). The more successful reverse logistics adoption is, the better the performance as well as green human resource management is also a great method to manage human resources because workers are happier and healthier, which also increases supply chain efficiency (Gupta et al., 2018). Environmental human resource managements improve firm performance significantly (Jabbour, Neto, Gobbo, Ribeiro & de Sousa, 2015).

It is evident that among different industries, Reverse logistics adoption have been increased due to increasing concerns pertaining to the environment issues, corporate social responsibility concerns, applied laws, increasing competition viability issues and the products return recalls, return of the warranty, return of service (Prakash & Barua, 2016). Reverse logistics adoption is an important part of firm performance, therefore there is need to encourage the customers to return the goods and raw material to manufactures. And there should be clear coordination between distributor and manufactures and clear policies and frame work should be developed so that reverse logistics adoption total expenses can be reduced (Najafizadeh & Kazemi, 2019) Reverse logistics adoptions helps the firms to save the cost if implemented efficiently (Vlachos, 2016) but there is lack of research that how strengthen the logistics competences the firm should have to enhance the performance. There is also less material to support how a surplus of human resources might be used to solve the challenges of reverse logistics adoption (Bag & Gupta, 2019). The reverse logistics adoption process has a number of difficulties, which are mostly attributable to human aspects such as the presence of green human resources (Matsumoto et al., 2016). In the literature, there is a void, i.e. there are no coordinated methods in the areas of human resources and environmental management. Green Human resources play a critical part in the company's environmental management policy implementation (Bag & Gupta, 2019).

Strong human resource practices not only increase employee engagement and willingness to stay with the company, but they also improve supply chain efficiency. However, there is data deficiency demonstrating how an abundance of green human resources may solve reverse logistics adoption complications. The firms faces many issues regarding the adoption of reverse logistics, these barriers are mainly related to poor infrastructure, lack of government support, the government policies and regulations, lack of guidelines and poor knowledge for reverse logistics adoption as well as the optimization of reverse logistics adoption to enhance firm performance (Govindan & Bouzon,2018). Moreover, studies shows that reverse logistics adoption and emphasis on re-manufacturing operation has a positive relation with firms' performance as it helps to save the energy used for the manufacturing of the new parts and this method also help to save the cost (Bag & Gupta, 2019). Green human resource management is a positive way of handling human resource as employees become satisfied and healthier (Mushtaq, Asim & Salman, 2021).

Corporate social responsibility adoption is driven by a variety of factors. For example, the Business Roundtable recently announced that a corporation's objective is to create value for all stakeholders, not just shareholders (Business Roundtable, 2019). The supply chain has a big impact on how well a firm performance. As a result, the integration of corporate social responsibility into supply chains is critical (Modak, 2020). For corporate social responsibility commitment, coordinated efforts and training programs required by firms' towards environment innovation adoption. Corporate social responsibility is a legal obligation imposed on businesses by society in order to improve performance in areas such as the environment, the economy, employee well-being, ethical business development, and the firm's planning and operations, which all contribute to the firm's positive image in front of all stake holders point of view. Corporate social responsibility activities are linked to a company's success and Human Resource Management, therefore when smart human resource management policies are in place, corporate social responsibility policies will be stronger (Sarvaiya , Eweje & Arrowsmith, 2018). Furthermore, despite the fact that corporate social responsibility has been around for a long time, it has been claimed that it is not prosperous rather it has been claimed that delivering shared gain is a wiser choice technique for addressing social concerns (Porter & Kramer, 2019). Firms reputation increases in front of all

stake holders once involved in corporate social responsibility actively (Martinez, Soto & Palacios, 2017). corporate social responsibility also enhances the firm's reputation in front of all stake holders (Zada, 2019), employee commitment grows significantly (Malik, Yukun & Khan, 2020), and the combination of financial and productive performance improves (Rodriguez, 2016). Firms can only achieve long-term success if all stakeholders' interests are taken into account. Issues regarding the firms' ethical and moral side do not seem to have been comprehensively included in the supply chain (Pullman et al., 2009). A few researchers expressed that sustainable supply chain activities are "well planned initiatives, that also take into account, side by side, the goals of social responsibility and firm performance, become instrumental to result in improved financial performance" (Govindan et al., 2014). Current research on reverse logistics adoption has mostly focused on the economic and environmental aspects of long-term sustainability – social context has yet to be thoroughly investigated. In developing economies, corporate social responsibility, have gotten less attentions where there are more ecological challenges and environmental management issues thus there is a huge need to focus on sustainability issues to help to reduce the problems (Anwar et al., 2020). To find out the influence of corporate social responsibility on green human resource management and reverse logistics adoption, the corporate social responsibility has been included in this study. Therefore, the scope of this investigation is concentrated on the factors like green human resource management, corporate social responsibility and reverse logistics adoption that affect the performance of the firm with specific emphasis on the Telecom sector of Pakistan.

The telecommunication industry is now adopting a "Green Policy" for the supply chain solutions. As a result, the industry is exerting more efforts in management and adoption of reverse logistics. The industry's focus is to attain environmental benefits by remanufacturing electronics equipment and reselling the same to customers rather than using new equipment (Goldey et al., 2010). This simply shows the concern of telecommunication industry towards the adoption of reverse logistics keeping in view the current situation. Pakistan's telecom sector is the country's fastest growing and most important economic engine. At present, Pakistan's telecommunications sector has become a major topic because of foreign investment, active GST and tax payer industry, and the provision of well-paid employment

opportunities in cities and remote areas. In Pakistan, the telecom industry is in its early stages of development, and it is necessary to hire the right people for the right job in order to measure employee loyalty and increase shareholder value. For this, Innovative and current human resource methods must be implemented. Pakistan's telecom sector has contributed to the country's GDP in recent years, which is good news for the mobile business. Telenor, Zong, Warid, Ufone, and Mobilink are the leading telecommunications companies in Pakistan, with a large market share (<http://www.pta.gov.pk>).

Human resource management strategies, according to studies, have a positive impact on employee performance in Pakistan's telecom business (Sultana et al., 2012). Another study on Pakistani enterprises suggests that green human resource management helps people achieve superior knowledge and skills. As a result, firms may now create high profits (Cheema et al., 2015). In Pakistan, the paradigm of green human resource management is still in its infancy. According to Bhutto (2016) organizations in Pakistan have begun to recognize the importance of green human resource management practices and have started to integrate their strategic goals to environmentally friendly human resource practices. These businesses are concerned about waste management, recycling, and the use of environmentally friendly products.

Reverse logistics adoption activities need to be prioritize by Pakistani government due to following indicators: environmental policy implementation (Policy and Regulations-Solid Waste Management Pakistan 2010); Waste and Hazardous Substances Rules, 2016 under Sections 13 and 14 of environmental protection Act,1997 ; Hazardous Substances Rules (2003); monetary issues; sustainable marketing development; societal context; and complexity of reclaiming used products. Pakistan's industrial and logistics enterprises, on the other hand, are experiencing difficulties in their operations due to an absence of logistics structure. As a result, experts must investigate this hot topic in order to identify and verify obstacles to reverse logistics adoption through research (Waqas, 2021). Reverse logistics adoption is still in its adolescence in poor countries like Pakistan. Despite the fact that reverse logistics adoption is a crucial part of the supply chain, experts say the absence of research in developing countries is unsurprising. On a list of countries most vulnerable to global warming, Pakistan is ranked seventh and this is a main alarm by the Pakistan environment

protection agency. Production of 20 million tons of solid waste each year contributes significantly to environmental damage, with a 2.4 percent yearly growth rate. Unluckily, reverse logistics adoption has not yet been scrutinized in Pakistan and Environmental contamination is still a big concern around the world.

In Pakistan, corporate social responsibility is a relatively new concept. It doesn't rule out the idea of helping or doing charity work. For a long time, some people and businesses have been involved in these types of scenarios. On the other hand, the current concept of Corporate social responsibility and its initiatives are a relatively new addition to socioeconomic development. Recently, a story was published in the Tribune, 2012. In Pakistan, there is limited official encouragement for corporate social responsibility; hence many companies undertake it on their own (Qazi et al., 2015). The telecom industry, like other large and developing industries in Pakistan, is leveraging corporate social responsibility by allocating a significant portion of its profits towards social welfare activities. The government has benefited from major telecom companies' generous initiatives in disaster relief, poor education, and assistance in the elimination of child labour, among other things (Hassan, 2017).

Therefore, the scope of this research is concentrated on the factors like green human resource management, corporate social responsibility and reverse logistics adoption that affect the performance of the firm with specific emphasis on the Telecom sector of Pakistan. The design of this study is composed of two theories: Resource-based and Institutional theory. According to resource-based, firms have a wide variety of resources, but they can acquire an edge over its competitors by emphasizing on resource sets that are exceptional, inimitable, and valuable. Resource based view theory lays a high emphasis on a company's internal capabilities so human resource practices can use this perspective to develop distinct core competencies, insights, and innovation strategies in the human resource base of a company. As a result, the resource based aids human resource managers in spreading the idea that people are the key source of competitive advantage for their companies (Browning et al., 2009) same as reverse logistics adoption in the firm can only be successful by making environmental friendly policies and make investment in necessary equipment and training. Competitive advantage by adoption of reverse logistics would lead to increase the firm profit

and the lack of resource commitment to Reverse logistics adoption is one of the biggest challenges for developing the successful return policies. Institutional theory supports the proposed study because institutional variables help corporations keep their procedures transparent and in line with international norms and corporate social responsibility. The plans, regulations, customs, and routines of various recognized institutions become authoritative standards for overall process refinement of enterprises, and firms might gain a competitive advantage. Institutional theory provides a solid framework for understanding the factors that influence human resource management and reverse logistics adoption strategies, stating that not all actions are the outcome of rational decision-making focused on a company's objectives and that certain are the result of outer inspiration.

1.2. Research Gap/Rationale

Human resource practices unified with environmental aims to adopt green human resource management (Jabbour et al., 2019). The authors offer an integrated framework and establish a link between green human resource management and green supply chain management, paving the path for future cross-disciplinary research (Jabbour and de Sousa Jabbour, 2016). However, there are few studies that describe how green Human Resource Management may help supply chain managers in supply chain department, to deal with their most important problems regarding reverse logistics adoption and remanufacturing operations (Bag & Gupta, 2019).

It is commonly known that successful reverse logistics adoption helps firm to save money while simultaneously providing excellent service to their clients (Vlachos, 2016). It is however, required to understand to what extent the reverse logistics adoption lead to firm's performance, but that is difficult for little theoretical support and limited empirical data is available. Furthermore, Researchers have focused on corporate social responsibility for reverse logistics adoption because they have more advantage in the supply chain to enhance

or harm social conditions. In supply chain management, most academics have emphasized on environmental and economic factors while social dimension analysis is limited (Arslan, 2020). In addition, the study of social aspect of sustainability related to adoption of reverse logistics is also limited (Banihashemi, Jiangang & PegyRangan, 2019).

This research addressed a deficiency in the current literature and as a result, broadens the knowledge base in this field that is reverse logistics adoption with specific focus on the telecom sector of Pakistan. The study used the institutional theory and Resource Based view theory framework, which supports the proposed research to test whether the green human resource management can play a role of competitive advantage and assist in the adoption of reverse logistics to improve the performance. Therefore, the goal of this research article was to conduct a thorough examination of the processes in order to evaluate green human resource management impact on performance through the mediating role of reverse logistics adoption and moderating role of corporate social responsibility.

1.3. Problem Statement

The changing climate has caused environmental problems resulting in great challenges. In order to tackle such challenges the organizations are making efforts to have as little impact as possible to the climate/environment. Reverse logistics is considered important by firms for handling the returned / unsold and damaged products but many firms failed to give importance to reverse logistics adoption within their own internal value chain and it is overlooked (Vlachos, 2016). The major issues faced by firm related to reverse logistics adoption as mentioned by Hall et al., (2013) relate to inbound and outbound problems in handling of dismantled and or damaged machineries / equipment from sites to warehouses or to the final destinations and their proper disposal. The other challenges faced by firms are the need to follow the government rules and regulations related to reverse logistics adoption, and for companies whose infrastructures are not strong enough, or they don't have the legal

awareness, or during the stages of developing the reverse logistics adoption, they find it difficult to bring reverse logistics adoption into conformity with the related rules and regulations. Furthermore, numerous constraints have influenced the organizations' for reverse logistics adoption. However, overcoming these obstacles is difficult (Abdulrahman, Gunasekaran & Subramanian, 2014).

