TALLINN UNIVERSITY OF TECHNOLOGY
School of Business and Governance
Department of Business Administration

Sir Syed Ahmed Khan

THE ACTIONS OF INTANGIBLE ATTRIBUTES OF LOGISTICS MANAGEMENT ON THE PERFORMANCE OF REVERSE LOGISTICS ON THE EXAMPLE OF BARRETT HODGSON PRIVATE LIMITED

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Supervisor: Tarvo Niine

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Sir Syed Ahmed Khan ……

(signature, date)

Student code: 184474TVTM

Student e-mail address: sirsyed10@hotmail.com

Supervisor: Tarvo Niine

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ABSTRACT

Barrett Hodgson Pakistan involves discovering drugs, making development in drugs, and manufacturing new drugs and medications. But none of the retailers or wholesalers made voluntary retrieval of useful products from the supply chain nodes unless the product reaches near expiry or is a non-selling item. Also, they encountered issues primarily because of unusable product returns in the Pakistan market. Also, the availability of medicines in rural areas is low with the absence of reused products. It happens because of the complex nature of logistics management. The problem is complex, and tangible and intangible attributes affect the process, influencing reverse logistics performance. Hence the study has the research questions which are; 1) What is the relationship between intangible attributes of logistics management and reverse logistics performance? 2) Why do intangible attributes of logistics management influence reverse logistics performance in Barrett Hodgson Private limited?

The researcher used quantitative approach. The study fixes the samples as employees working in the supply chain department of Barrett Hodgson Private Limited. The total sample is 108; literature support states that the number is sufficient to derive an outcome for the research questions. Intangible attributes include trust, commitment, cooperative norms, organization compatibility, and top management support, crucial in maintaining relationships with supply chain partners. The researcher observes that the variables are strongly associated with reverse logistics performance. Regression analysis shows that the individual assessment of intangible attributes finds that cooperative norms have the most substantial impact among five attributes (74.6%), whereas the least effect was organization compatibility (22.2%).

Despite the success of the assessment of variables demonstrated, a significant limitation is assessing five independent variables related to intangible determinants of logistics management did not portray the outcome precisely. Therefore, the inclusion of other attributes like Credibility, benevolence may change the impact percentage to a great extent.

Keywords: Logistics management, reverse logistics performance

INTRODUCTION

The global market of the pharmaceutical sector anticipates 1.5 trillion USD by the end of 2023 with an annual growth rate of 3-6%. The growth emerges due to the aspects like market drivers, upcoming trends, and growth patterns (Lyon 2020). North America is anticipating to retain as the leading position in the global market with a market share of 45.33% followed by Asia pacific keeps as the second position in the market with 24.07% (*Ibid*). Thus, the Asia Pacific region has been taken into account.

Out of many Asia pacific region, the researcher assesses the Pakistan region. The primary reason behind considering the pharmaceutical sector in the Pakistan region is that the tenth-largest country has dynamic potential in the particular industry (Atif *et al*. 2017, 25). Also, the industry is having an annual growth rate of 12.85% during 2018-2019 (Desk 2020). The country also has low environmental protection standards, and the firms underestimate reverse logistics in Supply chain management (Abdulrahman *et al,* 2014, 460). Underestimation of reverse logistics affects firm performance and thus affects the sustainable advantage of the organization. Therefore, the study focuses on intimating the effect of reverse logistics management in Pakistan.

There are 750 companies in the country, but the top 100 firms handle 97% of the market share. Approximately 30 MNC accounts to be about 50% of the market (Shahzad, Wahab 2017, 176). Among the top 100 firms, Barrett Hodgson Pakistan is the top 15 companies that offer pharmacy products. Presently, the company is having a turnover of 12,40,17,125.10 Euro. Barrett Hodgson Pakistan intends to gain a competitive advantage in the global market. The organization uses effective ways of attaining it through innovative options for handling waste materials through reverse logistics. It is gaining importance in the present days to achieve in the rival market and enhance the social image to address resource depletion and environmental problems—the action in turn upsurge the organization to develop sustainability in the market.

Barrett Hodgson Pakistan involves discovering drugs, making development in drugs, and manufacturing new drugs and medications. The organization made a massive investment in

logistics management, primarily in reducing the wastages to a great extent. But none of the retailers or wholesalers made voluntary retrieval of useful products from the supply chain nodes unless the product reaches near expiry or is a non-selling item. Also, they encountered issues primarily because of unusable product returns in the Pakistan market. Also, the availability of medicines in rural areas is low with the absence of reused products. It happens because of the complex nature of logistics management. The problem is complex, and tangible and intangible attributes affect the process, which influences the reverse logistics performance. Thus, the study evaluates how intangible attributes of logistics management influence the reverse logistics performance.

In order to achieve the aim, the researcher has setup the following questions:

1. What is the relationship between intangible attributes of logistics management and reverse logistics performance?
2. Why do intangible attributes of logistics management influence reverse logistics performance in Barrett Hodgson Private limited?

The objective of the study is to find out the relationship between intangible attributes of logistics management and reverse logistics performance of Barrett Hodgson Private limited. The study also measures the effect of intangible attributes of logistics management on reverse logistics performance in Barrett Hodgson Private limited.

The study provides prospects to advance knowledge in logistics management and reverse logistics performance of Barrett Hodgson Private Limited. Assessing the aspects provides a benefit to the organization to recognize the association between two aspects. Besides, how much percentage of impact logistics management on reverse logistics performance. All the attributes assessed it using quantitative research. Consequently, the researcher plans to obtain the outcome of the above-stated objectives using research-based view theory. The theory's main intention is to identify how the firm resources contribute to gain a competitive advantage in the market.

The thesis is made up of three chapters whereby in the first section, it gives a brief overview of the literature review. The literature review has sub-sections like logistics management, trust, commitment, organization compatibility, top management support, and reverse logistics performance. The second section provides a detailed description of how the research frames the

methodology to carry out the study. The study uses the research onion framework to describe the methodology. Besides, the study determines the samples using sampling methods and techniques. It has a data collection method, validity, reliability, and ethical consideration. In the third section, the entire analysis and interpretation are outlined with statistical tools like percentage analysis, descriptive statistics, correlation, and regression. Also, it presents the complete summary of the analysis chapter, which includes discussion and practical implications. The final section discusses the conclusion, the scope for further research, and limitations of the study

1. THEORETICAL BACKGROUND OF THE STUDY

1.1. Logistics management

It covers the aspects from the movement of product from incoming raw materials, storing it, and delivering it to customers. It also includes the information flow made throughout the organization. The logistics management's objective is to offer the products at the right time, right place, and the right price to the target customer (Ristovska *et al.* 2017, 245). In the modern era, logistics management acts as an important aspect in pharmacy industries and the effective management can lead to economic benefit. A detailed analysis of logistics management and its importance in the pharmaceutical industry is given in the below studies.

Srimarut and Mekhum (2020) have indicated the present trends of logistics management and its influence on pharmaceutical companies' performance, particularly in Thailand. Logistics management of sourcing and production flexibility as an independent variable and performance as a dependent variable. Both variables have a positive impact on pharmaceutical companies in Thailand. Initial work in the field primarily focuses on identifying the impact of logistics management on the pharmaceutical sector's performance. In this work, the authors reliably execute the study. Because it has a precise explanation of how the samples derived out from the population and the quantitative research approach application helps to get justified results for the study.

Their introduction to logistics management into the study (Uthayakumar, Priyan 2013, 52) shows that medical practices' effective practices are vital for all the health care industries. Shortages of medicine in health care industries are faced because of improper usage of pharmaceuticals, which lead to financial losses and impact patients. Hence, the authors have made a significant effort to address the pharmaceuticals' logistics management and how it leads to strategic decision-making. Inventory model developed to assess the attributes like multiple pharmacy products, lead time, payment delays, space availability challenges, and customer service level. With the inventory model's help, the authors associate the production and distribution of

pharmacy companies' supply chain and a hospital supply chain. Continuous reviewing of such attributes helps to derive out effective logistics management at the respective pharmacy companies. Thus, the study draws the attention that logistics management helps companies increase the customer service level at a reduced lead time and cost. The study's main limitation is that the authors did not mention how many companies they consider to investigate logistics management. Another drawback of the study is that there is no information regarding that the model supports making strategic decision-making

Romero (2013) highlights the issues which influence the management of pharmacies in hospitals in North America. Besides, the study also investigates the primary logistics inefficiencies of hospital pharmacy. The study finds from the statistical investigation that logistics inefficiencies were made because of improper inventory management followed by shrinkage in medicines and intensive manual labor. Also, improper application of technology, taking time-consuming products, and long procurement cycles influence the sustainability of the health care system in North America entirely.

All the studies stated above focuses on tangibly assessing logistics management. But the study assesses attributes like trust, commitment, cooperative norms, organization compatibility, and top management support, which is crucial in maintaining relationships with supply chain partners. These attributes have a direct relationship with reverse logistics performance Tinney (2012). Thus, the study considered attributes as intangible that associate it with logistics management, and the detailed explanation is stated below.

1.2. Trust

It refers to partners' readiness, which depends on others' belief that the partner has not been involved in opportunistic behavior (Moorman *et al.* 1993; Nooteboom *et al.* 1997). It acts as one of the attributes that influence the companies to reap success (Sherman 1992; Krishnan *et al.* 2006). In the analysis, Morgan (1994) finds that the trusting party's confidence emerges from the outcome of the party's belief. Besides, the party should act reliably and integrally. Both aspects closely associate the constructs like honesty followed by benevolence and competence (Dyer, Chu 2000; Joshi, 1999; Kumar *et al.* 1995; Mayer *et al.* 1995). Trust emerges when there is a belief between the parties(partner company) on actions. It creates a positive outcome for the

firm. Besides, there is no need for a partner company to take unexpected risks that affect the company image (Anderson, Narus 1990, 42).

It has the power to diminish the perceived risk, fear of information disclosure. However, it accelerates the partners' information flow and strengthens partners' beliefs by sharing confidential information (Anderson, Narus 1990; Moore 1998). In (Nyaga *et al.*2010; Handfield 2002; Zaheer *et al.* 1998) found that trust has a relationship with attributes like success followed by stability and supply chain partnership performance. However, unsuccessful relationships lead to having an absence of trust with partners. In such a case, companies will check each transaction, scrutinize it, and verify it, accelerating transaction costs. Transaction costs may arise because of complex contracts with partners, detailed confidentiality agreements, and specific continuous improvement clauses (Fawcett, Magnan 2004, 67). Therefore, companies are making an effort to mediate cooperation with their partners. An increasing number of studies have found that trust enables the supply chain members to have an effective logistics management describes below

Oláh *et al.* (2018) An investigation was made on trust and collaboration in supply chain management. The study finds that the variables (trust and collaboration) present in the relationship lead to a win-win relationship with the partners. Supply chain participants had integrity, credibility, respect, and compliance, along with a commitment to the relationship. All the aspects developed through organizational culture can help supply chain companies' partners overcome the bullwhip effect. The action can also improve information sharing and demand forecasting and reduce the co-ordination risk between the supply chain partners. The author highlights the two primary aspects essential in logistics management: trust and collaboration. It is playing a pivotal role in reducing the bullwhip effect present in logistics management.

Mesic *et al.* (2018) studied whether there is any relationship between reverse logistics performance and relationship quality. Besides, the study focuses on assessing the impact of relationship quality on reverse logistics performance. The study's findings highlight that trust followed by commitment, economic satisfaction, power, conflict, and reputation, impact reverse logistics performance. From the assessment, the study finds that there is an unclear outcome that the varibales were having a least impact and most impact was missed. Overall, it is clear that there is no simplistics explanation on how the methodology carries out in derving the objective.

Shin *et al.* (2018) indicated that the differences exist between supply chain relationship quality and the prerequisites of the firm. The statistical analysis shows that trust and commitment to supply chain relationship quality vary based on the firm. Trust has an impact on reverse logistics performance, whereas commitment did not have it. Thus, the study assist the researcher that trust has a close association with logistics performance. From the study, the reseracher identifies that the execution of entire study relies more on configuration theory. It remains unclear to which degree of configuration thoery are attributed to reverse logistics performance. Also, the exact explanation of the outcome that how trust and commitment vary statistically is still unclear.

Susanty *et al.* (2018) has examined the impact of trust on the performance of logistics management. The study observes that trust has an impact on the performance of logistics management. Mutual trust between owners and suppliers accelerates the performance of the organization. Strong trust is offered benefits to both parties. Some of the benefits, like mutual trust, reduce unnecessary costs and diminish the waiting time and number of inventories. Finally, it increases the profits of the organization and increases the satisfaction of consumers. In this study, the author determines the way of addressing the relatinship between trust and performance of logistics managmnet thorugh research insturment questionnaire. The primary reason behind picking out the article is that a well structured questionnaire which address the variable using five point likert scale. Thus the technique directs the reseracher to assess the attributes for more information.

Abdallah *et al.* (2017) have been found to analyze the effect of trust with suppliers on logistics performance. The study recognizes that trust has a positive impact on logistics performance. Finally, trust between the suppliers enhances the efficiency of operations, increases flexibility, and at the same time, reduce the costs associated with monitoring activities. The reseracher observes that the results is consistent which helps to determine the effect on logistics performance. But the study uses relational theory and the explanation of how theory supports to determine the outcome remains unclear. Thus, it is difficult to say that trust and logistics perforamnce related to each other.

More recent studies reveal that trust act as an antecedent of performance. Trust has a direct association with logistics performance. In simple words, it states that trust between the supply chain members considers as an outcome of logistics performance. All the studies have a direct outcome on pinpointing the relationship between the attributes. Hence, the researcher considers

trusting the first and foremost intangible attribute to measure the companies' logistics management.

Some of the below-stated studies show that trust and logistics performance indirectly associated with one another.

Ryu *et al.* (2009) have focused on identifying the attributes of buyer and supplier relationships and how they have impacted logistics performance. The study's outcome highlights that strategic and operational attributes are positively associated with the creation of buyer and supplier relationships. Besides, both attributes have an impact on logistics performance. Consequently, trust is also related to the attributes that influence the positive collaboration with the buyer and supplier partners, accelerating logistics performance. The resreacher uses the study to determine whether buyer and supplier relationship have an effect on reverse logistics performance. The study did not use any academic theory to support the attributes. Another criticism is that how the antecedents of buyer and supplier relationship supports in exploring the supply chain performance.

Panahifar (2018) has gained much attention to identifying the interrelationship between information sharing and trust and how the relationship accelerates firm performance. The study uses attributes like trust, followed by information readiness, information accuracy, and security. Firm performance assesses with the help of constructs relating to sales growth and operational performance. The study identifies that trust with secure information sharing with the partners positively accelerate the firm performance. Paluri and Mishal (2020) have described how the relationship exists between trust and commitment to logistics management longevity. The outcome shows that trust and commitment have a positive association with logistics management longevity. Developing trust and commitment between the partners increases profits and extends the relationship to an extended period.

From the studies, the researcher understands that trust has a close association with logistics performance. The above-stated studies assess it through quantitative aspects, and the outcome highlights that trust and commitment influence logistics performance. Thus, trust without commitment has no impact on firm performance. Therefore, the next section explains the commitment and its association with logistics performance.

1.3. Commitment

Commitment refers to the belief that supply chain partners have to continue their relationship (Loice 2015). It defines as the partner companies believe that the ongoing relationship with other companies is vital in warranting the parties' maximum benefits. Generally, parties establish a long-lasting relationship in an indefinite way (Morgan, Hunt 1994, 20). In other words, commitment is of extending willingness to the supply chain partners to maintain relationship continuity with them. Besides, it helps make the necessary sacrifices to reach the organization's goal (Rahmoun, Debabi 2012, 100). A long-enduring relationship between the parties, commitment, and joint action is vital in extending consistent support with the recurring exchanges (Heide 1990, 24). It acts as an essential attribute for long term success. Supply chain partners willing to invest resources sacrifice short-term benefits for reaping sustainability success in the environment (Mentzer *et al.* 2000). Organizations construct a relationship with partners and maintain it if they reap the mutually beneficial outcome (Morgan, Hunt 1994, 20). Thus it concludes that commitment act as a key to achieving the desired outcome directly and indirectly. Besides, the attributes have a positive impact on logistics performance (Prahinski, Benton 2004, 39). Thus, the recent literature evidence highlights the above-stated outcome using several different studies below.

Huo *et al.* (2015) has reported that how commitment mediated by supply chain co-ordination impacts reverse logistics performance. Supply chain coordination emerges between suppliers and customers. It finds to have a positive influence on reverse logistics performance. Interactive cooperation emerges between suppliers and customers, which in turn accelerates the reverse logistics performance. Thus, it observes that the parties' commitment creates supply chain co-ordination, directly influencing the reverse logistics performance. From the study the reseracher evaluates the impact of commitmnet on performance. The authors have framed the study in such a way that developing a proposed model uses to test the data collected from the firms. The way of carrying methodology is clearly defined, application of tools and outcome is highly correlated with one another.

Tsanos and Zografos (2016) reported that the impact of collaboration in reverse logistics performance. The study considers the antecedents of collaboration to be mutuality, followed by reciprocity, trust, and commitment. All the attributes were vital in creating a supply chain relationship, but at the same time, it has a power in influencing reverse logistics performance.

Chen *et al.* (2011) investigated how trust and commitment influence the supply chain relationship. The study finds that trust and commitment have a strong association with a supply chain relationship. The researcher observes that trust and commitment act as the primary attribute in developing supply chain relationships among supply chain members. Thus, trust and commitment as the most important attributes in developing the relationship.

1.4. Cooperative norms

It refers to the insights of a joint effort among supplier distribution to achieve integrated and individual goals (Tucker 2011; Cannon, Perreault 1999). Cooperation is essential among the supply chain parties to establish a common interest among them. The organization should believe that collaboration is necessary because will power of business partners with cooperation helps to make significant changes with faith and mutual effort. The action, in turn, adds value to the customers (Min, Mentzer 2004, 63). The organization allows sharing business information like purchase orders, requisitions and shipping notices and invoices smoothly previously collaborating with the partners can begin (Doukidis 2007).

Consequently, norms refer to the shared structure for social meaning. It assists the members in approaching supply chain partners to have interactions about internal functions (Tillquist 2007, 77). Altogether cooperative norms help to have working procedures internally for the organization to manage concerns and share rewards (Tinney 2012). Establishing respective collective standards for the organization relives it from risk when constructing a relationship with supply chain partners. Firms are willing to accept both risk and reward because of efficiencies gained through relationships. Studies like (Anbanandam *et al.* 2011; Pati *et al.* 2016; Sundram *et al.* 2011) explores the benefits of sharing risk and reward between supply chain partners.

Consequently, it helps the supply chain members to develop a long-term relationship. Also, it helps to reap a competitive advantage. To share both risk and reward among supply chain members, the organization needs to form strategies. Creating such strategies assist the firm in constructing cooperative norms with procedures. Organization member has to follow such procedures within the firm to develop a relationship with supply chain members.

Hamid *et al.* (2017) investigate the relationship between cooperative norms and reverse logistics performance. The study gets consistent support from a research-based view to assessing the above-stated objectives. Findings of the study highlight that there is a relationship between cooperative norms and reverse logistics performance. The resreacher observes that there is no direct statemnet portryaing the rleationship betweent he variables. The precise methodology driving the study is ambiguous. Thus, providing a clear perspective on academic theories and its back up with the study is vital to have a clear representation of effect of variables used in the study.

Tinney (2012) has been carried out on how cooperative norms impacted reverse logistics performance. A knowledge-based view assists the study in finding out the association between the variables. The study finds that there is a strong link between cooperative norms and reverse logistics performance. Thus, it helps to gain a competitive advantage in the marketplace. There is less amount of literature support to assess cooperative norms and reverse logistics performance. Hence the support induces the researcher to evaluate the relationship between the variables in the study.

1.5. Top management support

Every organization needs to have sufficient resources to carry out market studies. Consequently, it helps to determine the customer's needs and wants. The firm must get consistent support in creating and formalizing the processes among supply chain partners. Without consistent support from top management, it is impossible to make changes in procedures or processes (Bowersox *et al.* 2003). It has the power to promote customer involvement until it reaches the commercialization stage. Thus, Top management support and commitment are considered as the antecedents of supply chain management. It enables the firm to develop a close relationship with the suppliers to improve the quality and delivery of materials to the customers (Eltantawy *et al.* 2009). Thus the literature support portrays the importance of successful logistics management for a long time (Gibson 2004; Lambert, Cooper 2000). Therefore, it considers that the essential antecedents of supply chain management and the absence of such elements lead to supply chain management barriers.

Truong *et al.* (2016) indicate a relationship between top management support and firm performance. The study considers top management support as one of the antecedents for supply chain management. It finds that top management support had an indirect relationship with firm performance. Besides, it has a direct influence on firm performance.

Feng and Zhao (2014) have investigated the impact of top management support and inter-organization relationship on firm performance. A finding of the study states that top management support is essential to enhance the relationship with customers and suppliers. It has the power to improve customer involvement directly but not supplier involvement. Top management support assists in enhancing the supplier relationship with foreign-controlled firms than local firms. Enhancing customer involvement accelerates the firm performance

Shee *et al.* (2018) have been keen on assessing top management support and firm performance from a resource-based perspective. The study observes that there is a strong positive relationship with reverse logistics performance. It is moderating the relationship between supplier and internal integration with the performance.

Few studies have assessed the relationship between top management support and reverse logistics performance. Some of the studies have stated the relationship directly, whereas others through moderation analysis. Thus, the study evaluates the relationship between the variables directly.

1.6. Organization compatibility

It defines the values and principles, and strategies shared by the supply chain partners. It recognizes the ability to create synergies among supply chain partners (Sarkar *et al.* 2001). To enhance supply chain relationships among supply chain partners, it requires compatibility among the partnering organization (Mitsuhashi, Greve 2009). It refers to the element which inbuilt with an organization to enhance supply chain relationships with the partners. It observes from the previous year studies that firms having compatibility in the supply chain can have the change to improve supply chain efficiency and effectiveness (Ellram, Cooper 1990; Lambert *et al.* 1999)

Rajaguru (2019) indicated the extent to which compatibility had a relationship with the performance. With the dynamic capabilities theory, the study finds that the three dimensions of compatibility have been considered. It includes technical, operational, and cultural compatibility. All the variables play a crucial role in enhancing supply chain relationships with the partners. Compatibility act as a mediating variable in influencing competitive performance. The study backs up with the theory and it supprots to evaluate the attributes in enhance supply chain perforamnce. Besides, the findings arises from the fact that the application of mediation analysis helps to derive out the exact outcome on gaining competitive advantage through compatibility.

Dhaigude (2017) has been indicated that compatibility is one of the variables of supply chain orientation. The study assesses the association between compatibility and reverse logistics performance integrated with supply chain agility. It finds that the variable has a positive association with reverse logistics performance. The variable has a direct association with performance.

Ndubisi *et al.* (2011) has been stated how compatibility extends its association with performance. Compatibility assessment in terms of technical, followed by strategic and cultural aspects. The analysis provides an outcome that the antecedents of compatibility had a direct association with reverse logistics performance. The researcher observes that compatibility plays a vital role in influencing reverse logistics performance directly from the literature support assessment. It is having an indirect impact on reverse logistics performance. Thus, the researcher uses compatibility as an important attribute for the study.

Therefore, the researcher observes that intangible attributes like trust, commitment, cooperative norms, organization compatibility, and top management support have a relationship with reverse logistics performance. These attributes act as a key element in enhancing supply chain relationships with supply chain partners. Thus, the researcher concludes that the variables are antecedents to supply chain management, and hence the attributes use as a key element in the study.

1.7. Reverse logistics performance

Reverse logistics emerges as a new concept and demand the methodology to assess reverse logistics' performance. Assessment of reverse logistics performance acts as the tool to measure the performance and integration present in the closed-loop supply chain. Organizations using reverse supply chain activities are taking measures to evaluate improvement rather than identifying the specific targets. The primary reason for assessing reverse logistic performance is evaluating it and making decisions for future action (Sarkis *et al.* 2010; Gunasekaran *et al.* 2004).

Dimensions: The study assesses the performance based on three attributes: value recovered, quality, and responsiveness. All the attributes are derived out from the reverse logistics performance. The above-stated attributes have integration with reverse logistics performance, which supports gaining a competitive advantage. (Khalili-Damghani *et al.* 2015) indicated that the attributes were the most influential attribute in deriving out reverse logistics performance. Thus, the researcher determines that quality, value recovered and responsiveness are the attributes which supports reverse logistics performance.

Quality: Managing product quality is the foremost attribute in logistics activities. Supply chain partners have an equal responsibility to manage it effectively. The organization take back the product based on the quality, which determines the supply chain partners to make a design based on the conformance of the product design; if the product fit to use, then the organization take up the product to meet the customer needs effectively (Yoo, Cheng 2018; Handayani 2019). With the help of the study, the reseracher frames out the hypothesis that reverse logistics attributes has an effect on quality of reverse logistics performance.

Responsiveness: It defines how quickly the supply chain partners deliver reverse products to the organization (Javaid 2018). It is positively associated with lead time and customer returns. Lead time is an essential aspect that states how much tume will it take to reach the organization's products (Jie *et al.* 2007). Therefore, the study supports to frame out the hypothesis that reverse logistics attributes has an effect on responsiveness of reverse logistics performance.