Another major challenge for firms adopting reverse logistics is an unskilled workforce and an absence of training. The intensity of human resources has risen to a point where it is quite challenging. There is currently a greater need for trained staff in every firm (Manzoor et al., 2019). The untrained staff do not have the knowledge of how to handle the disposal material and this leads to the reverse logistics adoption process being slow as well as not following all HSSE (health, safety, security, and environment) standards and practices. As a result, the firm may face health and safety problems and a lack of corporate social responsibility commitment. Most of the problems mainly relate to the human factor and the inaccessibility of green human resource management (Matsumoto et al., 2016). Furthermore, firms are facing pressures from society to obey their social responsibilities otherwise, they will face boycott of international investors concerned with such problems. Firms will also face the problem of low reputation in front of all stake holders (Zada, 2019). Users, purchasers, and personnel are more inclined to penalize corporations with their own power that do not share their ethics as demand for socially responsible corporations grows (Investopedia, 2012). So many challenges related to reverse logistics adoption are related to human resource management and pressure from the society. However, in the presence of corporate social responsibility, there is need to study that how green human resource management can handle rising issues in reverse logistics adoptions.

The present study aimed to incorporate green Human Resource Management and operation management (reverse logistics) with the moderating effect of corporate social responsibility. The telecom industry is primarily concentrated on forward logistics, and as a result, reverse logistics adoption is often overlooked. In reverse logistics adoption, the telecom sector has experienced big issues. These are divided into two main categories: inbound and outbound challenges. High costs, poor contracts, client specifications, disposal of outdated items, identification and categorization of returned products, and strict import and

export legislation are some of the concerns highlighted in inbound obstacles. The outbound obstacles include complicated logistical issues, high costs, and social pressures to follow the behaviour in a socially responsible manner. Firms are under pressure from the Environment Protection Authority to follow the reverse logistics adoption, which is environmentally friendly as well as beneficial to the social context. This study is beneficial for the telecom sector, which can develop and revise policies based upon the results of this study.

1.4. Research Questions

The following are the questions that are motivating the current research study:

- Q1. What is the effect of green human resource management on firm performance?
- Q2. What is the effect of green human resource management on firm performance under the mediating effect of reverse logistics adoption?
- Q3. What is the effect of green human resource management on Reverse logistics adoption under the moderating effect of corporate social responsibility?

1.5. Research Objectives

- 1. To investigate the effect of green human resource management on firm performance
- 2. To investigate the mediating effect of reverse logistics adoption on green human resource management and firm performance
- 3. To investigate the moderating effect of corporate social responsibility on green human resource management and reverse logistics adoption.

1.6. Significance of the Study

This study aims to combine green human resource management and reverse logistics adoption under corporate social responsibility. It is crucial to learn if green initiatives are like reverse logistics adoption. Adoption does matter for a firm's success. The existing studies reflect that green practices have importance for many reasons, but basically, employees want their supervisors to make decisions that are environmentally friendly, and of course, that may have a positive impact on the under-mentioned three issues (Jabbour et al., 2016; Jabbour et al., 2019). It is imperative that the activities involved in business should involve all resources carefully, with a focus on a reduction in the utilization of resources taken from the environment, also making possible the reusing and recycling of resources to optimum levels. The practices of green human resource management simply make the workers satisfied, as well as attract the attention of a potentially skilled workforce and retain the brilliant and creative-minded people in the firm (Halawi, Ali & Zaraket, 2018).

Reverse logistics adoption is considered a limited part of a firm's performance, yet has its importance in inviting market managers to return goods or raw materials to manufacturers in order to preserve consistency. Collaborating manufacturing and distribution activities have been carried out. Operational stops were eliminated because of cash shortages, and critical policies were developed, as well as the structure, framework, and procedures to make use of returned products and goods to minimize total expenses (Najafizadeh & Kazemi, 2019). Moreover, reverse logistics may end up causing improvements in future products or even new product designs by taking into account the feedback received from customers and the knowledge attained by studying the reasons that caused product failure or its return (Aitken & Harrison, 2013).

Reverse logistics adoption is a multifaceted progression that involves different business methods like the implementation of an effective set of standards, in collaboration with human resource management and operation teams, selecting true partners in the supply chain and local service providers and warehousing, and entering into contracts with them. An important area pertains to the procurement of core and used products for refurbishment and re-manufacturing. There is more in regard to quality assurance and assessments (Lambert et al., 2011). Firms come across many difficulties in both reverse logistics adoption and

remanufacturing. Such difficulties, as recognized by Hall et al. (2013) are further categorized under inward difficulties (disposition of used products, poor contracts, difficulties in management of transportation, expensive products, non-availability of good guidance, end-consumers' misuses, customer requirements, complex and rigorous import and export rules and regulations, obstacles in developing standards to promote reverse logistics, identification and categorization of returned products, invisible marks and numbers) and outward difficulties (multifaceted outward logistics and higher costs). These days, firms are deemed to act with responsibility for the environment and society. As Hubbard (2009) maintained that about seventy five percent of major international firms are pressurized to think about sustainability problems and to build up non-financial procedures of performance in addition to traditional ones. Iqbal et al., (2018) proposed a positive connection between environmental sustainability of firm and employees' green behavior. Teixeira et al., (2016) added considerably in the field of sustainable and long term progression and revealed that human resources demonstrate the main role in sustainability of firms. Literature reflects the bondage between human resource management and sustainable development in firms (Kuo, 2011).

The current study added value to the telecom sector as it is one of the largest sectors in Pakistan and has a majority of equipment that is hazardous to the environment if not handled properly. Therefore, the application of reverse logistics adoption has become important in this field to reduce environmental impact and gain maximum benefits from dismantled equipment. This research first explored the relationship between green human resource management and the performance of the firm through the mediating role of reverse logistics adoption and provides insight into the performance outcomes after implementing green human resource management techniques. It is supported by green human resource management and reverse logistics literature. Secondly, using the moderating role of corporate social responsibility for measuring the relations between green human resource management and reverse logistics adoption up to that level where businesses are socially responsible to meet ethical, economic, and legal responsibilities entrusted to them by shareholders, this study gives insight into the performance outcomes. Thirdly, this study can play a vital role in guiding senior managers to establish and introduce effective reverse logistics adoption operations in their companies, which can bring significant outcomes to the industry. The findings of this study will be valuable not only for scholars but also for supply chain managers and telecom business

professionals. Moreover, this study is also intended to lead to the improvement of the Pakistani telecom industry. Finally, while the vast majority of studies on green human resource management approaches were undertaken in developed countries, as the study is being done in a developing country like Pakistan, scholars, industry managers, and suppliers will gain even more.

CHAPTER 2:

LITERATURE REVIEW/ THEORETICAL FRAMEWORK

Concepts and Definition

2.1 Green Human Resource Management

Green human resource management is a new idea that aims to influence employee green workplace behavior (Dumont, Shen, & Deng, 2017). Green human resources management includes green selection and recruitment green training, green rewards and green appraisal evaluation (Malik et al., 2021). Green human resource management concentrates on the values related to the environment in their different processes of human resource management. That includes employee selection, appraisal, policies related to training and development of employees, compensation and benefits (bin saeed et al., 2018). The process of hiring individuals who have a competitive advantage in the form of green skills and are committed to the development of economic value could aid in the reverse logistics adoption as well (Longoni et al., 2018). The literature fights with a different cause and says that for a circular economy green human resources must be paused (Jabbour et al., 2019). There is positive relationship has been observed on sustainability with green trainings and green human resource development (Zaid, Jaaron, & Bon, 2018). The firm economic development is related to the green recruitment. The influence of green human resource management is

abundant on the personnel as it make workers more enthusiastic and engaged as they help the firm to generate great profits (Longoni et al., 2018).

The green team need to take care every aspect of the project with relation to environment benefits and works to increase the sustainability performance (Mangla, Govindan, & Luthra, 2016) . It was shown that green human resource management is important in reverse logistics adoption and could bring significant economic benefits to firms. The firms are paying attention to the significance of human aspects and are further involving human resources in product development that is ecologically friendly and introducing advance practices in response to environmental changes. Environmental management is the responsibility of Green Human Resource Management. It develops a green workforce and an ecofriendly culture within the firm. When a company's environmental concerns and human resource objectives are aligned, this is related to green human resource management (Yong et al., 2020). One of researcher has expressed that there is a relationship between sustainable development in organisations and human resource management. The researchers emphasized that the firms, in order to achieve the sustainability in supply chain management particular in reverse logistics adoption, must employ green practices and green human resources. Companies need to pay attention to improve and develop the green human resource management system to provide green work environment to the employees (Yong, Yusliza, Ramayah, & Fawehinmi, 2019) so that the employees' workplace culture is more safe and hygienic (Yusoff, 2016). Acquah et al. (2020) found that there is relationship between green human resource management and green supply chain management which results in great operational performance and ultimately result in market performance, environmental performance, monetary efficiency, and societal efficiency. As per one study of green human resource management in Pakistan's telecom sector, it reveals that employee adaptability may be strengthened through four major areas of human resource practices: job fit, knowledge exchange and mobility inside of a firm, employee perks (both financial and none), and green practices and an ecofriendly culture with in firm. According to the findings, there is a significant connection between employee adaptability and the green human resource policies related to these major areas of human resource (khan et al.,2019).Therefore this study indicates that there is strong connection among green human resource and green supply chain management so it can improve business sustainability (business, environmental, and social performance).

2.2 Firm performance

Firms who are making the green recruitment and selection for employees and keep retaining the green human resource, having better firm performance rather than the firms who are not involving green practices (Bag & Gupta, 2019) if the company do not make themselves upgraded as per global requirement, the firm will eventually lose the strategic lead and will perish in the long haul (Bag & Gupta, 2019; Kirchherr, Reike, & Hekkert, 2017). Green human resource management, corporate social responsibility practices enhance the firm sustainable performance (Malik et al., 2021). The human resource dimension plays a key role in managing the overall performance of a business while concentrating on several activities for business growth (Gardas, 2019). Furthermore, as per the finding of research demonstrates that the green training has a positive impact of firm performance (Malik et al., 2021). And firms must need to adopt the green practices in their operations to bring the sustainability by using their resources and capabilities so that competitive advantage can be achieved and firm performance as a result can be improved (Waqas, 2021). Different reverse logistics adoption activities may have an impact on expenses and, as a result, on the firm's performance (Vlachos, 2016). Researchers have long been interested in measuring the performance of systems and programs for reverse logistics adoption (Li, Wang, Jiang & Kim, 2017). Previous study indicates that reverse logistics adoption processes should be regulated to ensure that advantages are obtained (e.g. reduced costs, increased revenues, improved customer satisfaction) (Genchev et al., 2011). The more successful reverse logistics adoption is, the better the performance as well as green human capital is also a great method to manage human resources because workers are happier and healthier also improve the supply chain performance (Gupta et al., 2018). Environmental human resource managements improve firm efficiency expressively (Jabbour, Neto, Gobbo, de Souza Ribeiro, and de Sousa Jabbour, 2015). To increase the firm performance a strategic decision need to be taken with in the organization to develop the Reverse logistics adoption and network. And the aim of this strategic decision is to fulfill the single or multiple goal of reduction in cost, profit maximization, loyalty to consumer and environmental friendly policies (Li et al., 2017; Marchi, Zanoni, Zavanella, & Jaber, 2019)

2.3 Reverse Logistics Adoption

Reverse logistics is the process of handling the products and services that is being returned by the customers and having the objective of worth creation by re-use, recycle or properly disposition process by considering the aspect of cost minimization and environment protection (Govindan and Bouzon 2018). After forward logistics stops, RL processes begin. The primary process in the RL design is to gather used products from the final user. Despite their increasing merits, RL approaches are seen as an additional charge obligation on firms in most underdeveloped nations (Ali, 2021). The Reverse Logistics adoption includes many activities, like disposal management, Recycling, Repair, reuse, reprocessing, Recovering of material, and designing network of reverse logistics which will support the firms to transfer their opportunities in to the profit (Wang et al., 2019). Therefore, the reverse logistics adoption have more power and opportunities to increase the performance of reverse logistics and ultimately the firm economic and environmental performance increases (Waqas, 2021)

Agrawal, Rajesh and Murtaza (2016) also pointed the difficulties for adoption of reverse Logistics with respect to firm environmental and technical aspects. So it is very important to adopt efficient reverse logistics network so that sustainability can be improved and the firm can get the competitive advantage over competitors. The processes of reverse logistics adoption are complex and involve the processes start from the right set of standards involving Human Resource Department, marketing department, prequalification and selection of quality supplier. The procurement as strategic for core components, contracting with logistics service provider and business partners, receiving of old/faulty material, transportation, storage, segregation for reusing, reselling or recycling purpose and then dispose of by keeping environmental and social concerns and finally measuring the overall performance of whole process (Alkahtani et al., 2021). The study showed that if firms have the efficient reverse logistics adoption network then it would help the firms to save money and increase the customer satisfaction on (Vlachos, 2016). Firms encounter numerous problems in implementing reverse logistics and carrying out re-processing. Complications revealed by Hall et al., (2013) are separated as inbound and out bound dilemmas. Inbound challenges related to poor quality contracts, transportation issues and tariff rates, no proper guidance of handling the old/dismantled equipment, lack of information regarding data, wrong customer

feedback, import and export rules and customs complications, issues regarding the classification of dismantled and old equipment etc. Inbound challenges are, the dispose of processes of dismantled products or old products and the challenges related to outbound are logistics, and the cost. The more successful reverse logistics adoption is, the better the performance.