Value recovered: It is an important activity to manage the flow of products from remanufacturing to disposal. It considers being an effective process to utilize the resources effectively

(Dowlatshahi 2000, 143). The main intention is to assess the aspects to recover the hidden value and to meet the market requirements at an appropriate time (Sasikumar, Kannan 2008). Therefore, the study supports to frame out the hypothesis that reverse logistics attributes has an effect on value recovered of reverse logistics performance.

From the assessment of various studies, the researcher observes the statistically significant attributes as the independent variable. It includes commitment, organization compatibility, cooperative norms, top management support, and trust. However, reverse logistics performance as the dependent variable. Reverse logistics performance measures using three attributes, namely quality followed by responsiveness and value recovered.

2. METHODOLOGY

The section describes more detail about the methods and methodology used. It provides information regarding applying research methods and its justification, research design chooses, and the reason behind using it in the study. Besides, it describes the information concerning population, samples, sampling techniques, data collection methods, reliability, validity, and ethical considerations. All the information has been described in detail in the subsequent headings.

Research Onion: The study uses research onion to recognize the research process carried out by the researcher. (Saunders *et al.* 2016). Layers of the research onion presented in the below diagram.

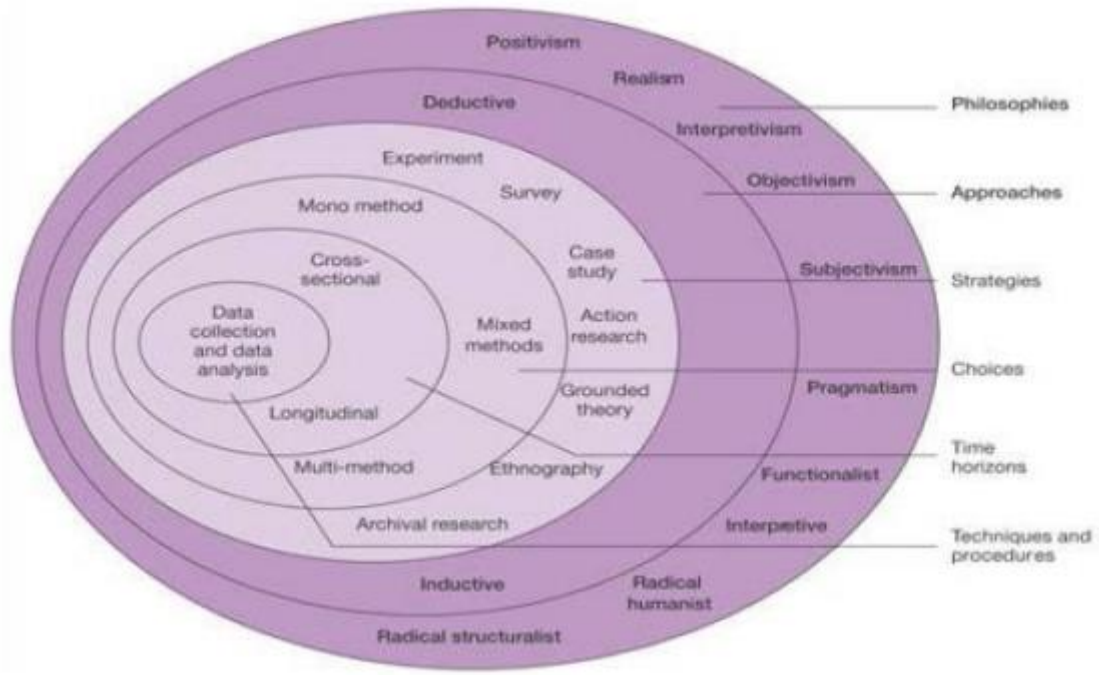

Figure 1. Research Onion
Source: Saunders *et al.* (2016)

Research philosophy: It is defined as a belief or idea that directs the appropriate research design, data collection, and research analysis. (Saunders *et al.* 2016). The study executes based on statistical tools to generate the outcome for the research concern. Hence, positivism is a suitable approach to determining logistics management's actions and their impact on reverse logistics performance. The positivism approach is backed up by the evidence in (Tucker 2011; Nilsson *et al.* 2018), which supports positivism.

Research approach: There are two types of approaches. Inductive and deductive approaches. Inductive methods: In this approach, the researcher observes the data and discover new knowledge from it. Deductive methods: The researcher gathers the data, fix the hypothesis, and derive the outcome. (Maxwell 2012; Melnikovas 2018). Justification: The vast majorities of studies included in the methodology that the deductive approach is the best to identify the outcome for research concern (Govindan *et al.* 2015; Mandota 2015)

Research strategy: It helps the researcher choose the appropriate methods to identify the research questions' outcome, paving the way to accomplish the research objectives. (Saunders *et al.* 2016). The researcher uses seven techniques, such as experiments, surveys, action research, case studies, ethnography, grounded theory, and archival research. Among seven, the survey has been chosen to facilitate gathering consistent data from a sample population. The study prefers the survey approach. Both questions and interviews are related to a survey (Bryman 2017). For this analysis, the researchers selected the survey approach. The study collects the respondent's opinion through the google form.

Research method and process: Research methods are quantitative methods, qualitative methods, and mono methods. Quantitative data is in numerical form, followed by a qualitative collection of vast descriptive data, and the mono method uses either qualitative or quantitative methods (Saunders *et al.* 2016; Creswell 2017). Notably, some recent theoretical work of (Lima-Junior 2017; Acquaye *et al.* 2018; Dekker *et al.* 2013; Tayur 2012) supports the assessment of logistics management and reverse logistics performance using quantitative methods.

Time horizons: The time horizon is the period to study the thesis. (Saunders *et al.* 2015). The present study time horizon is cross-sectional because the study's nature is made within a short period. (Bryman, Bell 2015).

2.1. Research sampling methods and techniques

Population: Pernecky (2016) defines a population as a wider variety of subjects from which a sample is taken. The study has a population as the employees working in the supply chain department of companies in Pakistan. The total number of employees to be 150, and hence it determines the population of the study.

Samples : The sample is of picking out the small data from the wide population. Thus, the samples are employees working, especially in the supply chain department of Barrett Hodgson Private Limited.

Sampling: Sampling refers to applying the respective methods to represent the subset of the population. It is of two types.
Probability sampling: It gives equal importance to equal sample selects for the study
Non-probability sampling: It picks out the samples based on non-randomized methods.
The study uses non-probability sampling in which purposive sampling is determined for the study. The study fixes inclusive criteria as the employees who are working in Barrett Hodgson Private Limited, Rawalpindi. The study excludes the employees who are working outside Rawalpindi. Already, the researcher had an experience in working with the organization. Thus, the researcher can get the contacts of the reverse logistics personnel through their manager. The research gets the respondents opinion through web survey.

Sample size: It refers to the number of participants uses in the study. The sample size determines the power and impact of the study. Determining the sample size relies on the study design, and it may vary based on attributes like confidence interval and level of significance (Chander 2017, 217). The minimum sample size ranged from 30 to 200 (Louangrath 2017). Among 150 respondents, the study fixes a 5% level of significance and a formula. The sample size was determined using a formula adapted from (Guilford, Frucher 2009)

$n = \frac{N}{1} + N\ (e^2)$
Where
n- The expected sample size
N- The population
e- $\pm$0.05, is the level of precision

The sample size required for a 5% analysis, based on the above statistical formulation, was n = 150/ 1 + 150 (0.052) = 108 respondents. At least 108 pharmaceutical workers in Pakistan had to analyse at a confidence interval of 2.18% and an error margin of 5%.

Data collection: Data collection is about gathering the information about the variables, measuring it using statistical tools, fixing the hypothesis, and deriving the outcome. The study relies on primary data because it is reliable and authentic (Paradis *et al.* 2016). The organization permits us to collect the employees' opinions about intangible attributes and reverse logistics performance for the first time. It has a higher validity than other types of data. There are various sources to collect primary information from the respondents and include experiments, surveys, questionnaires, and interviews. Among the sources, the study uses a questionnaire, uses both open-ended and close-ended questions to record the respondents' opinion through Google form. Secondary sources like journal articles, books, and conference proceedings collect the information regarding how the others had already done the study. Besides, websites information uses to know about the organization.

Reliability: The study assesses the reliability of statistics using SPSS to assess the accuracy of the attributes. It considers the attributes like trust, commitment, cooperative norms, organization compatibility, and top management support. Also, reverse logistics performance has been taken into account. It contains attributes like quality, responsiveness, and value recovered. Assessing all the attributes statements (21) provides the Cronbach alpha as 0.821. The study observes that the Cronbach alpha is higher than the standard limit. The standard limit of Cronbach alpha is 0.70; acceptable values should be ranged between 0.70-0.95 (Tavakol, Dennick 2011). Thus, the values in the study indicate that it has higher internal consistency. Random error variance for the attributes is 0.32 (Kline 1994), which concludes that reliability is high, diminishing random error present in the attributes.

Hypothesis:
The present study aimed to test the following hypothesis.

Trust has an association with reverse logistics performance: Most of the current evidence supports the association of trust of logistics management and reverse logistics performance (Shin *et al.* 2018); Susanty *et al.* 2018) Abdallah *et al.* 2017)

Commitment has an association with reverse logistics performance. The present hypothesis is supported by eh findings of the subsequent studies (Huo *et al.* 2015; Tsanos, Zografos 2016); Chen *et al.* 2011)

Cooperative norms are associated with reverse logistics performance: The study frames the hypothesis included in the review found that very few studies have proved the relationship. (Hamid *et al.* 2017; Tinney 2012)

Top management support is associated with reverse logistics performance: The hypothesis is backed up by the evidence that asserts that a relationship exists between the variables. ((Shee *et al.* 2018; Feng, Zhao 2014)

Organization compatibility is associated with reverse logistics performance: Further support of the hypothesis is given in the studies, directly correlating to the variables having an association with one another. (Ndubisi *et al.* 2011; Dhaigude 2017; Rajaguru 2019)

Ethical considerations: The ethical standards, such as willingness to engage, objectivity, secrecy, equity, and analytical rigor, are considered to ban unwanted research practices. The present study was conducted with the written consent of the interviewees (Srivastava 2007). The research respondents' data is kept anonymous by software encryption—every type of bias excluded from the report. The constant data analysis approach is used to ensure that the subjects originate from the data collected. The use of other methods that implement priority themes' development can lead to claims like the bias in the study (Kolb 2012). Also, the report offers knowledge from credible and stable sources of information. It also avoids plagiarism by reducing the illicit use of the prevailing research.

3. ANALYSIS, RESULTS AND IMPLICATIONS

3.1. Profile of respondents

It shows the number of observations of respondents' opinions on each category (Duquia 2014). The main intention of using the tools is to offer each category information more thoroughly and effortlessly (Manikandan 2011). The study applies a percentage analysis for the profile of respondents related to educational qualification and work experience. Education qualification has categories like Undergraduates, post-graduates, profession, and others. The term others represent the education qualification of respondents related to ITI and diploma holders. However, respondents' work experience is classified in less than three years,3-5 years, 5-7 years, and above seven years. A detailed description of the respondents' profile and their observations has been presented in the below table.

Table 1. Profile of respondents

Particulars		frequency	percent
Education qualification	Undergraduate	29	26.9
	Postgraduate	32	29.6
	Professional	22	20.4
	Others	25	23.1
Work experience	Less than three years	24	22.2
	3 to 5 years	23	21.3
	5 to 7 years	31	28.7
	Above seven years	30	27.8
Total		108	100.0

Source: Author own calculation

Education: The table above indicates that 26.9% of undergraduates while 29.6% of post-graduates, 20.4% of professionals, and 23.1% are others. Hence it evident that the most significant number of respondents have post-graduate as their education qualification.

Work experience: It was found from the table that 22.2% of participants have less than three years of experience while 21.3% of between 3 and 5 years of experience, 28.7% of between 5 and 7 years of experience, and 27.8% are above seven years of experience. Thus it is inferred that the highest numbers of respondents have 5-7 years of work experience in the respective organization.

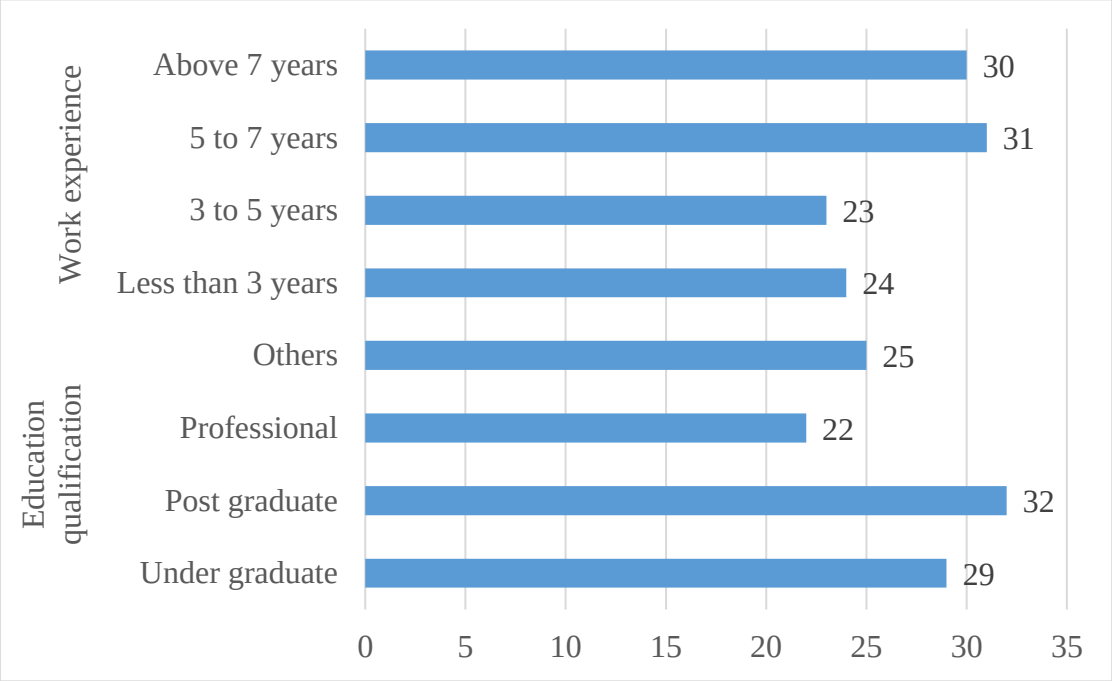

Figure 1. Profile of respondents
Source: Author own calculation

3.2. Independent variables

Descriptive statistics: summarizes the respondents being studied without drawing inferences based on theory (Kaliyadan, Kulkarni, 2019). It offers a general summary of the respondents' opinions who participated in the survey (Nick, 2007). It summarizes the data of both dependent and independent variables in the form of mean and standard deviation. Visually the researcher represents the data using a bar diagram.

Trust: Trust is the first independent variable used in the study. The researcher framed the constructs to test the trust of supply chain partners of the organization. The statements like supply chain members trustworthy, supply chain partner capabilities investigate carefully before

making contracts, regularly monitoring the performance. Besides, supply chain partners often have conflicting goals with the supply chain goals, and supply chain members map the product returns for cost savings and cost improvement. All the constructs assess using a five-point Likert scale and the average values ranging from 2.75 to 3.25. The highest mean indicates the construct" Supply chain members involved in the supply chain activities are trustworthy." However, the least mean to represent the statement "Supply chain members map the product returns that offer prospects for cost savings and service improvement" Standard deviation represents the statement's precision. The highest precision indicates the statement," Our supply chain partners often have goals which are conflicting with the supply chain goals." In contrast, the lowest accuracy for the statement is, "We are analyzing our supply chain partners' capabilities very carefully before making contracts."

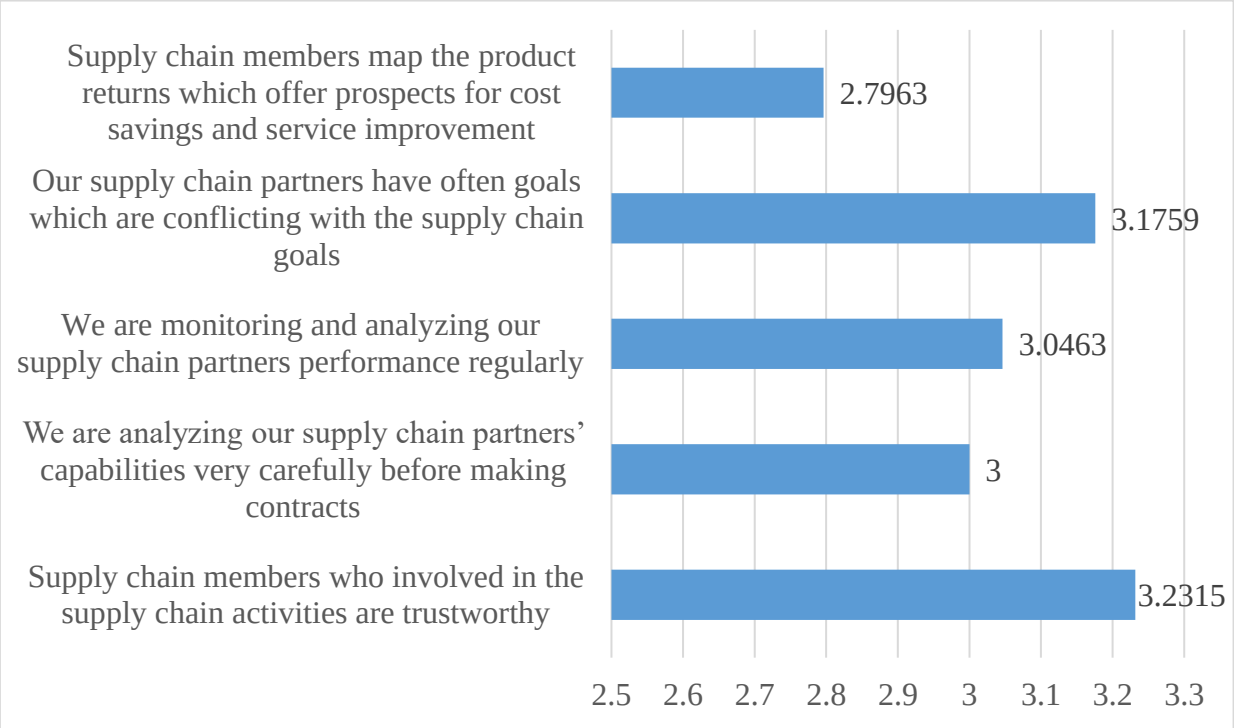

Figure 2. Trust
Source: Author own calculation

Commitment: The second independent variable was used in the study is commitment. The researcher measures the commitment using the below statements. Statements like the organization are working hard to establish good friendly relations with supply chain participants. Relationship with supply chain members is essential for an organization, and the organization

expects the relationship with supply chain members will last for an extended period related to the commitment. The average values are ranging from 2.9 to 3.1. The highest value indicates the statement, "Organization expects the relationship with supply chain members will last for a long period."

In contrast, the least mean value for the statement" organization is working hard to establish good friendly relations with supply chain participants." However, the researcher uses standard deviation to measure the precision of the statement. The highest precision for the statement is "Relationship with members of the supply chain is essential for the organization." In contrast, the lowest accuracy for the statement is, "Organization expects the relationship with supply chain members will last for a long period."

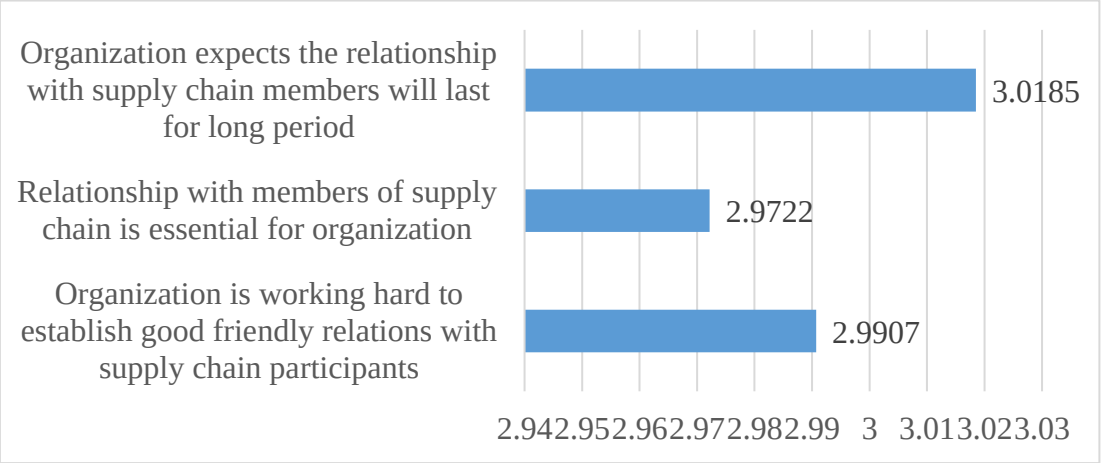

Figure 3. Commitment
Source: Author own calculation

Cooperative norms: In this study, cooperative norms consider being the third independent variable. The variable assesses using the subsequent statement. Statements like organization prepared to make adjustments for the supply chain leaders defined performance limits as minimal expectations to all our supply chain partners. The organization views the supply chain as a critical function in creating value for the business associated with cooperative norms. The study assesses the constructs using a five-point Likert scale. The average mean value for cooperative norms ranging from 2.8-3.2. The highest mean value indicates the statement, "We have defined performance limits as minimal expectations to all our supply chain partners."

In contrast, the least mean value for the statement is" organization prepared to make adjustments for the supply chain leaders." Precision can be assessed with the help of standard deviation. The highest precision for the statement is, "The organization views the supply chain as a key function in creating value for the business." In contrast, the lowest precision for the statement is "Organization prepared to make adjustments for the supply chain leaders."

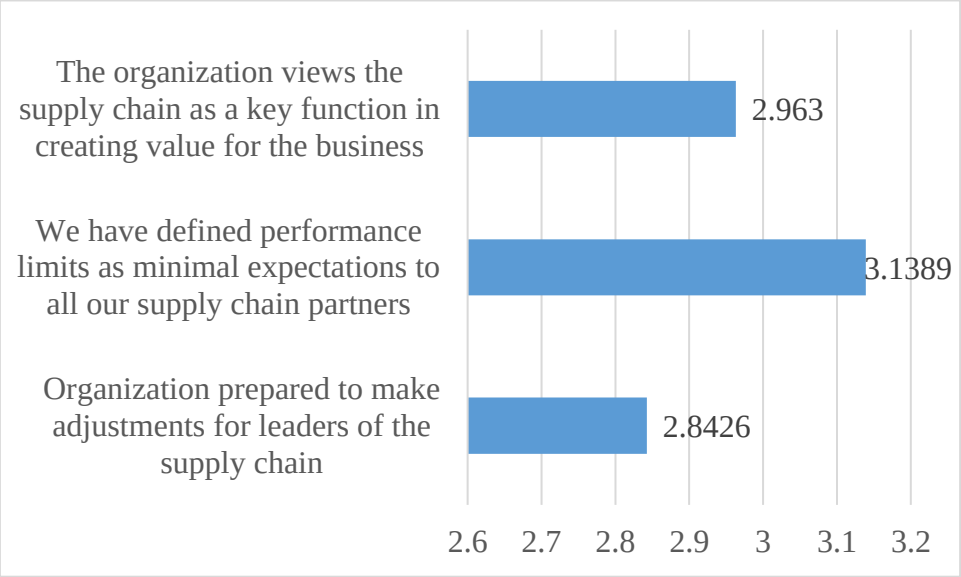

Figure 4. Co-operative norms
Source: Author own calculation

Organisation compatibility: The study has organization compatibility being the fourth independent variable. The researcher evaluates the variable using the statement "Organization goals and objectives consistent with key supply chain members." Simultaneously, the "Culture of the organization is quite similar to the key supply chain members," and "Top officials have a style similar to that of key supply chain members." All the statements assessed it using a five-point Likert scale. The average values are ranging from 2.75 to 3.05. The highest mean value indicates the statement," Culture of the organization is quite similar to the vital supply chain members." However, the lowest mean value for the statement "Organization goals and objectives consistent with key supply chain members." Standard deviation represents the precision; the highest accuracy for the statement is, "Top officials have a style similar to that of key supply chain members." In contrast, the lowest precision for the statement is "Culture of the organization is quite similar to the key supply chain members."