Previous research has shown that reverse logistics adoption is critical when considering the firm's environmental impact. It is an important factor of new environmental concepts like the green supply chain, circular economy, and green economy. The processes involved in reverse logistics help to the mitigation of ecological concerns related to depletion of resources and the waste generation and significantly result in resource use efficiency and reduction of waste. Östlin, Sundin and Björkman (2009) have shown that reverse logistics adoption are valuable for firms, because it not only allows reuse of equipment, but also saves huge energy and financial resources.

2.4 Corporate Social Responsibility

Corporate social responsibility is term that refers to a firm's social responsibilities. Rangan et al. (2015) claimed that Firms can fulfill their corporate social responsibility duties by streamlining their core business and reorganizing operations to assist society's most vulnerable members (Arslan, 2020). In the presence of above trends in reverse logistics, there is a continuous pressure on companies are under pressure to prioritize reverse logistics more strategically rather than operationally. Karaman et al., (2020) have shown that reverse logistics is being explored more importantly as many firms started adopting this process as a strategic support for economic advantages and the making good corporate social image among stakeholders. It is also found that businesses have the requirement to be socially responsible for environmental protections by stakeholders/manufactures/government agencies. Therefore, the firms are focussing on the social aspect of the reverse logistics and it is reported by various researchers that the firm show their good commitment to corporate socially responsibility if they adopt the reverse logistics activities and it will increase the firm

performance also. Arslan (2020) demonstrated that with the development of globalization, researchers are giving more attention to corporate social responsibility for SCM and in the last decade, it has become a more important issue, particular reverse logistics for multinational firm, because they have a larger role in improving or deteriorating social issues in supply chains. (SC). In addition, the social aspect of sustainability related to adoption of reverse logistics is often overlooked (Banihashemi, Jiangang & PegyRangan, 2019).

2.5 Theoretical Reflection

The design of this study is supported by two theories; one is RBV, i.e. The Resource based theory and the other is Institutional theory.

2.5.1 Resource Based View Theory (RBV)

The theory of resource based view was first proposed in the 1990s mid and Edith was the researcher who investigates the concept of resources as a source of competitive advantage. Further conception is later designed as observed in the study of Rubin (1973), Wernerfelt (1984) and Barney (1986). Companies have a variety of resources, but they can gain a competitive advantage by concentrating on assets that are exceptional, special, and powerful (Barney, 2001; Barney and Clark, 2007). RBV has been used in scholarly investigation on Strategic HRM before. (Wright et al., 2001). Colbert, (2004) has articulated the contingency perspective in the area of human resource processes. The efficacy of human resource management approaches is the degree to which they integrate with other aspects of the firm (Colbert, 2004). This notion is employed in other functions besides human resources, such as supply chain management and operations (Gupta et al., 2018).

SCM activities are viewed as a supplementary resource, according to the review, and Manufacturing and production analytics are reliant on the framework (Chae et al., 2014). It not only allows for cost savings, but it also allows for strategic flexibility. Also, Roininen (2008) stated that the resource-based view focuses on creating a competitive advantage through the inventive application of valuable resources in the firm's development processes. Tracing back the firm's assets and internal resources that have been owned by the firm can effectively differentiate the firm's performance and firm can get the competitive advantage over their competitors. Similar reverse logistics, resources have been defined as productive assets that can assist businesses in achieving their major business goals and improving future performance as well as to get the competitive advantage over their competitors, RBV theory basically concentrate on the resources available to the firm, and how best to use those resources to produce the greatest possible results. This idea also emphasizes that by successfully utilizing resources, any business can gain a competitive advantage over its competitors and this theory will help to evaluate the firm performance in the telecom sector of Pakistan.

2.5.2 Institutional Theory

Factors from outside Firms' tactics and decision-making are influenced by social, government, and economic factors (Jennings & Zandbergen, 1995). External pressure groups influence reverse logistics to assist firms in developing environmentally friendly reverse logistics strategies while adhering to government regulations. Changes in cultural attitudes, technological advancements, and regulation all impact decisions concerning environmentally friendly activities, according to Institutional Theory (Ball & Craig, 2010) and management of the environment (Tate et al., 2010). Institutional Theory is used to examine how Firm mold themselves for society welfare and they do efforts for the society welfare. The society have the pressure groups and they align the firms automatically and not accepts the goods and services until unless the firms not aligned for the welfare of society. Institutions are the pressure groups and guiding factors and help out to come to improvement by abiding the

rules. The firms once achieved their desired goals then and work out for society welfare and help them then it became institution. The reverse logistics process is governed by a variety of influential, social, and regulatory elements and ensure that these procedures comply with international standards, particular reverse logistics in terms of the environment and social context.

The proposed study are supported by institutional theory because these institutional variables assist firms keep their processes transparent and in accordance with international norms and corporate social responsibility. Various renowned institutions' schemes, rules, conventions, and routines become established as authoritative standards for overall process refinement of firms and the firms can get the competitive advantage. The Model mentioned in diagram 1 evaluates the relationship and determine whether green human resource management can be used to get the competitive advantage over competitors in telecom sector of Pakistan as well as the study will also try to test that whether the Green human resource management can play a role of competitive advantage and assist in the implementation of reverse logistics to improve the performance. Therefore, the proposed model defines the relationship between Green human resource management and firm performance through the mediating role of Reverse logistics adoption and moderating effect of corporate social responsibility.

2.6 Hypothesis Development

To achieve green human resource management, human resource practices are matched with environmental concerns (Jabbour et al., 2019). As the focus of firms' business strategies is shifting and emphasis is being given on a program, which gives more attention to environment, operations of HR must adapt to the change and environmental management must be incorporated by enhancing the scope and making it one of a core HR functions. Therefore, efforts by the firms are required on Green Human Resource Management and for adoption of Reverse, logistics focus and develop Green Capital and make reverse logistics

adoption more efficient. Green human resource management focusing on sustainability Program benefits firms to a large extent by ensuring the availability of competent staff to proper reverse logistics operate the programs (wamba et al., 2017). Therefore, the hypothesis for this study is:

H1. Green human resource management is positively related to Firm Performance

Jabbour et al., (2016) recognized several human related obstructions to reverse logistics adoption, including an availability of appropriate employee engagement, an inadequately qualified workforce, and a limitation of reverse logistics training and education.. As the focus of firms' business strategies is shifting and emphasis being given on a program, which gives more attention to environment, operations of human resource management must adapt to the change and environmental management must be incorporated by enhancing the scope and making it one of a core HR functions. Therefore, efforts by the firms are required on management of green human resource management for adoption of reverse logistics and make reverse logistics processes more efficient. It is reported that Green human resource management can help to achieve better productivity and reduced expenses within operations, reduction and elimination of ecological wastage and reuse of human resource processes. The emphasis on human factor has gained importance due to its role in appropriate management of environmental problems that could result in achieving sustainability and reverse logistics adoption (Zaid et al., 2018). According to a recent study, firm's long-term profitability has a direct impact on green human resources (Zaid et al., 2018).

Reverse logistics adoption as a conventional mode of green manufacturing is a significant approach of reforming and upgrading the Telecom sector. In order to meet environmental goals, Pakistan's telecom industry and related sectors are focusing on environmentally friendly reverse logistic processes. The greening of Pakistan's telecommunications sector will allow the country to compete with global businesses. This will considerably increase firm growth. . However, effective reverse logistics adoption is a vital problem, and countless constraints must be monitored and dealt with appropriately (Naseem et al., 2021)

Various studies have given high attention to and stressed the role of green human resource management for the growth of reverse logistics adoption. For instance, Acquah,

Agyabeng-Mensah and Afum (2020) stated that the human resource management has been critical to the development of the supply chain and the effective and efficient execution of reverse logistics adoption. Similar reverse logistics has also been acknowledged as a driving element in the supply chain in achieving green production. (Yong et al., 2019).

For managing reverse logistics, green human resource management evaluate the environment and make wise management decisions that directly improve sustainability initiatives. (Hall et al., 2013; Mangla et al., 2016). Reverse logistics is of immense importance to any firm; Firms must successfully manage the reverse logistics cycle in the era of the circular economy, which includes processes such as stock selection, collecting, sorting, inventory management, transportation modes, refurbishment, and remanufacturing (Bag and Gupta, 2019). Studies have shown that there is better connection of reverse logistics innovation with economic and environmental performance (Huang and Yang, 2014) and reverse logistics competences are positively related with firms' efficiency (Vlachos, 2016). Reverse logistics improves the firm's performance by lowering costs and minimizing expenses (Najafizadeh and Kazem, 2019). So it is hypothesized that if there is trained green human resource, the reverse logistics adoption success will be higher and automatically will have the positive effect on firm performance. Therefore, this study hypothesizes that:

H2. Reverse logistics adoption mediates the relationship between green human resource management and Firm Performance

It is the social responsibility of businesses to meet legal, moral and economic requirements of shareholders known as corporate social responsibility (Nik & Sabariah, 2014). Green human resource management is a concept that aims to impact green workplace behavior among employees. Green human resource management has a positive relationship with a firm's economic growth (Salem, Hasnan, & Osman, 2012). Green human resource management plays a key role in the development of highly inspired and devoted employees who contribute to a firm's economic value. (Longoni et al., 2018). According to various studies, businesses with strong green policies get profit from higher sales and brand awareness along with appropriate level of employee performance (Wee & Quazi, 2005; Yang, Hong, & Modi, 2011). Therefore, employees' actions must be in line with the changing environment and the green goals of firm (Ones & Dilchert, 2012).

With the increase in demand for corporations, which act in a socially responsible manner, there is a declining trend in investors, consumers and employees not do business with firms that do not have a moral code. For example, investors could boycott the firm's products or services; decline to invest in their stock when they come to know about a firm's negative policies regarding corporate social responsibility (Investopedia, 2012). Most of the small and medium companies give emphasis on financial sides only and do not look after the other two main aspects i.e. environmental and social sides. Green human resources deliberate from environmental point of view for handling reverse logistics adoption and improve firms' sustainability performance directly by making sensible management decisions (Mangla et al., 2016). Therefore, there is a huge pressure on firms today to respond in a socially responsible manner. It is hypothesized that reverse logistics adoption will improve by implementing green human resource in the presence of corporate social responsibility. Thus, the third hypothesis of this study is:

H3. Corporate social responsibility moderates the relationship between Green human resource management and Reverse logistics adoption

2.7 Research Model

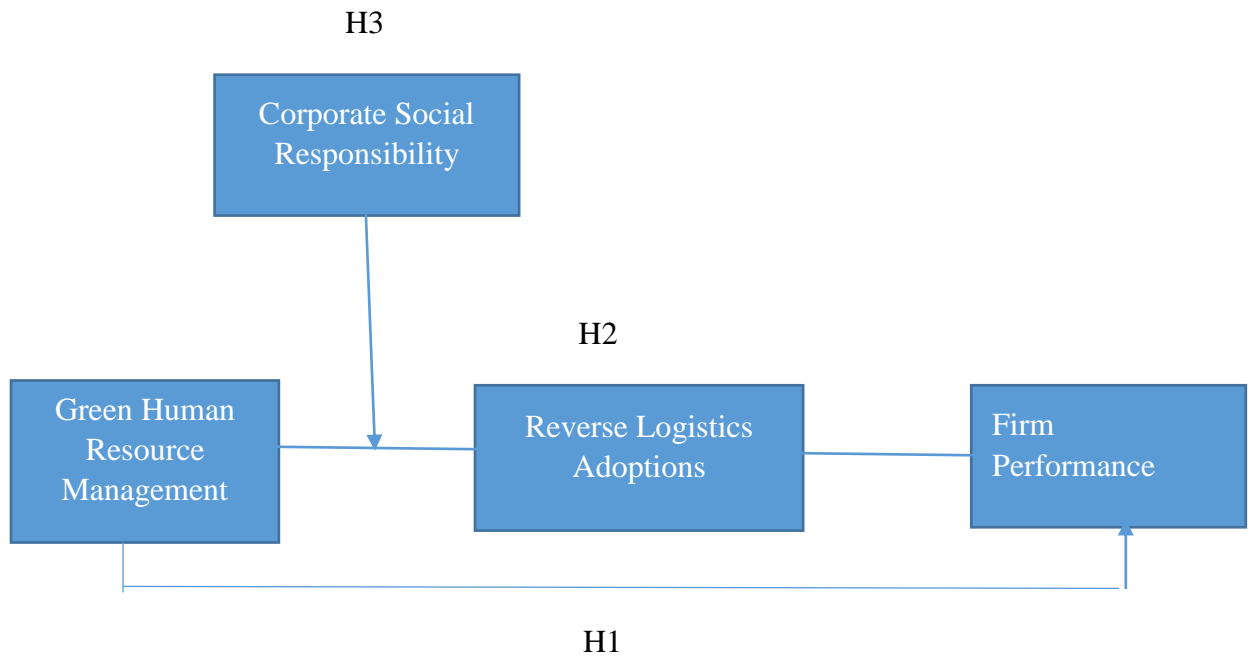


Figure 2.1: Research Model

CHAPTER 3:

RESEARCH METHODOLOGY

3.1 Research Philosophy

Positivism is a reliable philosophy that holds only "factual" information obtained from observation (the senses), including measurement. In positivism studies the researcher role is only limited to the data collection and then interpretation of the data collection in an objective way. In our current study, we also used data collection method to obtain the data from telecom industry of Pakistan and then used analytical techniques to interpret the results in an objective way. The telecom sector is one of the largest growing sectors in Pakistan. As the telecom sector is growing rapidly due to new innovations in technology day by day, the old equipment need to be replaced with the new one when the advance equipment arrive. This requires proper dismantling, handling of equipment from sites to warehouse and its proper disposal. Various steps are involved in this process. The sector is providing 5G services, network deployment services, customer pain points and network potential, end to end network deployment etc. Telecom equipment is installed at various sites to provide services to its customers.