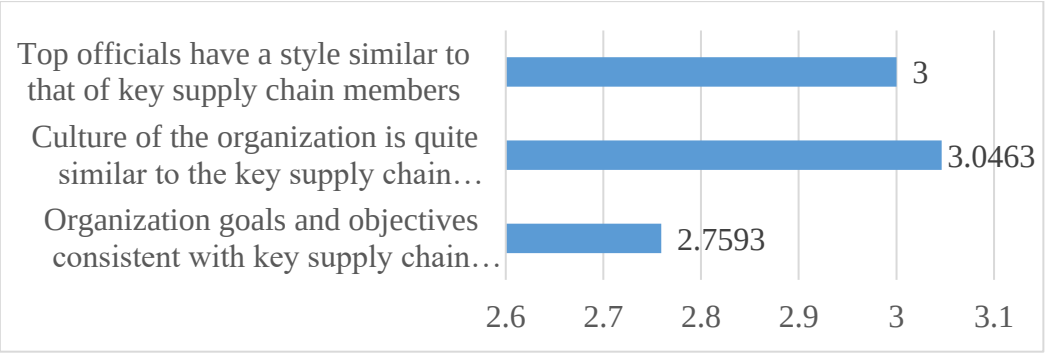

Figure 5. Organisation compatibility
Source: Author own calculation

Top management support: The study has top management support as the fifth independent variable. The researcher evaluates the top management using statements like "Enhance long-term partnerships with key members of the supply chain." Simultaneously the "Share valuable information with the key members of the supply chain to make the business unit win," and "Sharing risks and rewards with key supply chain members." The average mean values ranging from 2.8 to 3.05. The highest mean value represents the statement" Enhance long-term partnerships with key members of the supply chain." The lowest mean value for the statement is "Sharing risks and rewards with key supply chain members." The highest precision for the statement is "Sharing risks and rewards with key supply chain members." In contrast, the lowest accuracy for the statement is to "Enhance long-term partnerships with key members of the supply chain."

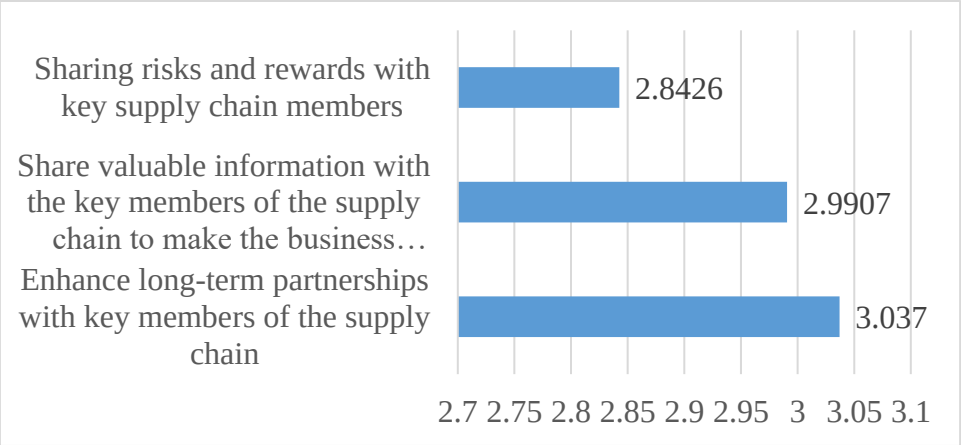

Figure 6. Top management support
Source: Author own calculation

3.3. Dependent variables

Reverse logistics performance: The study considers reverse logistics performance as the dependent variable. Reverse logistics performance includes quality, responsiveness, and value recovered.

First is quality, which measures statements like “Does the percentage of defects reduced to a great extent?” and “Customer complaints resolved.” The average mean value is ranging from 3 to 3.08. The highest mean value for the statement is, “Does the percentage of defects reduced to a great extent?” The lowest mean value for the statement is “Customer complaints resolved.” The statement “Customer complaints resolved” has the highest precision. However, the statement “Does the percentage of defects reduced to a great extent?” has the lowest accuracy.

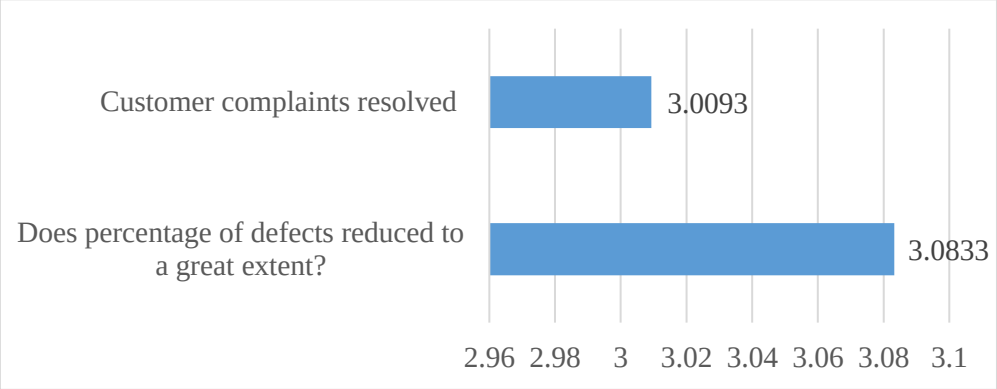

Figure 7. Quality
Source: Author own calculation

Responsiveness: The second most attribute is responsiveness, which measures using the statements. The statements like “Return rates by returns reason” and “Return rates by quality” indicate variable responsiveness—the average mean for the responsiveness ranging from 3 to 3.1. The highest mean value for the responsiveness is “Return rates by quality,” which has the lowest precision. The lowest mean value for the statement is “Return rates by returns reason,” which has the highest precision

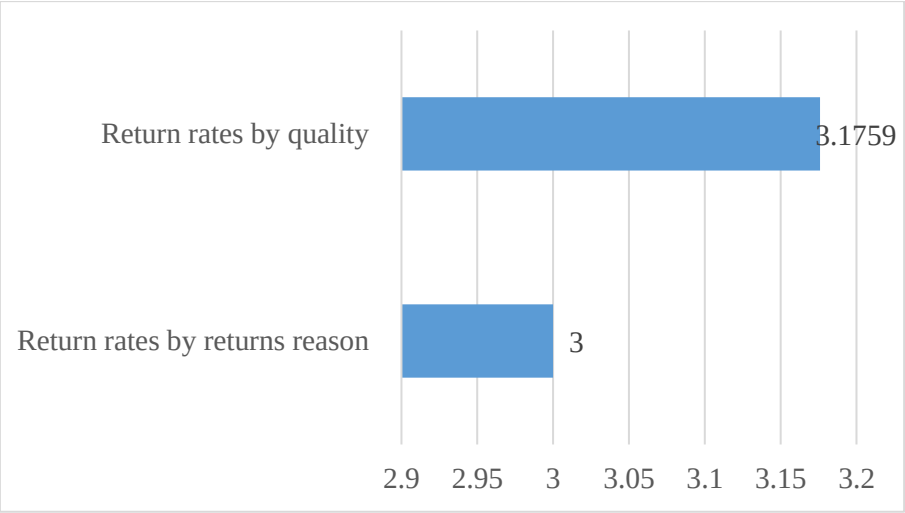

Figure 8. Responsiveness
Source: Author own calculation

Value recovered: The third most attribute is value recovered. It measures using the statements like "Revenue from reselling repaired products in value-recovery" and "Cost avoidance by reusing refurbished parts/products in the forward supply chain." The average mean value for the value recovered, ranging from 2.90 to 2.92. The highest mean value for the statement is "Cost avoidance by reusing refurbished parts/products in the forward supply chain," which has the highest precision. The lowest mean value for the statement is "Revenue from reselling repaired products in value-recovery," which has the most insufficient accuracy.

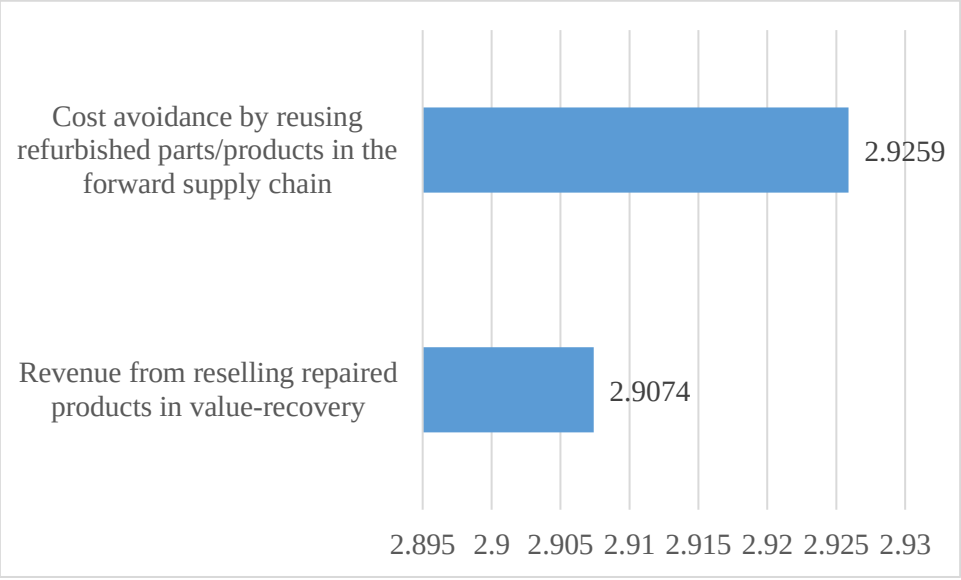

Figure 9. Value recovered
Source: Author own calculation

3.4. Association between intangible attributes of logistics management and reverse logistics performance

Correlation: It measures the degree of association between two variables (intangible attributes of logistics management and reverse logistics performance). Pearson correlation uses to determine the strength of association between two variables (Gogtay, Thatte 2017). The standard value of correlation lies between positive 1 to negative 1.

The study has intangible characteristics of logistics management containing trust, commitment, cooperative norms, organization compatibility, and top management support. However, reverse logistics performance integrated the attributes like quality, responsiveness, and the value recovered. The correlation test uses to find out the relationship between each intangible characteristic separately with the integrated reverse logistics performance.

Table 2. Relationship between intangible attributes of logistics management and reverse logistics performance

Particulars		correlation value	significance	outcome
Reverse logistics performance	Trust	0.760	.000	Positive and strong
	Commitment	0.632	.000	Positive and strong
	Cooperative norms	0.864	.000	Positive and strong
	Organization compatibility	0.471	.000	Positive and strong
	Top management support	0.648	.000	Positive and strong

Source: Author own calculation

H_1: Trust has an association with reverse logistics performance

From the above table, it is observed that the coefficient of correlation is 0.760, and its P-value is 0.000, which suggests that there is a strong positive correlation between trust and reverse logistics performance. It shows the association between the variables is statistically significant.

H_2: commitment has an association with reverse logistics performance

The table above shows that the coefficient of correlation is 0.632 and its P-value is 0.000, which suggests that there is a strong positive correlation among the commitment and reverse logistics performance, and it concluded that the relationship is statistically significant

H_3: Cooperative norms have an association with reverse logistics performance

The table above depicts that the correlation coefficient is 0.864 and its P-value is 0.000, which suggests that there is a strong positive correlation among the cooperative norms and reverse logistics performance, and it is statistically significant

H_4: Organisation compatibility has an association with reverse logistics performance

It observed from the table above that the correlation coefficient is 0.471 and its P-value is 0.000, which suggests that there is a strong positive correlation among the organization compatibility and reverse logistics performance, and it's statistically significant

H_5: Top management support has an association with reverse logistics performance

It finds from the table that the correlation coefficient is 0.648 and its P-value is 0.000, which suggests a strong relationship between the management support and reverse logistics performance. Finally, the association is statistically significant.

3.5. Association between intangible attributes of logistics management and the quality of reverse logistics performance

The study described the correlation analysis using intangible features of logistics management and quality of reverse logistics performance. The outcome of the table presents below

Table 3. Association between intangible attributes of logistics management and the quality of reverse logistics performance

Particulars		correlation value	significance
Quality of Reverse logistics performance	Trust	0.700	.000
	Commitment	0.840	.000
	Cooperative norms	0.930	.000
	Organization compatibility	0.368	.000
	Top management support	0.672	.000

Source: Author own calculation

H_1: Trust has an association with the quality of reverse logistics performance
The table indicated that the coefficient of correlation is 0.700. Its P-value is 0.000, which shows a strong positive correlation between reverse logistics performance trust and quality. It shows the association between the variables is statistically significant.

H_2: commitment has an association with the quality of reverse logistics performance
The table above reveals that the coefficient of correlation is 0.840 and its P-value is 0.000, which indicated the commitment has a strong positive correlation with the quality of reverse logistics performance, and it concludes that the relationship is statistically significant

H_3: Cooperative norms have an association with the quality of reverse logistics performance
The table above finds that the correlation coefficient is 0.930. Its P-value is 0.000, which shows a significant association between the cooperative norms and quality of reverse logistics performance and statistically significant.

H_4: Organisation compatibility has an association with quality of reverse logistics performance
It shows from the table above that the correlation coefficient is 0.368. Its P-value is 0.000, which suggests that organization compatibility strongly relates to reverse logistics performance quality, and it's statistically significant.

H_5: Top management support has an association with the quality of reverse logistics performance
It finds from the table that the correlation coefficient is 0.672 and its P-value is 0.000, which suggests a strong relationship between the management support and quality of reverse logistics performance. Finally, the association is statistically significant

Table 4. Association between intangible attributes of logistics management and responsiveness of reverse logistics performance

Particulars		correlation value	significance
Responsiveness of Reverse logistics	Trust	0.664	.000
	Commitment	0.755	.000

performance	Cooperative norms	0.750	.000
	Organization compatibility	0.520	.000
	Top management support	0.698	.000

Source: Author own calculation

Correlation analysis has been used to assess the relationship between intangible attributes of logistics management and reverse logistics performance responsiveness.

H_1: Trust has an association with the responsiveness of reverse logistics performance

The above table states that the correlation value is 0.664 and the P-value is 0.000, which indicates the trust has a strong association with the responsiveness of reverse logistics performance. It shows the association between the variables is statistically significant.

H_2: commitment has an association with the responsiveness of reverse logistics performance

The above table found that the correlation value is 0.755 and the P-value is 0.000. Hence it concludes that there is a positive relationship between the variables and it's statistically significant

H_3: Cooperative norms have an association with the responsiveness of reverse logistics performance

The above table observed that the correlation value (0.750) and the significance value are 0.000. Therefore it is evident that the cooperative norms have a significant relationship with the responsiveness of reverse logistics performance, and it is statistically significant

H_4: Organisation compatibility has an association with the responsiveness of reverse logistics performance

In this study, the table depicts that the correlation value is 0.520 and its P-value is 0.000, which suggests that there is a strong and positive correlation among the organization compatibility and responsiveness of reverse logistics performance, and it's statistically significant

H_5: Top management support has an association with the responsiveness of reverse logistics performance

The above table indicated that the value of the correlation (0.698) and the P-value is 0.000. Therefore, it inferred a strong relationship between the management support and responsiveness of reverse logistics performance. Finally, the association is statistically significant

Table 5. Association between intangible attributes of logistics management and the value recovered of reverse logistics performance

Particulars		correlation value	significance
Value recovered of Reverse logistics performance	Trust	0.642	.000
	Commitment	0.746	.000
	Cooperative norms	0.864	.000
	Organization compatibility	0.525	.000
	Top management support	0.608	.000

Source: Author own calculation

Correlation analysis has been used to assess the relationship between intangible attributes of logistics management and the value recovered of reverse logistics performance

H_1: Trust has an association with value recovered of reverse logistics performance

The table shows that the correlation coefficient value (0.642) and the significance value is 0.000. Therefore, it concludes that reverse logistics performance's trust and value have strong and positive relationships. Finally, it shows the association between the variables is statistically significant.

H_2: commitment has an association with value recovered of reverse logistics performance

It reveals from the table that the correlation value (0.746) and the P-value are 0.000. Thus it concludes that there is a positive association between the variables, and it is statistically significant

H_3: Cooperative norms have an association with value recovered of reverse logistics performance

The correlation value (0.864) and the significance value (0.000) are found in the table. Hence it is evident that there is a strong positive correlation among the cooperative norms and value recovered of reverse logistics performance, and it is statistically significant

H_4: Organisation compatibility has an association with value recovered of reverse logistics performance

The table above shows that the correlation value (0.525) and the significance value (0.000). It then concluded that there is a strong relationship among the organization compatibility and value recovered of reverse logistics performance, and it's statistically significant

H_5: Top management support has an association with value recovered of reverse logistics performance

The above table indicated that the correlation value (0.608) and the P-value (0.000) suggest a strong relationship between the management support and value recovered of reverse logistics performance. Finally, the association is statistically significant.

3.6. Effect of trust of logistics management on reverse logistics performance

A simple linear regression method was used to evaluate the effect of one independent variable (trust) on the outcome (Reverse logistics performance). The hypothesis for the regression is stated below

H_1: Trust has an impact on reverse logistics performance

Table 6. Impact of trust of logistics management on reverse logistics performance

Particulars	r	r^2	f	sig	t	sig
(Constant)	.760[a]	.578	3.970	.000[b]	12.847	.000
Trust					1.992	.000

Source: Author own calculation

The table finds that the R-value is 0.760, which signifies that trust has a strong linear relationship with reverse logistics performance. However, r square is 0.578, which characterizes that trust has a 57.8% effect on reverse logistics performance. The ANOVA table found that the statistics that 3.970 and significance of 0.000 show that the variable trust can pave the way to predict the reverse logistics performance with the present data. In the coefficient table, the beta value is

shown as 0.760, t as 1.992, and sense as 0.000. Hence it concluded that trust has an impact on reverse logistics performance. The simple linear regression for reverse logistics performance=2.623+0.134(trust)

Table 7. Impact of commitment of logistics management on reverse logistics performance

Particulars	r	r^2	f	sig	t	sig
(Constant)	.632[a]	.399	.660	.000[b]	16.815	.000
Commitment					.812	.000

Source: Author own calculation

The table found that the r-value is 0.632, which indicates that commitment has a strong positive relationship with reverse logistics performance. R square as 0.399, which suggests that the commitment has a substantial impact on reverse logistics performance. From the ANOVA table, it was found that the statistics of 0.660 and significance of 0.000 show that with the help of commitment, the researcher can predict the reverse logistics performance. The coefficient table shows that the beta value is 0.632, t is 0.812, and P-value is 0.000. Hence it concluded that the commitment has an impact on reverse logistics performance. The simple linear regression equation for reverse logistics performance= 3.164+0.049(commitment)

Table 8. Impact of cooperative norms of logistics management on reverse logistics performance

Particulars	r	r^2	f	sig	t	sig
(Constant)	.864[a]	.746	.985	.000[b]	15.684	.000
Cooperative norms					.992	.000

Source: Author own calculation

The above table found that the R-value is 0.864, which shows that cooperative norms have a strong positive relationship with reverse logistics performance. However, r square is 0.746, which indicates that cooperative norms have a 74.6% impact on reverse logistics performance. The ANOVA table found that the statistics that are 0.985 and significance as 0.000 show that the variable cooperative norms can pave the way to predict reverse logistics performance. In the coefficient table, the beta value is shown as 0.864, t as 0.992, and sense as 0.000. Hence it

concluded that the cooperative norm has an impact on reverse logistics performance. The simple linear regression for reverse logistics performance=2.845+0.058(cooperative norms)

Table 9. Effect of organisation compatibility of logistics management on reverse logistics performance

Particulars	r	r^2	f	sig	t	sig
(Constant)	.471[a]	.222	2.667	.000[b]	9.519	.000
Organisation compatibility					1.633	.000

Source: Author own calculation

The table observes that the r square value is 0.222, representing organization compatibility impacting 22.2% reverse logistics performance. However, R-value is 0.471, which signifies that organization compatibility has a strong positive relationship with reverse logistics performance. The ANOVA table found that the statistics of 2.667 and 0.000 show that the variable organization compatibility can pave the way to predict the reverse logistics performance with the present data. In the coefficient table, the beta value is shown as 0.471, t as 1.633, and sense as 0.000. Hence it concluded that organization compatibility has an impact on reverse logistics performance. The simple regression equation is Reverse logistics performance = 2.582+0.143(organization compatibility)

Table 10. Effect of top management support of logistics management on reverse logistics performance

Particulars	r	r^2	f	sig	t	sig
(Constant)	.648[a]	.420	1.029	.000[b]	14.867	.000
Top management support					.170	.000

Source: Author own calculation

The table shows that the r-value is 0.648, which indicates that top management support has a linear relationship with reverse logistics performance. Consequently, the r square value is 0.420, representing that top management support affects 42% reverse logistics performance. It clarifies from the ANOVA table that the statistics that 1.029 and significance of 0.000 statistics show that

top management support is sufficient to predict reverse logistics performance. The beta value is shown in the coefficient table as 0.648, t as 0.170, and sense as 0.000. Hence it concluded that the top management support has an impact on reverse logistics performance. The simple linear regression equation for reverse logistics performance=3.051+0.011(top management support)

Table 11. Impact of logistics management attributes on reverse logistics performance

Particulars	r	r square	f	sig	beta	t	sig
Trust	0.664	0.441	1.291	.000	0.664	0.231	.000
Commitment	0.755	0.570	1.092	.000	0.755	0.873	.000
Cooperative norms	0.750	0.563	0.934	.000	0.750	1.092	.000
Organization compatibility	0.520	0.270	2.918	.000	0.520	0.793	.000
Top management support	0.698	0.487	2.193	.000	0.698	1.182	.000

Source: Author own calculation

Trust: The above table indicates that R-value (0.664) is large and shows a strong relationship between the variables. However, the R square value (0.441) represents that trust affects 44.1% of reverse logistics performance responsiveness. The ANOVA table shows that the F-value (1.291) and significance of 0.000 show that trust is sufficient to predict reverse logistics performance responsiveness. The beta value is shown in the coefficient table as 0.664 and t as 0.231. The hypothesis for the variable is H_1: Trust affects the responsiveness of reverse logistics performance

Hence, it is evident that the trust has a strong and positive impact on reverse logistics performance's responsiveness. The simple linear regression equation for the responsiveness of reverse logistics performance=2.837+0.172 (trust)

Commitment: The table observed that the R-value (0.755) is high, offering a close relationship between the variables. The R square value shows that the commitment affects the responsiveness of reverse logistics performance is 57 percent. The ANOVA table clarifies that the F value is 1.092, and the p-value is 0.000. This shows that commitment is sufficient to predict the responsiveness of reverse logistics performance. The regression test shows that the beta value is 0.755 and t is 0.873. The hypothesis for the variable is H_2: Commitment affects the responsiveness of reverse logistics performance Thus, it is evident that commitment has a strong

and positive impact on reverse logistics performance's responsiveness. The simple linear regression equation for the responsiveness of reverse logistics performance=3.123+0.016 (commitment)

Cooperative norms: From the above table, it indicated that the R-value is 0.750, R square as 0.563. Based on the R square value, the study observes that the Cooperative norms have a 56.3% impact on reverse logistics performance responsiveness. ANOVA statistics showing that the value is 0.934, and the value is statistically significant. The table also indicates that the beta is 0.750, t is 1.092, and the p-value is 0.000. The hypothesis for the variable is H_3: Cooperative norms affect the responsiveness of reverse logistics performance. With the help of analysis the study concludes that the Cooperative norms have a strong and positive impact on reverse logistics performance responsiveness. The simple linear regression equation for the responsiveness of reverse logistics performance=2.938+0.532 (Cooperative norms)

Organisation compatibility: Hypothesis for the variable is H_4: Organization compatibility affect responsiveness of reverse logistics performance. The effect of Organization compatibility and reverse logistics performance's responsiveness secures R as 0.520, while R square is 0.270. The R-value implies that it is strongly related to the variables. The R square value indicates that the Organization compatibility and responsiveness of reverse logistics performance is 27%. The ANOVA table suggested that the value is 2.918, and the value is statistically significant. The beta value shows in the coefficient table as 0.5220, t as 1.829, and P-value as 0.000. It is then evident that an organization's compatibility has a strong and positive impact on reverse logistics performance responsiveness. The simple linear regression equation for the responsiveness of reverse logistics performance=4.129+0.817 (Organization compatibility).

Top management support: Hypothesis for the variable is H_5: Top management support affects the responsiveness of reverse logistics performance. The table reveals the R-value is 0.698, and R square is 0.487, which is high, offering a close relationship between the variables. The R square value shows that the top management support of reverse logistics performance responsiveness is 48.7 percent. The ANOVA table clarifies that the F value is 2.193, and the p-value is 0.000. This shows that top management support is sufficient to predict the responsiveness of reverse logistics performance. The regression test shows that the beta value is 0.698, t is 1.182, and P-value is 0.000. Therefore, top management support has a strong and positive impact on the

responsiveness of reverse logistics performance. The simple linear regression equation for the responsiveness of reverse logistics performance=3.928+0.191 (top management support)

3.7. Effect of intangible attributes of logistics management on quality of reverse logistics performance

Table 12. Effect of intangible attributes of logistics management on quality of reverse logistics performance

Particulars	r	r square	f	sig	beta	t	sig
Trust	0.700	0.490	1.892	.000	0.700	1.021	.000
Commitment	0.840	0.706	2.192	.000	0.840	1.123	.000
Cooperative norms	0.930	0.865	1.836	.000	0.930	0.892	.000
Organization compatibility	0.368	0.135	1.283	.000	0.368	0.782	.000
Top management support	0.672	0.452	0.927	.000	0.672	0.837	.000

Source: Author own calculation

Trust: H_1: Trust affects the quality of reverse logistics performance. The table shows the R-value is 0.700, which indicates that trust has a linear relationship with the quality of reverse logistics performance. Consequently, the R square value is 0.490, representing that trust affects 49% of reverse logistics performance quality. It clarifies from the ANOVA table that the statistics that 1.892 and significance of 0.000 statistics show that trust is sufficient to predict the quality of reverse logistics performance. The beta value is shown in the coefficient table as 0.700, t as 1.021, and sense as 0.000. Hence it concluded that trust has an impact on the quality of reverse logistics performance. The simple linear regression equation for the quality of reverse logistics performance=3.928+0.819 (trust).