In order to meet environmental goals, Pakistan's telecom industry and related sectors must establish environmentally friendly reverse logistic processes with due emphasis on corporate social responsibility. The greening of Pakistan's telecommunications sector will allow the country to compete with global businesses. This will considerably increase firm growth.

3.2 Research Strategy

Non-probability sampling techniques used to achieve the objectives of this research. Population characteristics and study objectives considered as priority for selecting samples. A list of senior supply chain professionals and HR professionals was made and their database maintained. The questionnaire was circulated online through goggle link as well as via emails for collection of data from professionals. Google form was created for quick and easy response of individuals as well as hard copies of questionnaire were also distributed in telecom sector by hand and via email to get the reasonable sample size. Data were collected from telecom operators and service providers from Rawalpindi and Islamabad from the professionals who are involved in reverse logistics processes and HR management. In telecom companies foreigners especially Chinese are also serving and they were also made a part of the sample population.

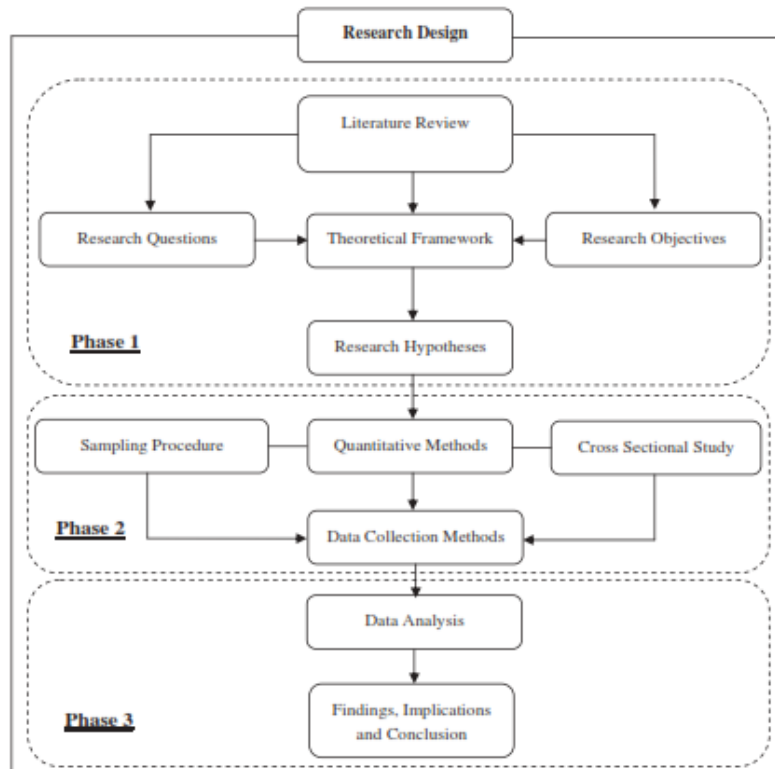


Figure 3.1: Research Design

3.3 Instrument Development/Adoption

The factors to be researched in this study have been derived from past literature to meet the current research context. The questionnaire has been set up in order to collect the required information for this research. A five-point Likert scale used to assess all of the items in the questionnaire. Following variables identified from literature sources used in the study:

Sr. No.	Variable	Number of Items	Source
1	Green Human Resource Management	6	Dumont,et al., (2017)
2	Firm Performance	9	Wamba et al., (2017)
3	Reverse logistics adoption	5	Hall et al., (2013), Mangla et al., (2016)
4	Corporate social responsibility	3	Malik et al. (2021)

The study was carried out by utilizing primary data obtained through questionnaires and online surveys. A preliminary survey instrument developed using the approach recommended by Dillman (2000) and Fanning (2005). The development of the survey instrument followed the guidelines from Malhotra and Grover (1998) for conducting survey research. Questionnaire circulated to relevant professionals working in different companies of telecom sector located at Rawalpindi and Islamabad.

3.3.1 Independent variable

The independent variable of this study is **green human resource management** and scale used to measure this is adopted from Dumont et al., (2017) titled as “Effects of Green HRM Practices on Employee Workplace Green Behavior”, Scale consists of 6 items..

3.3.2 Dependent Variable

Firm Performance is dependent variable in this study. Scale consisted of 9 items is adopted from Wamba et al., (2017) title as “Big data analytics and firm performance: Effects of dynamic capabilities”

3.3.3 Mediator

The mediator of this study is Reverse logistics Adoption. Questionnaire is adopted from Hall et al. (2013), titled as “Reverse logistics goals, metrics, and challenges: perspectives from industry” and Mangla et al., (2016) titled “Critical success factors for reverse logistics in Indian industries: A structural model”. Scale consists of 5 items.

3.3.4 Moderator

The moderator of this study is corporate social responsibility. Scale consisted of 3 items for corporate social responsibility questionnaire is adopted from Malik et al. (2021) titled as “CSR, Green Human Resources Management, and Sustainable Performance: Is Firms’ Citizenship Behavior towards Environment the Missing Link?”

3.4 Population and sampling

Telecom companies of Pakistan selected for collection of data. The telecom industry is very dynamic, with their own set of difficulties and hazards. telecom sector is one of the largest sector of Pakistan and have majority of equipment, which are hazardous to

environment if not handled properly. Therefore, application of reverse logistics adoption has become important in this field to reduce environmental impact and to gain maximum benefits from dismantled equipment. Pakistan has availability of the Raw materials and also have skilled human resource for further development of the telecom industry. In Pakistan, many telecom companies are operating. These companies are mainly of two types: vendors and operators. The major operators are jazz, Ptc1, Zong, Ufone and Telenor and major vendors are ZTE, Huawei, Nokia etc. Pakistan has already devised strategy towards protection of environment, and the environmental protection authority (EPA) is dedicated to the protection of human health and the environment. As a result, in order to meet environmental objectives, the telecom industry must promote environmentally friendly telecommunications products and services. The green attitude of Pakistan's telecom industry will provide a chance to compete in the international market and help to improve the business progression.

Data were collected from senior professionals involved in logistic processes, end to end handling of equipment and HR management. These professionals have extensive understanding of the subject. Online survey conducted to reach wider range of professionals and some responses were obtained through electronic email and by hand. Unit of analysis was individual supply chain professionals and HR professionals working at senior position in the telecom sector firms. The questionnaire was circulated to the respondents for their input and data was collected on selected parameters. Purposive sampling from non-probability sampling technique was used for collection of data. Due to lack of time, data was collected from telecom industry (especially telecom operators and telecom vendors) in major cities of Rawalpindi and Islamabad the Capital Territory Pakistan.

297 questionnaires have been distributed to companies in the Islamabad and Rawalpindi regions in order to achieve an appropriate response rate for this study, as all Pakistan's big telecom operators and service provider's head offices are located in Islamabad and Rawalpindi Regions, A total of 250 survey questionnaire were submitted. As a result, this study has an adequate response rate of 83 percent, making it suitable for analysis. (Bryman & Bell, 2015).

3.5 Data collection and analysis techniques

Purposive sampling from non-probability sampling technique was used for collection of data. Data were collected through online Google form and via email as well as in hard form. Data were analyzed using SPSS Software. Variance and reliability of data was checked by using SPSS software. Path coefficient and R^2 analysis was conducted for data analysis. Hypotheses were tested using correlation and regression analysis. Analysis of variance (ANOVA) was carried out to check the significance of differences. Sobel Test was also used to test the significance of mediation effect. AMOS software was also used for factor analysis.

Table 3.1: Detail of Response Rate

Name of Organization	No. of questionnaires distributed	No. of useable questionnaires received back	Response Rate
ZTE	75	70	93%
Huawei	40	33	83%
CMPak/Zong	35	30	86%
Jazz	30	25	83%
Telenor	25	20	80%
PTCL	35	30	86%
Ufone	32	25	78%
Edotco	10	7	70%
Nokia	15	10	67%
Total	297	250	84%

3.6 Research Ethics

The questionnaire begins with a specific message to ensure that respondents comprehend everything. That the information received from survey will not be used for commercial purpose and only used for research in academia. Furthermore, the respondents were assured that their personal information would not be divulged at any point during the

research process. The research is based on originally obtained data and no plagiarized information from other sources is used.

3.7 Schedule of Dissertation

Dissertation completion time (GANTT chart)

The study completed in 06 months duration. time line taken against activities as given below:

Task	M1	M2	M3	M4	M5	M6
Planning						
Research / Review of Literature						
Design						
Data Collection						
Data Analysis						
Thesis Report Writing						

CHAPTER 4:

DATA ANALYSIS/RESULTS/FINDINGS

Based on the responses from the respondents, an overall analysis of the respondent's firm was carried out. Given below is an analysis of data collected, followed by a summary of findings. In this Chapter, analysis of data is done by SPSS software. It helps in finding the mean, standard deviation, Cronbach's alpha, Pearson correlation and Regression analysis.

In Pakistan, many telecom companies are operating. These companies are mainly of two types: vendors and operators. For this thesis, the data were collected from the companies located in Islamabad and Rawalpindi regions, as all Pakistan's big telecom operators and service providers' head offices are located in Rawalpindi and Islamabad.

Common Method Bias

Various forms of statistical analysis have been employed in prior studies to discover Common Method Bias (CMB). The Harman one factor test was used to discover Common Method Bias in this study. The results are depicted below.

The Table 4.1 below demonstrates that the overall variance is 20.411%, which is below 50% therefore it specifies that no common method bias in this study.

4.1 Socio demographic characteristics of the Respondent

The demographic profile of the respondents is presented to provide an overview of their gender, age, gender, level of qualification and years of experience. The following tables 4.2, table 4.3, table 4.4 and table 4.5 shows the sociodemographic of the respondents.

Table 4. 1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.695	20.411	20.411	4.695	20.411	20.411
2	3.264	14.190	34.601			
3	2.901	12.615	47.216			
4	2.231	9.700	56.916			
5	2.030	8.826	65.742			
6	1.739	7.562	73.304			
7	1.239	5.388	78.691			
8	.960	4.173	82.864			
9	.755	3.283	86.147			
10	.613	2.666	88.813			
11	.489	2.128	90.940			
12	.403	1.753	92.693			
13	.295	1.281	93.974			
14	.280	1.219	95.194			
15	.223	.970	96.163			
16	.201	.875	97.038			
17	.181	.785	97.824			
18	.165	.716	98.540			
19	.130	.566	99.106			
20	.077	.333	99.439			
21	.053	.232	99.671			
22	.041	.178	99.849			
23	.035	.151	100.000			

Extraction Method: Principal Component Analysis.

4.1.1 Gender

Table 4.2 shows that the respondent comprised of 230 (92%) male and 20 (8%) female.

Table 4. 2: Sociodemographic Characteristics of the Participants

Sr. No.	Gender	No.	%
1	Men	230	92
2	Women	20	8
	Total	250	100

4.1.2 Age Group

The data shows that average age of respondents. Age group was further classified into categories. The categories and frequency in different categories shown in the Table 4.3 reveal that majority of the respondents in the study belonged to the age group 31-35 (96) and 41-50 (95) respectively.

Table 4. 3: Classification of Age Group of the Participants

Sr. No.	Gender	Age Group						Total
		20-25	26-30	31-35	36-40	41-50	51 and above	
1	Men	-	11	85	39	93	2	230
2	Women	-	6	11	1	2	-	20
	Total	-	17	96	40	95	2	250

4.1.3 Qualification Level

Table 4.4 shows the groups of respondents according to their qualification level. The results showed that the maximum number of participants were graduate (123) followed by 85 having Master Degree.