Commitment: H_2: Commitment affects the quality of reverse logistics performance. The table indicates the R-value is 0.840, and R square is 0.706, which is high, offering a close relationship between the variables. The R square value shows that the commitment has a 70.6 percent impact on reverse logistics performance quality. The ANOVA table clarifies that the F value is 2.192, and the p-value is 0.000. This shows that commitment is sufficient to predict the quality of reverse logistics performance. The regression test shows that the beta value is 0.840, t is 1.123, and P-value is 0.000. Therefore it is evident that commitment has a strong and positive impact on reverse logistics performance quality. The simple linear regression equation for the quality of reverse logistics performance=2.829+1.195 (commitment)

Cooperative norms: H_3: Cooperative norms affect the quality of reverse logistics performance. From the above table, it indicated that the R-value is 0.930, R square as 0.865. Based on the R square value, the study observes that the Cooperative norms have an 86.5% impact on reverse logistics performance quality. ANOVA statistics showing that the value is 1.836, and the value is statistically significant. The table also indicates that the beta is 0.930, t is 0.892, and the p-value is 0.000. Therefore, it concludes that the Cooperative norms have a strong and positive impact on reverse logistics performance quality. The simple linear regression equation for the quality of reverse logistics performance=3.281+0.234 (Cooperative norms).

Organisation compatibility : H_4: Organization compatibility affect the quality of reverse logistics performance. The table above found that the effect of Organization compatibility and reverse logistics performance's quality secures R-value as 0.368, while R square is 0.135. The R square value indicates that the Organization compatibility has a 13.5% impact on reverse logistics performance quality. The ANOVA table suggested that the value is 1.283, and the value is statistically significant. The beta value shows in the coefficient table as 0.368, t as 0.782, and P-value as 0.000. It thus inferred that an organization's compatibility has a strong and positive impact on the quality of reverse logistics performance. The simple linear regression equation for quality of reverse logistics performance=2.453+0.625 (Organization compatibility).

Top management support: H_5: Top management support affect the quality of reverse logistics performance The table reveals the R-value is 0.672, and the R square is 0.452, which is high. The R square value shows that the top management support has a 45.2 percent impact on reverse logistics performance quality. The ANOVA table clarifies that the F value is 0.927, and the p-value is 0.000. This shows that top management support is sufficient to predict the quality of reverse logistics performance. The regression test shows that the beta value is 0.672, and the t is 0.837. Therefore, it concludes that top management support has a strong and positive impact on reverse logistics performance quality. The simple linear regression equation for the quality of reverse logistics performance=3.637+0.029 (top management support)

3.8. Effect of intangible attributes of logistics management on value recovered of reverse logistics performance

Table 13. Effect of intangible attributes of logistics management on value recovered of reverse logistics performance

Particulars	r	r square	f	sig	beta	t	sig
Trust	0.642	0.412	2.183	.000	0.642	0.782	.000
Commitment	0.746	0.557	1.028	.000	0.746	1.021	.000
Cooperative norms	0.864	0.746	1.002	.000	0.864	0.918	.000
Organization compatibility	0.525	0.276	1.928	.000	0.525	1.192	.000
Top management support	0.608	0.370	1.263	.000	0.608	0.921	.000

Source: Author own calculation

Trust: H_1: Trust has affected the value recovered of reverse logistics performance. The table shows the R-value is 0.642, which indicates that trust has a linear relationship with the value recovered of reverse logistics performance. Consequently, the R square value is 0.412, representing that trust affects 41.2% of value recovered of reverse logistics performance. It clarifies from the ANOVA table that the statistics that 2.183 and significance of 0.000 statistics show that trust is sufficient to predict value recovered of reverse logistics performance. The beta value is shown in the coefficient table as 0.642, t as 0.782, and sense as 0.000. Hence it concluded that the trust has an impact on value recovered of reverse logistics performance. The simple linear regression equation for value recovered of reverse logistics performance=4.826+1.291 (trust).

Commitment: H_2: Commitment has affected the value recovered of reverse logistics performance The table indicates the effects of commitment and value recovered reverse logistics performance secures R as 0.746, while R square is 0.557. The R-value implies that it is strongly related to the variables. The R square value indicates that the commitment and value recovered reverse logistics performance is 55.7%. The ANOVA table suggested that the value is 1.028, and the value is statistically significant. The beta value shows in the coefficient table as 0.746, t as 1.021, and P-value as 0.000. It is then evident that commitment has a strong and positive impact on reverse logistics performance value. The simple linear regression equation for value recovered of reverse logistics performance=3.726+0.935 (Commitment)

Cooperative norms: H_3: Cooperative norms have affected the value recovered of reverse logistics performance The above table indicated that the R-value is 0.864, and R square is 0.746, which is high, offering a close relationship between the variables. The R square value shows that the Cooperative norms to value recovered of reverse logistics performance is 74.6 percent. The ANOVA table clarifies that the F value is 1.002, and the p-value is 0.000. This shows that a Cooperative norm is sufficient to predict the value recovered of reverse logistics performance. The regression test shows that the beta value is 0.864, t is 0.918, and P-value is 0.000. Therefore it is evident that Cooperative norms have a strong and positive impact on value recovered of reverse logistics performance. The simple linear regression equation for value recovered of reverse logistics performance=4.382+0.917 (Cooperative norms)

Organisation compatibility: H_4: Organization compatibility has affected the value recovered of reverse logistics performance. The table indicates the R-value is 0.525, and R square is 0.276, which is high, offering a close relationship between the variables. The R square value shows that the organization's compatibility to value recovered reverse logistics performance is 27.6 percent. The ANOVA table clarifies that the F value is 1.928, and the p-value is 0.000. This shows that Organization compatibility is sufficient to predict the value recovered of reverse logistics performance. The regression test shows that the beta value is 0.525, t is 1.192, and P-value is 0.000. Therefore, it is evident that Organization compatibility has a strong and positive impact on reverse logistics performance value. The simple linear regression equation for value recovered of reverse logistics performance=3.876+ 0.178 (Organization compatibility)

Top management support: H_5: Top management support has affected the value recovered of reverse logistics performance. From the above table, it indicated that the R-value is 0.608, R square as 0.370. The study observes that the Top management support ms have a 37% impact on reverse logistics performance value based on the R square value. ANOVA statistics showing that the value is 1.263, and the value is statistically significant. The table also indicates that the beta is 0.608, t is 1.921, and the p-value is 0.000. Therefore, it concludes that the Top management support has a strong and positive impact on reverse logistics performance value. The simple linear regression equation for value recovered of reverse logistics performance=3.745+0.134 (Top management support).

3.9. Strength of association between the variables

Crammer v test: It is a convenient tool for the researcher to test the data's strength (McHugh 2013). The standard value of the index ranges from 0 to 1. A higher value indicates a stronger association, whereas the least value indicates the lowest association (Kearney 2017).

Trust: The crammer v test was used to verify the strength of association among the dependent variable (reverse logistics performance) and independent variable (trust)

Table 14. Strength of association between trust and reverse logistics performance

Particulars		Reverse logistics performance			Output	
		low	moderate	high	chi-square	crammer v
Trust	Low	15 (71.4%)	5 (23.8%)	1 (4.8%)	18.086 (.001)	.589 (.001)
	Moderate	15 (23.4%)	39 (60.9%)	10 (15%)		
	High	4 (17.4%)	7 (30.4%)	12 (52.2%)		

Source: Author own calculation

It clarifies that low trust represents low performance as 71.4% while moderate trust has moderate performance as 60.9% and at last high trust have a high performance of 52.2%. Trust and logistics performance secures the chi-square value as 18.086, and the P-value is 0.001, which is lesser than the 5% significance level. Hence it concluded that there exists a strong significant association between the variables. Besides, the strength of the variables assesses it using crammer v value. Cramer V value secures as 0.589 suggest a high strength of association.

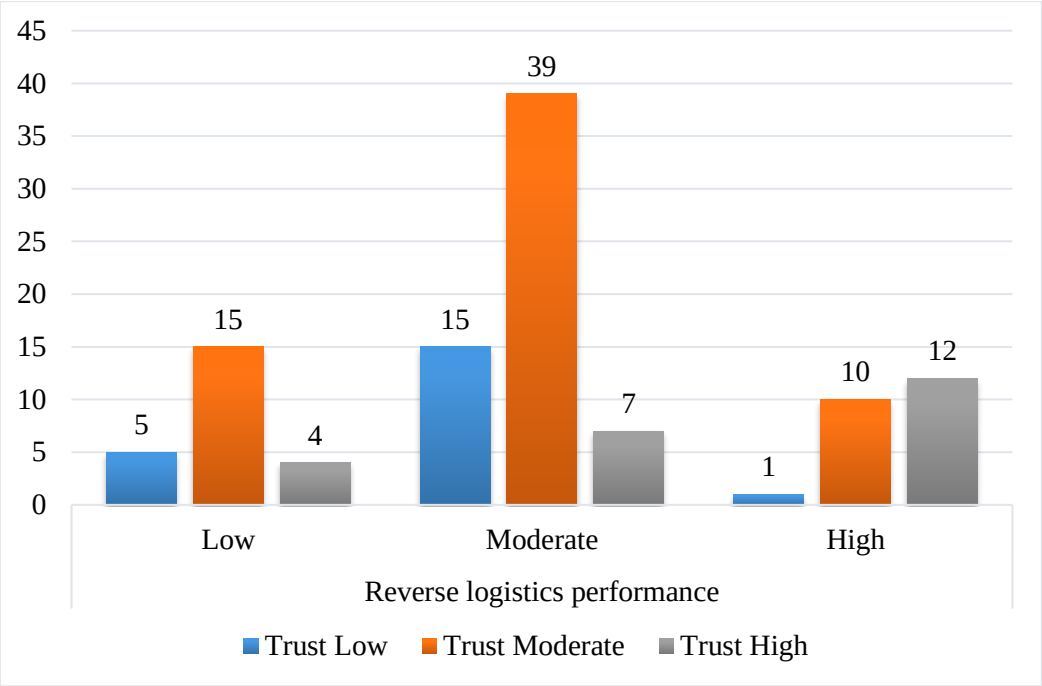

Figure 10. Trust and reverse logistics performance
Source: Author own calculation

Commitment: The researcher used the crammer v test to report the strength of dependent (reverse logistics performance) and independent variable (commitment). Commitment is low with low performance to 60.6%, followed by moderate commitment had an average performance of 63.4%, and high commitment had a high performance of 44.1%. The Chi-square value is 3.303, and the P-value is 0.000, which shows less than the 5% significance level. Hence it concluded that there is a strong significant association between the variables Cramer V value secures as 0.524 suggests a high strength of association.