Table 4. 4: Qualification Level of the Participants

Sr. No.	Gender	Qualification					Total
		Under Graduate	Graduate	Masters	MS	Ph.D	
1	Men	30	122	70	7	1	230
2	Women		1	15	4	-	20
	Total	30	123	85	11	1	250

4.1.4 Professional Experience

The respondents were also classified based on their total professional experience. The professional experience is an important demographic variable and the senior professionals significantly affect day to day operations of the firms. It was observed that the majority of the respondents (232) were highly experienced having experience of more than 10 years (Table 4.5). This validates the responses as they are received from mid to senior level experts in their fields.

Table 4. 5: Professional Experience of the Participants

Sr. No.	Gender	Age Group					Total
		0-1	2-3	4-5	6-10	10 and above	
1	Men	-	-	-	6	14	20
2	Women	-	-	3	9	218	230
	Total	-	-	3	15	232	250

4.2 Descriptive Statistics

The data was investigated with SPSS software, and descriptive statistics for all four variables (Green Human Resource Management, Reverse Logistics Adoption, Firm Performance, and Corporate Social Responsibility) were revealed. The results of the attributes are combined together and the average is taken to get the score of the variables in each section, and the mean and standard deviation for each variable are generated for all cases.. These descriptive statistics are presented in the Table 4.6.

Descriptive Statistics shows that green human resource management mean value was 3.6567 with a variance of 0.046. The mean value of reverse logistics adoption was 3.9152 and variance of 0.074 while the mean value of corporate social responsibility was 3.638 with variance of 0.043. The mean value against firm performance was 3.793 and variance was 0.039.

Table 4. 6: Descriptive Statistics

	Mean	Std. Error	Std. Deviation	Variance	N
GHR	3.656	0.013	.213	0.046	250
RLA	3.915	0.017	0.273	0.074	250
CSR	3.638	0.013	0.221	0.043	250
FP	3.793	0.012	0.198	0.039	250

GHR = Green Human Resource Management, RLA = Reverse Logistics Adoption, CSR = Corporate Social Responsibility, FP = Firm Performance

4.3 Reliability Statistics

We have used Cronbach's Alpha test to test the reliability of the constructs. The results of the Alpha Reliability are presented in Table 4.7. The range of Cronbach's alpha in the present study is from 0.739 to 0.817. The results indicated that Cronbach's alpha for all the variables showed good level of reliability as suggested by researchers. According to the

Nunnally and Bernstein (1994), the Cronbach's value less than 0.7 is an unacceptable, but the Cronbach's value is in acceptable range if is greater than 0.7 and near to one is considered the best one and highly acceptable. In our case, the reliability of all the constructs is well above 0.7 and indicates good level of reliability.

Table 4. 7: Reliability Statistics

Latent Coefficient Variables	GHR	RLA	CSR	FP
Cronbach's alpha	0.817	0.739	0.783	.757

GHR = Green Human Resource Management, RLA = Reverse Logistics Adoption, CSR = Corporate Social Responsibility, FP = Firm Performance

4.4 Pearson Correlation Analysis

Inter correlations between the studied variables are calculated using most widely used Pearson correlation coefficient for analysis of critical attributes of service. Pearson correlation coefficient is preferred because it assumes that the two variables are measured on at least interval scales and it determines the extent to which values of the two variables are proportional to each other. The result of the Pearson's correlation for each hypothesis, which is a correlation matrix, are shown in Table 4.8.

4.4.1 Correlation Analysis between Green Human Resources and Firm Performance

The results show that there exist significant correlation between green human resource management and firm performance (0.841). This means that the change in one variable is strongly correlated with changes in the second variable as correlation coefficient is very close

to 1. This result affiliates with the hypothesis of this research that green human resource management have significant positive impact on firm performance

4.4.2 Correlations Analysis between Green Human Resource Management, Reverse Logistics adoption and Firm Performance

The Results presented in Table 4.8 revealed that there is a positive and significant correlation (0.841) between green human resource management and firm performance. Moreover, the correlation coefficient between green human resource management and reverse logistics adoption (0.640) and between reverse logistics adoption and firm performance (0.768) were also observed as positive and significant. It means that change in one variable effect the other variable significantly. And provide partial support for the acceptance of H2.

4.4.3 Correlation Analysis between Reverse Logistics, Green Human Resource Management, and Corporate Social Responsibility

The correlation between green human resource management and reverse logistics adoption was 0.640, while corporate social responsibility and reverse logistics adoption were positively correlated (0.692). The correlation coefficient between corporate social responsibility and green human resource management was significant and positive (0.708). The significant and positive correlation (0.931) was observed between green human resource management and interaction of green human resource management and corporate social responsibility. The combined effect of green human resource management*corporate social responsibility on reverse logistics adoption also expressed significant positive correlation (0.721) and provided partial support for the acceptance of H3.

Table 4. 8: Correlation Analysis

	GHR	RLA	FP	CSR	GHR*CSR
GHR	1				
RLA	.640**	1			
FP	.841**	.768**	1		
CSR	.708**	.692**	.906**	1	
GHR*CSR	0.931**	0.721**	0.940**	0.911**	1

** . Correlation is significant at the 0.01 level (2-tailed).

GHR: Green Human Resource Management, RLA :Reverse Logistics Adoption, FP: Firm Performance, CSR: Corporate Social Responsibility

4.5 Regression Analysis

Regression analysis was conducted to visualize the causal relationship between various variables. It is a technique to identify which variables have impact on the dependent variables. Regression analysis was used to test the relationship of following hypothesis, that either the relationship, which we have proposed in the study is significant or not.

4.6 Hypothesis 1: Relationship of Green Human Resource management with Firm Performance

4.6.1 Analysis of Variance (ANOVA)

Table 4.9 explains the ANOVA result of green human resource management and firm performance. The F value (599.143) and P value < 0.01 shows significant differences and depicts that the model is fit.

Table 4. 9: Analysis of Variance for Green human resource management and firm performance

Model	Sum Square	of df	Mean Square	F	Sig.
Regression	6.870	1	6.870	599.143	0.000
Residual	2.843	248	0.011		
Total	9.713	249			

- a. Predictor (Constant): Green Human Resource Management
- b. Dependent Variable: Firm Performance

4.6.2 Regression Analysis

The data presented in Table 4.10 showed that R^2 value for regression analysis between green human resource management and firm performance is 0.707. This means that effect of green human resource management causes 70.7% variance in our dependent variable firm performance. Similarly, the coefficient value also shows that a unit change in independent variable green human resource management will bring a 0.782 change in dependent variable firm performance. Furthermore, higher t values in regression analysis show that there is a significant difference among the variables. The t value of 24.477 shown in Table 4.10 indicated that the relationship between green human resource management and firm performance is significant.

Table 4. 10: Regression Analysis for Green Human Resource Management and Firm Performance

	B	β	T	Sig.	R²	ΔR²
(Constant)	.934					
Green Human Resource Management	.782	.841	24.477	.000	.707	.707

a. Dependent Variable: Firm Performance

The figure 4.5 presents the histogram of green human resource management and firm performance. It is clear from the figure that the data is centrally present in the bell shaped curve formation. This shows that the data is distributed normally. The Normal PP Plot of study variable, namely HR and FP is shown in the Figure 4.6. As shown from the figure, the data almost lies in the straight line, which indicates that the data is normally distributed. Thus, one of the basic assumptions of both simple and multiple regression is fulfilled.

4.7 Hypothesis 2: Reverse Logistics Adoption Mediates the Relationship between Green Human Resource Management, Reverse Logistics and Firm Performance

To test the mediation, we have used Baron and Kenny’s approach (Baron & Kenny, 1986) and Hayes process macro approach.

As per Baron’s steps of mediation analysis, we first checked whether the following three conditions are satisfaction, and then processed the analysis for mediation.

- 1) **Step-1:** Relationship between green human resource management (independent variable) and reverse logistics adoption (mediator)
- 2) **Step-2:** Relationship between reverse logistics adoption (mediator) and firm performance (dependent variable)

- 3) **Step-3:** Relationship between green human resource management (independent variable) and firm performance(dependent variable)

Step 1

4.7.1 Analysis of Variance (ANOVA)

Table 4.11 explains the ANOVA result for green human resource management and reverse logistics adoption. The results showed fitness of model as the F value (171.768) and P value < 0.01 shows significant differences

Table 4. 11: Analysis of Variance for Green Human Resource Management and Reverse Logistics Adoption

Model	Sum of Square	Df	Mean Square	F	Sig.
Regression	7.579	1	7.579	171.768	0.000 ^a
Residual	10.943	248	0.044		
Total	18.522	249			

- a. Predictor (Constant): HR
b. Dependent Variable: RLA

4.7.2 Regression Analysis

The results from table 4.12 shows a significant effect of green human resource management on reverse logistics adoption ($\beta=-0.640$, $t=-13.106$). The variance R^2 indicated that effect of green human resource management causes 40.9% variance in our dependent variable reverse logistics adoption. Similarly, the coefficient value also shows that a unit change in independent variable green human resource management will bring a 0.821 change in dependent variable reverse logistics adoption.

Table 4. 12: Regression Analysis for Green Human Resource Management and Reverse Logistics Adoption

	B	B	T	Sig.	R ²	ΔR ²
(Constant)	.912					
Green Human Resource Management	.821	.640	13.106	.000	.409	.409

a. Dependent Variable: Reverse Logistics adoption

Step 2

4.7.3 Analysis Of Variance

Table 4.13 explains the ANOVA result of reverse logistics adoption and firm performance. High F value (356.357) and P value < 0.01 showed significant differences and illustrates the fitness of model.

Table 4. 13: Analysis of Variance for Reverse Logistics Adoption and Firm Performance

Model	Sum Square	of Df	Mean Square	F	Sig.
Regression	5.727	1	5.727	356.357	0.000 ^a
Residual	3.986	248	0.016		
Total	9.713	249			

a. Predictor (Constant): Reverse Logistics Adoption

b. Dependent Variable: Firm Performance

4.7.4 Regression Analysis

The results from table 4.14 shows a significant effect of reverse logistics adoption on firm performance ($\beta=-0.768$, $t=-18.877$). The variance R^2 indicated that effect of reverse logistics adoption created 58.8% variance in our dependent variable firm performance. Similarly, the coefficient value also shows that a unit change in independent variable reverse logistics adoption will bring a 0.556 change in dependent variable firm performance

Table 4. 14: Regression Analysis for Reverse Logistics Adoption and Firm Performance

		B	β	T	Sig.	R²	ΔR^2
(Constant)		1.616					
Reverse Adoption	Logistics	0.556	0.768	18.877	.000	0.588	0.590

a. Dependent Variable: Firm Performance

Step 3

Table 4.9 explains the ANOVA result of green human resource management and firm performance. The F value (599.143) and P value < 0.01 shows significant differences and depicts that the model is fit. Results given in Table 4.10 shows a significant effect of reverse logistics adoption on firm performance ($B=-0.782$, $t=-24.477$). The variance R^2 indicated that effect of green human resource management causes 40.9% variance in our dependent variable reverse logistics adoption.

Mediation Analysis

After fulfilling the three conditions, we were ready to proceed with mediation analysis. The Table 4.15 shows that Reverse logistics adoption partially mediates the relationship between green human resource management and firm performance. Moreover, as the beta weight reduced from 0.841 to 0.592 and remained significant thus demonstrating a partial mediation (Baron & Kenny, 1986). R^2 value also shows 79.7% variation comes in dependent variable firm performance due to the effect of both green human resource management and mediator variable reverse logistics adoption.

Table 4. 15: Regression analysis for Mediating Effect of Reverse Logistics adoption on Green Human Resource management and Firms Performance

Model		Unstandar		t	Sig.	R^2	ΔR^2
		dized	ardized				
		B	Beta				
1	(Constant)	.934		7.986	.000		
	Green Human resource Management	.782	.841	24.477	.000	.707	.707
2	(Constant)	.677		6.721	.000		
	Green human resource management	.550	.592	15.863	.000	.797	.089
	Reverse logistics adoption	.282	.389	10.427	.000		

a. Dependent Variable: Firm Performance

The following results were obtained after carrying out the mediation through process macro: Table 4.16 shows the significant relation between Green human resource management and Reverse Logistics adoption ($R^2 = .4092$, $B = .8212$ and $t = 13.10$) This shows that a unit change in green human resource management will have 0.8212 change in reverse logistics adoption and R^2 value shows that 41% variation comes in our mediator reverse logistics adoption due to green human resource management.

Table 4. 16: Regression Analysis for Green Human Resource Management and Reverse Logistics Adoption

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6397	.4092	.0441	171.7679	1.0000	248.0000	.0000

Model

	coeff	se	t	p
Constant	.9124	.2295	3.9755	.0001
Green human resource	.8212	.0627	13.1060	.0000

Dependent Variable: Reverse Logistics adoption

Table 4.17 also shows model fitness is established. Predictor concerned both independent variable that is green human resource management and as well mediator reverse logistics adoption. Both variables independent variable and green human resource management were included and found significant and positive. The coefficient value B=.5504 for green human resource management also reduced from 0.8212 (Table 4.16), after controlling the effect of mediator reverse logistics adoption. Also R² value shows 80% variation comes in dependent variable firm performance due to both green human resource management and mediator variable reverse logistics adoption.

Table 4. 17: Regression Analysis for Green Human Resource Management, Reverse Logistics and Firm Performance

Model Summary

R	R-sq	MSE	F	df1	df2	p
.8926	.7967	.0080	484.0616	2.0000	247.0000	.0000

Model

	coeff	se	t	p
Constant	.6771	.1007	6.7208	.0000
Reverse Logistics	.2818	.0270	10.4272	.0000
Green human resource	.5504	.0347	15.8629	.0000

Dependent variable: Firm Performance

In the Table 4.18, we examined the effect of independent variable green human resource management on dependent variable firm performance without the inclusion of mediator reverse logistics adoption. Results (B=.7818, t=24.4774) showed the significant and

positive relation between green human resource management on firm performance. This also shows that if we change green human resource management by one unit, it will bring change 0.7818 to firm performance. And R^2 value shows that 70% variation comes in our dependent variable due to green human resource management. So we can conclude that all four conditions have significant relationship, and there is a partial mediation. Therefore, Reverse logistics adoption mediates the relationship between green human resource management and reverse logistics adoption

Table 4. 18: Regression Analysis for Green Human Resource Management and Firm Performance (Total Effect Model)

Model Summary

R	R-sq	MSE	F	df1	df2	p
.8410	.7073	.0115	599.1431	1.0000	248.0000	.0000

Model

	coeff	se	t	p
Constant	.9342	.1170	7.9855	.0000
Green Human Resource	.7818	.0319	24.4774	.0000

Dependent Variable: Firm Performance

SUMMARY

The Table 4.19 below shows the summary of all results. By looking at indirect effect, Mediation exist 0.2314 and If we change the mediator then the independent variable and dependent variable relation have effect of 0.2314. By looking LLCI and ULCI we can see that mediation is significant or not as there is no zero between lower level confidence interval and upper level confidence interval so we can conclude the mediation is significant.

Total Effect = 0.7818 (Direct + Indirect Effect)

Direct Effect = 0.5504

Indirect Effect = 0.2314

Partial Mediation (because direct path is significant. If not then full mediation)

Table 4. 19: Indirect effect of X on Y (Green human resource management on firm performance)

	Effect	Boot SE	BootLLCI	BootULCI
MRL	0.2314	0.0286	0.1787	0.2892

MRL: Reverse logistics adoption (mediator)

4.7.4 Sobel Test

The results of mediation analysis were also validated through Sobel Test. Sobel Test is used to test the significance of mediation effect. According to Sobel (1982), there is an indirect effect of independent variable on the association between the independent variable and the dependent variable due to the existence of a third variable (the mediator). Due to this, the effect of the independent variable is reduced and the effect of the mediator remains significant when the mediator is included in a regression analysis model with the independent variable.

We applied the Sobel Test in our study to check the significance of the mediation effect of RLA and to check whether the effect of independent variable GHR is reduced. The result presented in Table 4.20 revealed that value of Sobel Test is 3.814 with S.E of 0.386. The *p*-value shows that the result are significant which shows that the mediation variable RLA has a significant effect by reducing the effect of independent variable GHR, therefore the mediation effect is proved to be statistically significant and we can say that Reverse Logistics Adoption partially mediates the effect of green human resource on firm performance.

Table 4. 20: Sobel Test Analysis

	Test Statistics	Std. Error	<i>p</i>-value
Sobel Test	3.814	0.386	0.00013
Aroian Test	3.805	0.387	0.00014
Goodman Test	3.823	0.385	0.00013

a = raw (unstandardized) regression coefficient for the association between GHR and mediator RLA.

s_a = standard error of a .

b = raw (unstandardized) regression coefficient for the association between the mediator RLA and the FP.

s_b = standard error of b

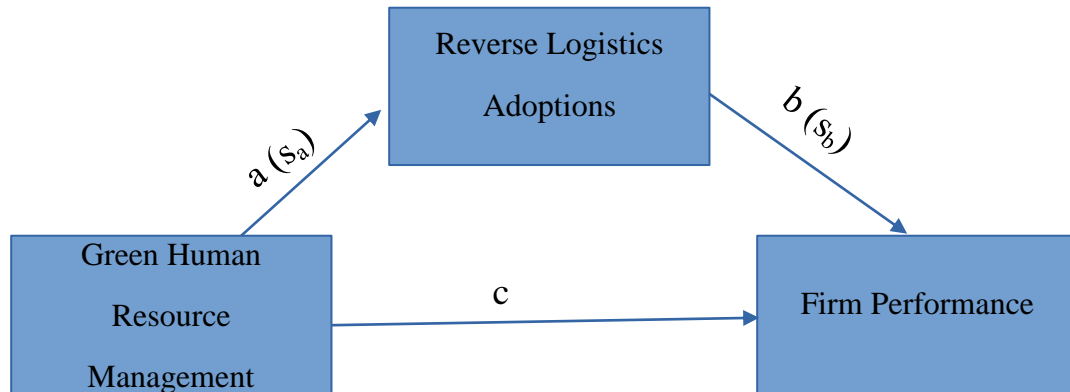


Figure 4.10: Sobel Test Model

4.8 Hypothesis 3: Moderating Role of Corporate Social Responsibility between Green Human Resource Management and Reverse Logistics Adoption

4.8.1 Analysis of Variance

To test this supposition, stepwise multiple regression analysis was performed. Table 4.21 explains the ANOVA result of moderation role of corporate social responsibility between green human resource management and reverse logistics adoption. The results showed fitness of model as the F values (171.768, 135.689 and 91.644) with P values < 0.01 shows significant differences.

Table 4. 21: Analysis of Variance for Green Human Resource Management, Corporate Social Responsibility and Reverse Logistics Adoption

Sr. No.	Model	Sum Square	of Df	Mean Square	F	Sig.
1	Regression	7.579	1	7.579	171.768	0.000 ^b
	Residual	10.943	248	0.044		
	Total	18.522	249			
2	Regression	9.697	2	4.848	135.689	0.000 ^c
	Residual	8.826	247	0.036		
	Total	18.522	249			
3	Regression	9.775	3	3.258	91.644	0.000 ^d
	Residual	8.747	246	0.036		
	Total	18.522	249			

- a. Dependent Variable: reverse logistics adoption
- b. Predictor: (Constant) green human resource management
- c. Predictors: (Constant) green human resource management, corporate social responsibility
- d. Predictors: (Constant) green human resource management, corporate social responsibility, green human resource management*corporate social responsibility,

4.8.2 Regression Analysis for Moderation

Table 4.22 explains the model summary of regression analysis for moderating variable. Moreover, the data showed that R^2 value for moderation is 0.538. It shows that the moderating variable significantly moderates relationship between independent variable and dependent variable. This means that the effect of moderating variable corporate social responsibility with green human resource management causes 53.8% variance in our dependent variable reverse logistics adoption. Interaction of green human resource management and corporate social responsibility has a significant impact on Reverse logistics adoption with the beta value 0.872 and p value less than 0.01. Moreover, the t values ranging from 2.689 show the significant positive effect of moderator on the reverse logistics adoption. Thus, it is evident from this result that corporate social responsibility significantly moderates relationship between green human resource management and reverse logistics adoption and

corporate social responsibility (CSR) plays an important role as a moderator for improving firm performance.

Table 4. 22: Regression Analysis for Moderator

Model	Un-Standardized B	Standardized Beta	t	Sig.	R²	ΔR²
Step 1 (Constant)	0.912					
Green Human Resource Management (IV)	0.821	0.640	13.106	.000	0.409	0.409
Step 2 (Constant)	0.355					
Corporate Social Responsibility (Moderator)	0.591	0.479	7.698	.000	0.524	0.114
Step 3 Constant	2.414					
Green Human Resource Management (IV)* Corporate Social Responsibility (Moderator)	0.171	0.872	2.689	.000	0.538	0.014

Dependent variable: Reverse Logistics Adoption

The figure 4.9 presents the histogram of green human resource management*corporate social responsibility and reverse logistics adoption. The figure demonstrates that the data is accumulated in the center with bell shaped curve. This represents the normal distribution of the data. The figure 4.11 presents the graphic representation of moderation effect which shows positive relation between green human resource management and reverse logistics adoption. Moreover, the positive relation is strengthening by the moderator corporate social responsibility.

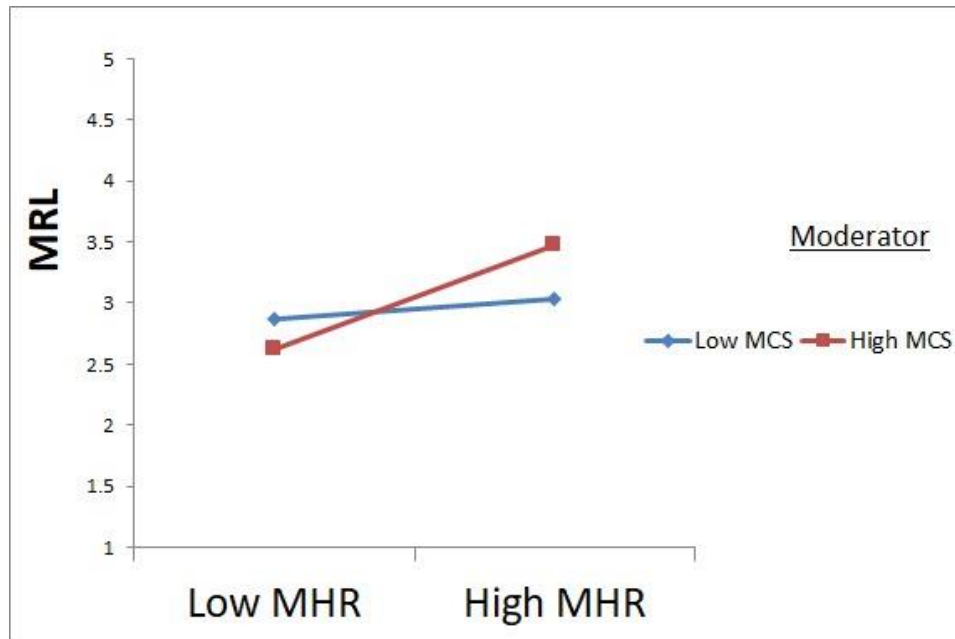


Fig. 4.11 Moderation effect

4.9 Confirmatory Factor Analysis

AMOS was used to find the direct and indirect effect of independent variables on dependent variable and to draw a model for describing the structural relationship among the variables (Fig. 4.11). Table 4.23 presents the regression weights and model fit summary of the model that were estimated to explain the theoretical model. These factors were carefully studied and were conformed into an appropriate coding. The score for acceptable value of factor loading was kept as ± 0.2 . This means that the items with factor loading less than -0.2 and greater than +0.2 are acceptable.

Table 4. 23: Factor Analysis

	HR	RL	FP	CS
HR6	1.071			
HR5	0.774			
HR4	0.501			
HR3	0.275			
HR2	-0.629			
HR1	-0.461			
RL5		0.631		
RL4		0.333		
RL3		-0.558		
RL2		-0.982		
RL1		-0.178		
FP9			1.356	
FP8			0.41	
FP7			0.516	
FP6			0.31	
FP5			-0.415	
FP4			-0.19	
FP3			0.089	
FP2			-0.069	
FP1			0.289	
CS3				1.364
CS2				-1.04
CS1				0.08

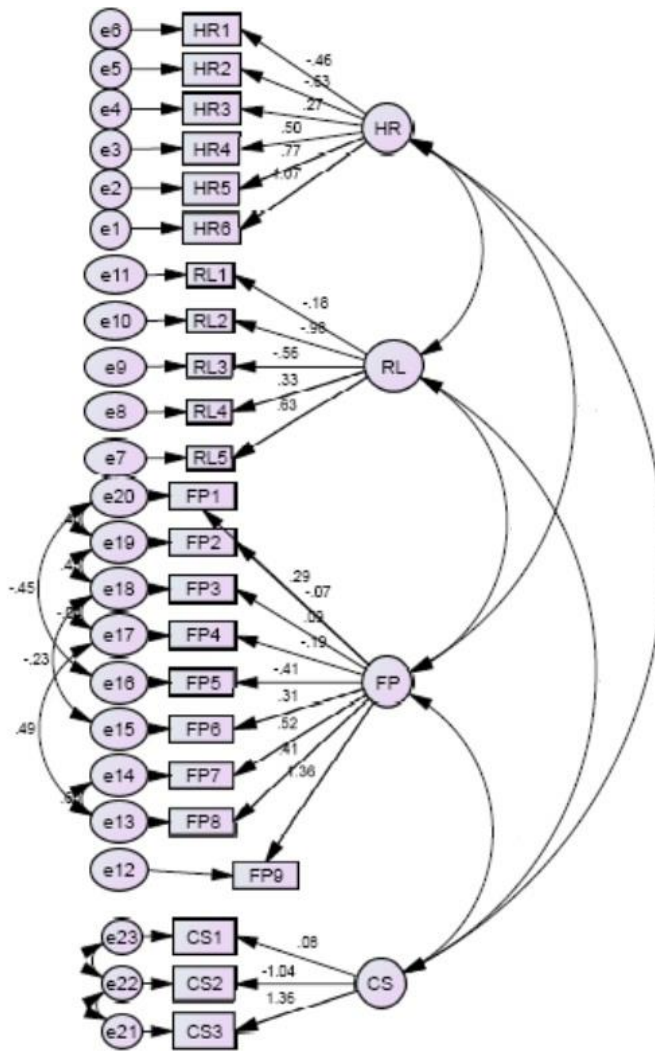


Figure 4.12: Factor Analysis

4.10 Result/Findings of hypotheses/experiments

Hypothesis	Statement	Results
H1	Green human resource management is positively related to Firm Performance	Accepted
H2	Reverse Logistics adoption mediates the relationship between green human resource management and Firm performance	Accepted (partial mediation)
HE	Corporate social responsibility moderates the relationship between Green human resource management and reverse logistics adoption	Accepted

CHAPTER 5: DISCUSSION AND CONCLUSION

The factors that influence firm performance in Pakistan's telecom sector were investigated in this study; the variables chosen for the study were green human resource management, reverse logistics adoption, and corporate social responsibility. The population that was targeted for this study was senior supply chain professionals and HR managers. The data has been collected through a five-point Likert scale questionnaire. SPSS has been used for data analysis and interpretation. The following hypothesis was tested to find out the results of the study.

Hypothesis 1: Green human resource management is positively related to Firm Performance

Our study concluded the positive relationship between green human resource management and Firm performance. The findings are related to the prior study of Zaid et al., (2018), where positive effect has been observed on sustainability by focusing on green training programs and green human resources development. Employees get more benefits from green human resource management and the green human resource management makes the workers more determined and engaged that help the firm to generate great profits (Longoni et al., 2018). Green human resource management is a critical component of formulating policies and public awareness initiatives to educate employees about the need of environmental preservation. As a result, green human resource management at all levels is no longer limited to certain businesses; rather, every operational area of any company is responsible for green jobs and green duties in order to operate in an environmentally beneficial manner. (Malik et al., 2021). Green human resource management, according to

researchers, helps company to get competitive advantage over competitors by promoting the employees friendly attitude towards environment, developing policies related to environment protection, focusing on enhancing green performance, and putting these policies into practice at work and helps the firm to generate the profit (Anwar,2020).

Hypothesis 2: Reverse logistics adoption mediates the relationship between green human resource management and Firm Performance

The study concluded that green human resource management is critical for the success of reverse logistics adoption. Moreover, the reverse logistics adoption has significant effect on Firm performance. Similarly, the green Human resources management is implemented by aligning human resource management with environmental goals (Jabbour et al., 2019) and The impact of green human resource management is great on the employees and makes the workers more determined (Longoni et al., 2018). Existential dilemmas such as low workforce enthusiasm, an insufficient training, a scarcity of qualified workforce, and a lack of reverse logistics adoption training are other bottlenecks to reverse logistics adoption (Bag & Gupta, 2019). Hall et al. (2013) quantified the contests for reverse logistics adoption and that are related to inbound and outbound of flow of goods. The existence of green human resource management, according to our findings, reduces potential risks in reverse logistics adoption. prior studies support this such as Longoni et al. (2018) where they emphasized the necessity of human resource management and the rewards that come with it. Employees are happier and healthier when they have good human resource management (Rae et al., 2015; Menendez Blanco and Montes-Botella, 2017). Firms do not have the green human capital, on the other hand, would need to more struggle and fight for the adoption of reverse logistics, which will have an influence on remanufacturing operations, potentially resulting in opportunity and financial losses (Bag & Gupta, 2019). Resource based view theory and institutional theory could be used to elucidate that how accessibility of green human resource management can enable to gain a comparative advantage in telecom firms and management must pay more attention on allocation of funds and budgets towards training programs. Our findings also

indicated that green human resource management can hasten reverse logistics adoption and further enrich firm performance.

Hypothesis 3: Corporate social responsibility moderates the relationship between green human resource management and Reverse logistics adoption

A number of factors drive firms to consider corporate social responsibility. For example, the Business Roundtable recently revealed that a corporation's aim is to create value for all stakeholders, not just shareholders (Business Roundtable, 2019). Corporate social responsibility is also very important in supply chain management due to globalization (Arslan, 2020) and plays a significant role in business performance (Modak, 2020). Corporate social responsibility measures are necessary for firm and human resource management performance, so stronger human resource policies relates to stronger corporate social responsibility (Sarvaiya et al., Freitas, 2020). Green human resource management practices, in fact, positively influence corporate social responsibility practices as well as the corporate social responsibility is a key part while implementation of Reverse logistics adoption (Alnoor, 2018) and our research findings also suggest that the commitment to corporate social responsibility positively intervene the relationship to green human resource management and reverse logistics adoption .

So firms without green human resource management and corporate social responsibility commitment will struggle with the reverse logistics adoption, as firms are now transferring towards green and more committed towards corporate social responsibility because these are social pressures and need to be followed to remain successful. So telecom companies must have green human resource management to adopt a reverse logistics network. The bottom line of this study is "YES". Green human resource management is necessary for reverse logistics adoption and will lead to firm performance. This study will be beneficial for the telecom sector, which can develop and revise policies based upon the results of this study. Therefore, the findings of this study will be valuable not only for scholars but also for supply chain managers and telecom business professionals. Moreover, this study is also intended to

lead to the improvement of the Pakistani telecom industry. Finally, while the vast majority of studies on green human resource management practices were undertaken in developed countries, as the study are being done in a developing country, Pakistan, scholars, industry managers, and suppliers will gain even more.

Theoretical Implication:

The results of this research study identified that green human resource management is necessary for reverse logistics adoption and, ultimately, it will lead to improved firm performance. Furthermore, corporate social responsibility moderates the relationship between green human resource management and reverse logistics adoption. Contingent RBV can be used to demonstrate how the availability of green human resource management can establish a competitive edge over competitors in Pakistan's telecom. Institution theory can also be used to understand the factors that influence human resource management and reverse logistics adoption strategies, arguing that not all practices are the result of rational decision-making related to organizational goals, and that some are the result of outside influence.

Managerial Implication:

There is a need to focus on green human resource management. The managers should focus on preparing the green tasks, assessments of skills, find out the gaps, and then plan the training programs accordingly. The job announcement must cover the green job description and then perform selection of right candidates who can perform as per job description. There should be reward policy for retaining the talented employees. For this, the firms need to require the investment in training and development programs. Yes, there is a cost on it but its

return is absolutely remarkable and will be beneficiary for the organization as well as for the supply chain stakeholders including the supplier and customer who will get the benefit as green initiatives seeps at all level aiming at sustainable production and consumption

Secondly, there should be a focus on adoption of reverse logistics, comprised of local and global network development and performance, which connects scrap traders, manufacturers, and clients. Therefore, to build a network of this sort, there is a need to reduce the fissure between demand and supply. Optimal control tools can be used to monitor revenue, throughput, and reverse logistics production processes in order to best forecast demand. Managers should smartly need to take the decisions at every step of reverse logistics and should smartly plan while deploying the collection centers and deciding about transportation, as high costs will lead to less profit. The outcome is that without the need for proper reverse logistics adoption, the process of reverse logistics will fail in the long run as there is a need to carefully decide about the options of (re-use, recycle, export, or locally dispose of) the transportation and associated warehousing costs. Hence, the managers must turn their attention towards reverse logistics adoption through green human resources to get a competitive advantage in the market.

Focus on Corporate Social Responsibility is very important to develop the green environmental management programme correctly. Corporate social responsibility awareness rising among employees and supply chain partners, including customers and suppliers, is required. Corporate social responsibility requires the firm to follow the rules and regulations related to local laws, human rights, and labour laws related to forced labour, child labor, etc. By establishing a green opportunity at work, recruiting and retaining green human resources, we can protect freedom of association and collective bargaining, health and safety, the environment, forbidden business practices, including money laundering, and other issues in all processes and activities. In the telecom sector, nowadays, firms are very much concerned about corporate social responsibility and a commitment letter for corporate social responsibility is being signed with all stakeholders.

Contributions, limitations and future research directions

This research shed light using resource based view and institutional theory in a relatively new area of green human resource management and further extend the knowledge base but there are some limitation of the study. This study is limited to specific sector research so further studies may include other sectors and longitudinal data for comparing the results of present study. Finally, for the data collection process the five point likert scale was used, whereas the seven-point scale may provide the more precise results. Yet there are some more limitation, which are discussed as under:

- 1) Employees of telecom sector hesitate to share the related information due to strict information security policies of their organizations
- 2) The misperception held by some of the employees that data collected in the form of questionnaires, may be made available to their superiors which might have detrimental effects for them, thus prevented them to give true responses. Some brief research oriented secessions were conducted to address their misperception. However, this limitation did not have the major effect on the study
- 3) Generally people in Pakistan are either not aware of the usefulness of research or lack trust in the ability of researchers, so response rate was less than expected
- 4) Many questionnaires were not filled whole heartedly and some employees filled them without even reading the questionnaires on which those questionnaire had to be discarded.

Conclusion

The telecom sector in Pakistan is a major contributor to both the economy's pollution and environmental problems. Environmental issues are a major concern for both internal and external stakeholders, and they require adequate procedures and solutions to address them. As a result, it is critical to reduce environmental challenges in communities by implementing green projects and engaging in corporate social responsibility activities. Green activities and

corporate social responsibility assist businesses in gaining a competitive advantage and achieving long-term success. Green activities such as green human resource management and efficient reverse logistics adoption assist corporations in attracting a talented, dedicated, and skilled workforce; corporate social responsibility improves the firm's image in the eyes of stakeholders, promotes brand image, and tackles societal problems. Reverse logistics adoption, on the other hand, refers to employees' willingness to work together to speed up the adoption of green logistics and improve the performance of the reverse logistics adoption network to help their companies succeed.

The goal of this research was to fill a knowledge gap in the fields of green human resource management and reverse logistics adoption. The studies on green human resource management on reverse logistics adoption with a moderating effect of corporate social responsibility and a mediating effect of reverse logistics adoption are limited. Recent studies conducted on reverse logistics adoption to firm performance through the availability of green human capital (Bag & Gupta, 2019) and green human resource management and corporate social responsibility and sustainable performance by (Herrera, 2020). Two theories were used to develop the frame work and this was validated statistically by taking out 250 samples from Pakistan telecom sector firms located in major cities of Rawalpindi and Islamabad. After conducting the statistical techniques like SPSS analysis, model fit, scale validity, and reliability were checked. We concluded that our model was fit and it was found that green human resource management has an impact on firm performance through the mediating role of reverse logistics adoption and the moderating role of corporate social responsibility.

No prior studies have been conducted on the framework of this research from the perspective of Pakistan's telecom sector. Another novelty is the effect of green human resource management on the adoption of reverse logistics under the moderating effect of corporate social responsibility, which has never been presented in any study.

It is concluded that firms could achieve sustainability performance by engaging in green activities and acting in a socially responsible manner. Reverse logistics adoption will be beneficial to businesses in order to address environmental challenges and green human resource management can speed up the adoption of green logistics and further enhance the firm performance. Green human resource management is important because it is a useful

resource for promoting reverse logistics adoption and operating remanufacturing facilities. Managers should choose candidates with environmental knowledge and awareness. Similarly, corporate social responsibility contributes to long-term sustainability. As a result, enterprises can gain a competitive edge and long-term viability by applying green human resource management, corporate social responsibility and reverse logistics adoption.

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Appendices

Appendix-A

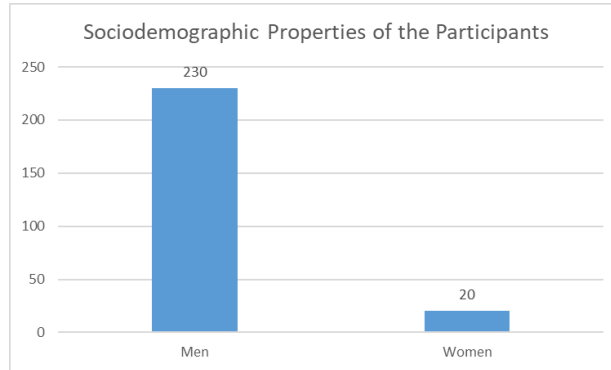


Fig. 4.1: Sociodemographic characteristics of the participants

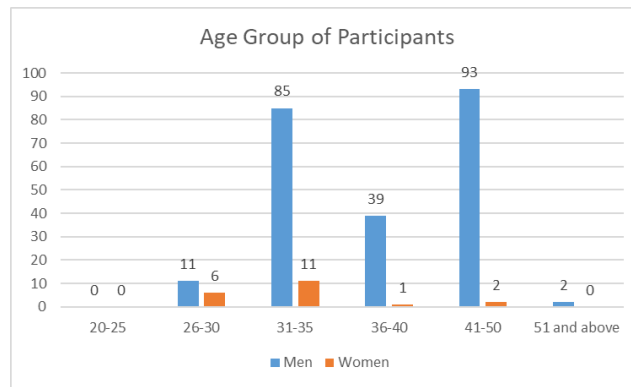


Fig. 4.2: Age Group of the participants

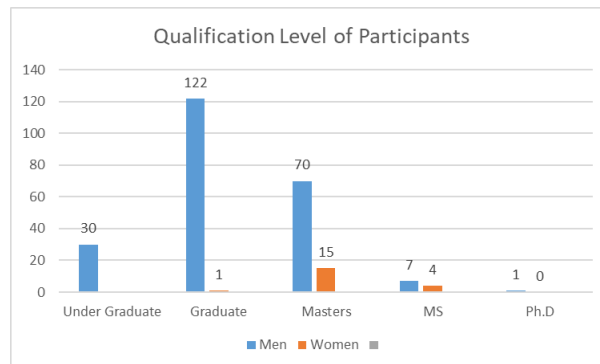


Fig. 4.3: Qualification Level of the participants

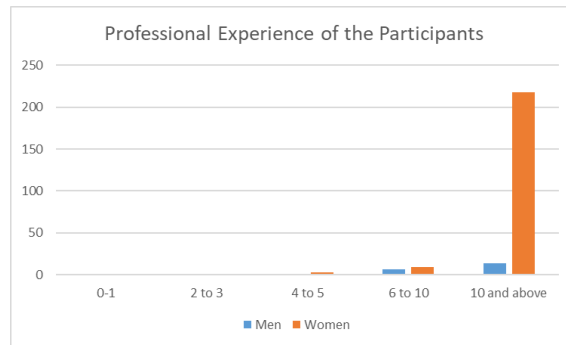


Fig. 4.4: Professional Experience of the participants

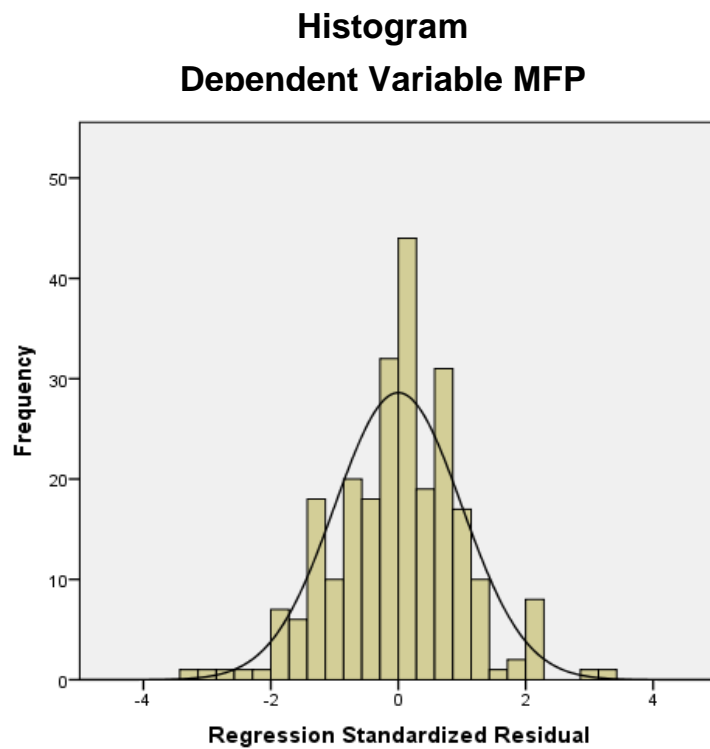


Figure 4.5: Histogram of GHR and FP

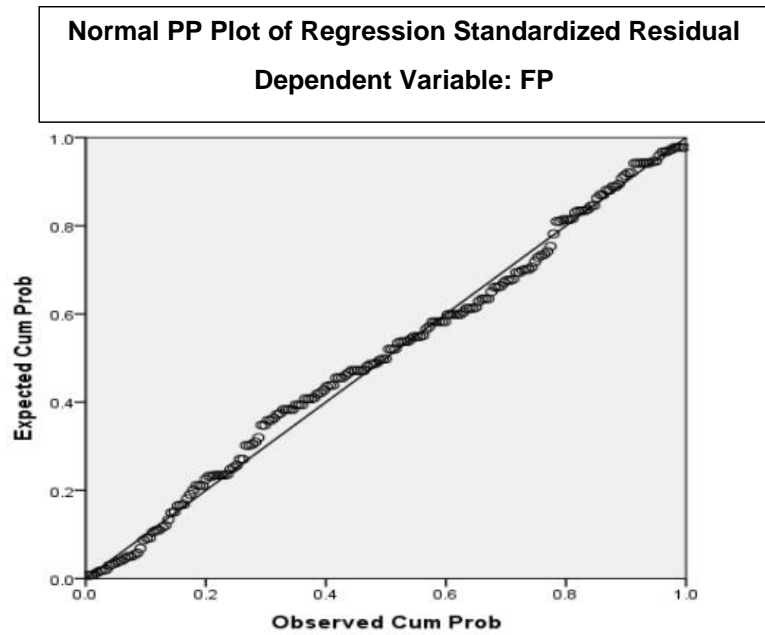


Figure 4.6: Normal PP Plot of GHR and FP

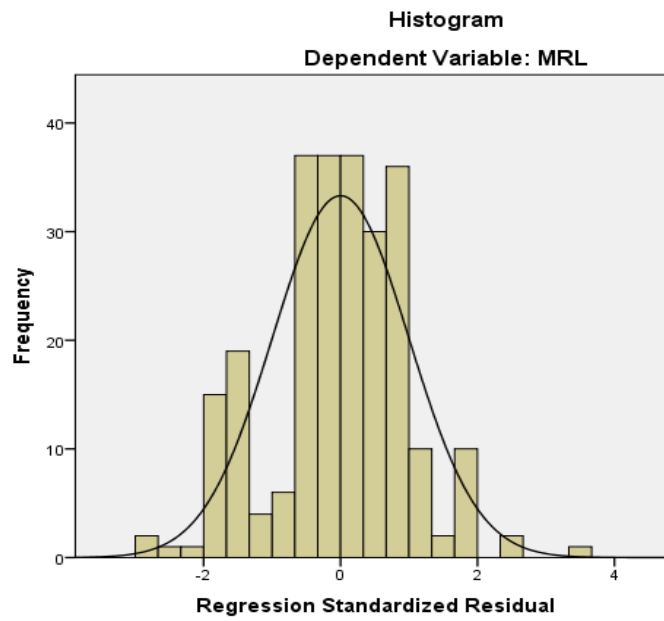


Figure 4.7: Histogram of GHR and MRL

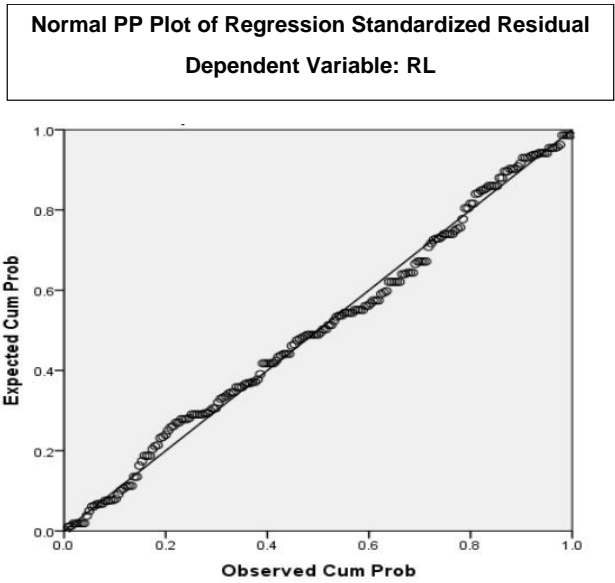


Figure 4.8: Normal PP Plot of GHR and MRL

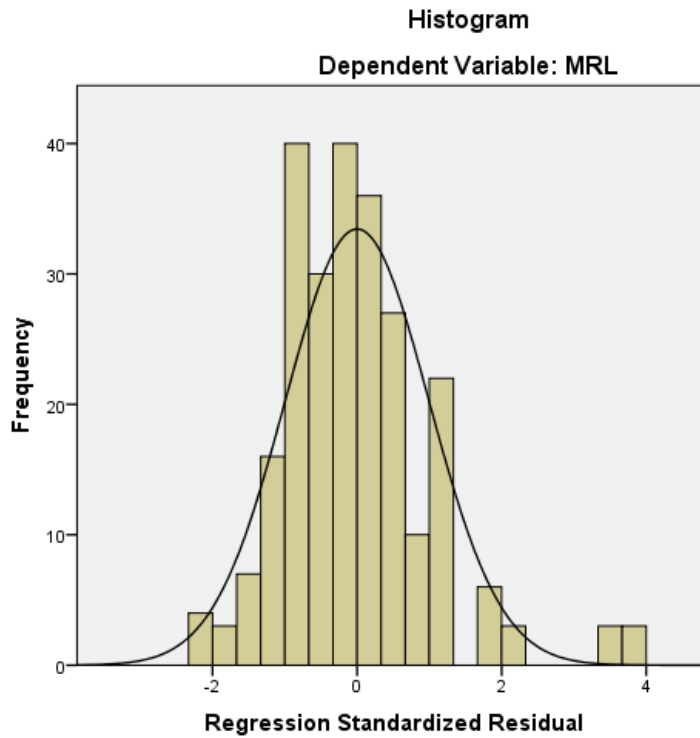


Figure 4.9: Histogram of GHR*CSR and RLA

Appendix-B

Questionnaire

THE EFFECT OF GREEN HUMAN RESOURCE MANAGEMENT ON FIRM PERFORMANCE THROUGH REVERSE LOGISTICS ADOPTION: MODERATING ROLE OF CORPORATE SOCIAL RESPONSIBILITY

Demographics

1. Organization: _____
2. Position: _____
3. Gender: Male / Female
4. Age: 20-25, 26-30, 31-35, 36-40, 41-50, 51 and above
5. Education: Under Graduate, Graduate, Masters, MS, Ph.D.
6. Professional Experience (in years). 0-1, 2-3, 4-5, 6-10, 10 and above

Please provide your feedback by Checking , Options from 1 to 5.

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

S. No.	Particulars	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Green human resource management						
1	My firm sets green goals for its employees.	1	2	3	4	5
2	My firm provides employees with green training to promote green values.	1	2	3	4	5
3	My firm provides employees with green training to develop employees' knowledge and Skills required for green management.	1	2	3	4	5
4	My firm considers employees' workplace green behavior in performance appraisals.	1	2	3	4	5
5	My firm relates employees' workplace green behaviors to rewards and compensation.	1	2	3	4	5
6	My firm considers employees' workplace green behaviors in promotion.	1	2	3	4	5
Reverse logistics Adoption						
7	Our firm have designed a robust reverse logistics network	1	2	3	4	5
8	Our firm have overcome multiple challenges which was encountered during reverse logistics adoption process	1	2	3	4	5
9	The reverse logistics adoption is done in several phases and gradually the network has been extended gradually to all suppliers/ scrap dealers/ customers	1	2	3	4	5
10	Our firm have optimized reverse	1	2	3	4	5

	logistics costs using Industry 4.0 digital tools					
11	Our firm have done truck-load and route optimization using Industry 4.0	1	2	3	4	5
Firm Performance						
12	Our firm is able to do better customer Retention	1	2	3	4	5
13	Growth in sales has happened in our firm	1	2	3	4	5
14	Higher level of profitability is achieved by our firm	1	2	3	4	5
15	Return on investment is high	1	2	3	4	5
16	Overall financial performance has improved in our firm	1	2	3	4	5
17	We have entered new markets more quickly than our competitors	1	2	3	4	5
18	We have introduced new products or services to the market faster than our competitors	1	2	3	4	5
19	Our success rate of new products or services has been higher than our competitors	1	2	3	4	5
20	Our market share has exceeded that of our competitors	1	2	3	4	5
Corporate Social Responsibility						
21	This firm is very concerned with environmental protection.	1	2	3	4	5
22	This firm is very concerned with customers' benefits	1	2	3	4	5
23	This firm actively participates in social initiatives	1	2	3	4	5

Thank You for Your Valuable Time.