Table 15. Strength of association between commitment and reverse logistics performance

Particulars		Reverse logistics performance			Output	
		low	moderate	high	chi-square	crammer v
Commitment	Low	20 (60.6%)	7 (21.2%)	6 (18.2%)	3.303 (.000)	.524 (.000)
	Moderate	7 (17.1%)	26 (63.4%)	8 (19.5%)		
	High	10 (29.4%)	9 (26.5%)	15 (44.1%)		

Source: Author own calculation

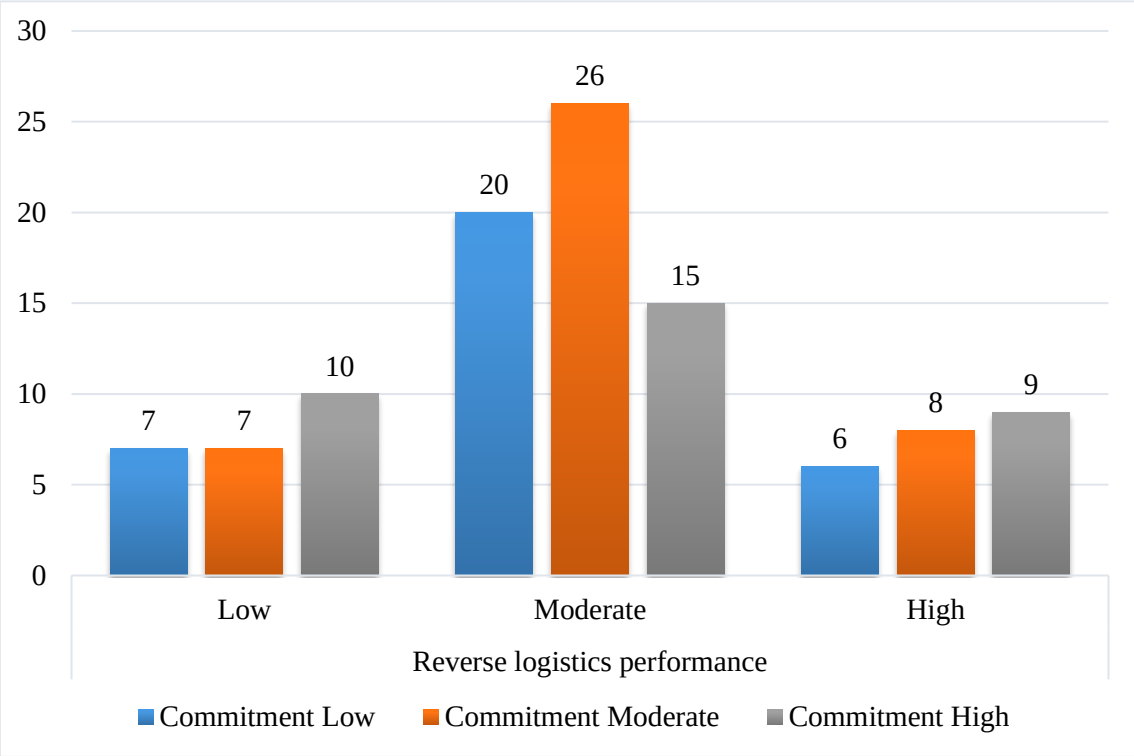

Figure 11. Commitment and reverse logistics performance
Source: Author own calculation

Cooperative norms: The crammer v test uses to determine the strength of association between dependent (reverse logistics performance) and independent variable (cooperative norms). It is clear from the table that low cooperative norms had a poor performance up to 61.5%, followed by moderate cooperative norms with 52.1% reverse logistics performance moderate. Consequently, high cooperative norms had 57.1% of reverse logistics performance, which is high. Chi-square value is 2.386, and the P-value is 0.000, which is less than the 5% significance level. Hence it concluded that there exists a strong significant association between the variables. However, the Cramer V value secures as 0.605 suggests a high strength of association.

Table 16. Strength of association between cooperative norms and reverse logistics performance

Particulars		Reverse logistics performance			Output	
		low	moderate	high	chi-square	crammer v
Cooperative	Low	20	8	4	2.386	.605

norms		(62.5%)	(25.0%)	(12.5%)	(.000)	(.000)
	Moderate	11 (22.9%)	25 (52.1%)	12 (25.0%)		
	High	5 (17.9%)	7 (25.0%)	16 (57.1%)		

Source: Author own calculation

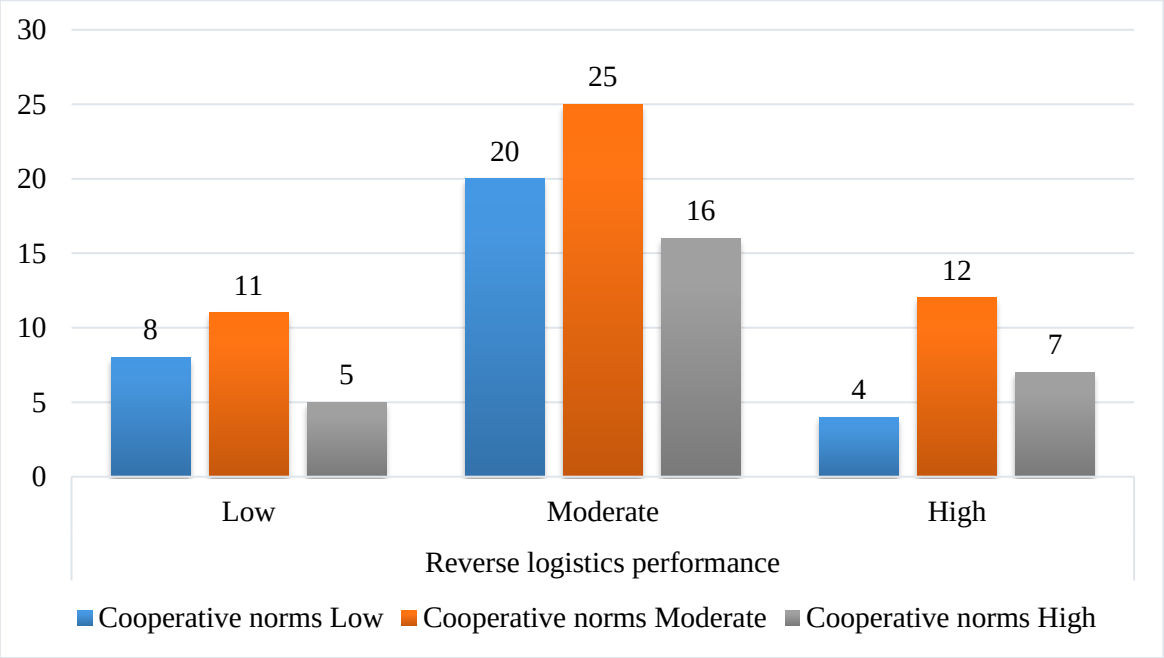

Figure 12. Cooperative norms and reverse logistics performance
Source: Author own calculation

Organisation compatibility: Association between organization compatibility and reverse logistics performance were assessed with the use of crammer v test. The outcome of the association is given below.

Table 17. Strength of association between organisation compatibility and reverse logistics performance

Particulars		Reverse logistics performance			Output	
		low	moderate	high	chi-square	crammer v
Organisation	Low	20	7	4	6.289[a]	.229

compatibility		(64.5%)	(22.6%)	(12.9%)	(.002)	(.002)
	Moderate	15 (28.3%)	27 (50.9%)	11 (20.8%)		
	High	2 (8.3%)	8 (33.3%)	14 (58.3%)		

Source: Author own calculation

It shows that low organization compatibility has a low performance of 64.5%, moderate organization compatibility has excellent performance to 50.9%, and high organization compatibility has a high performance of up to 58.3%. Chi-square value is 6.289, and the P-value is 0.002, which is less than 5% of the significance level. Hence, it concluded a strong significant association between the variables and the Cramer V value secures as 0.229 suggest a moderate association strength.

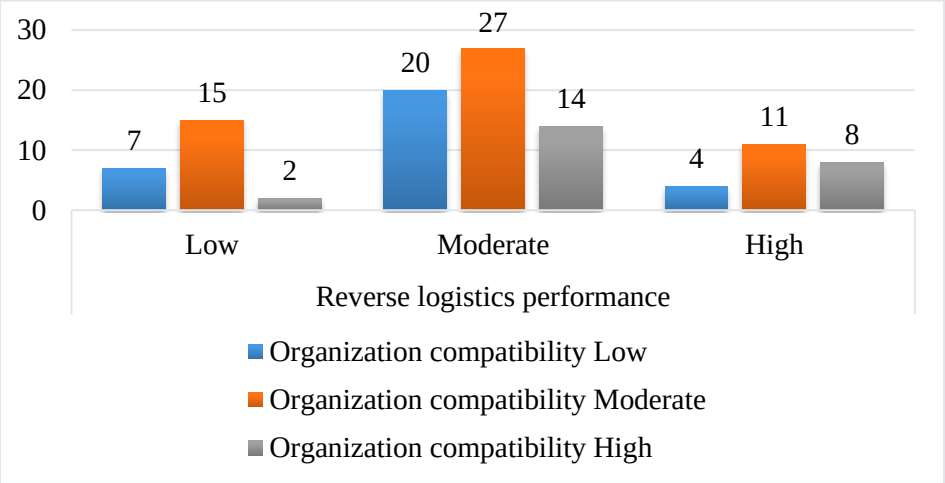

Figure 13. Organisation compatibilty and reverse logistics performance
Source: Author own calculation

Top management support: The crammer v test's objective was used to determine the strength of association between top management support and reverse logistics performance. The table above found that low management support leads to low performance (36.4%). Moderate support leads to medium support of 54.4%, and high support leads to increased support of 75.9%. The chi-square value is 9.291, and the P-value is 0.054, which is greater than the 5% significance level. Hence it concluded that a strong significant association between the variables and the Cramer V value secures as 0.207 suggests a moderate association strength.

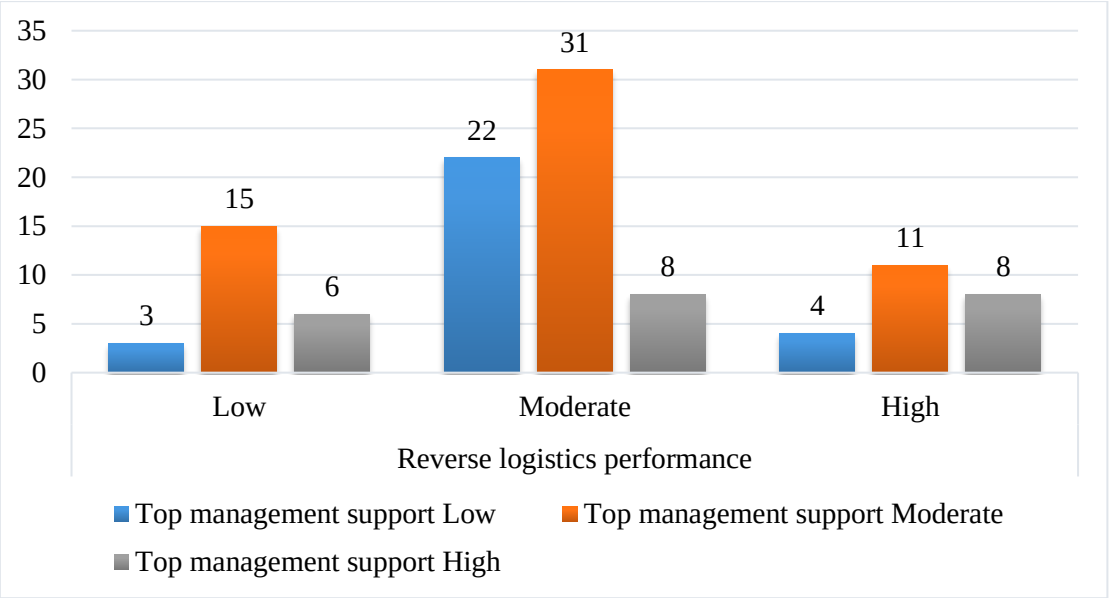

Figure 14. Top management support and reverse logistics performance
Source: Author own calculation

3.10. Findings

In the study, the researcher found the data were reported in percentage analysis outcome indicated in percentage that the maximum number of respondents were post graduates. Also, they had an experience ranged between 5-7 years.

The descriptive statistics show the data reported by the mean and standard deviation in this study. The average mean values of all the independent variables lies between 2.5 to 3.5. Thus the independent variables values were moderate in the study. Out of all variables, trust has a least mean value for the statement “Supply chain members involved in the supply chain activities are trustworthy”. However, highest mean value for the organisation compatibility statement is ,” Culture of the organization is quite similar to the vital supply chain members..

The individual assessment of the dependent variable, i.e., reverses logistics performance reported with mean values and standard deviation. Reverse logistics performance includes quality, responsiveness and value recovered. All the variables values ranged between 2.9 to 3.2 and the

values indicated that it is quite high. Thus, the values portrays that value recovered has the highest precision among the variables

Notably, a correlation existed between intangible attributes of reverse logistics management and quality of reverse logistics performance. The outcome indicates that the cooperative norms has a strong positive relationship with the reverse logistics performance. However, organization compatibility has a strong positive with the dependent variable (reverse logistics performance) but the values were least.

Simple linear regression shows that the intangible attributes affect responsiveness of reverse logistics performance. Highest effect of the variable was cooperative norms whereas least effect was organization compatibility.

The Crammer V test indicates that the variables like trust, commitment, and cooperative norms have a high association with reverse logistics performance. Other variables, such as organization compatibility and top management support, show a moderate strength of association with reverse logistics performance.

3.11. Discussion

Logistics comprises transferring information and material flows throughout the organization. The operation objective is to move the products or services, managing the raw materials, producing them, storing them, and deliver them to the customers and extend after-sales service to the customers (Pollitt 1998). The purpose of logistics management transformed due to the emergence of technology and strategic alliance. The fundamental goal was to compete with others on flexibility and responsiveness. The growing importance emerges due to globalization, and the companies are keen to gain access to the new market, release the efficiencies, and tap technological competencies beyond their limits. Thus, the companies expectation induces them to focuses on logistics operations. It involves purchasing, distribution, inventory management, packaging, manufacturing, and even customer services. All the aspects portray in the (Srimarut, Mekhum 2020; Kumaradhas, Mahmoudi 2020; Ghoumrassi 2017; Rushton *et al.* 2014), Uthayakumar, Priyan 2013; Romero 2013). The above-stated logistics operations consider as tangible attributes. However, intangible attributes related to logistics management are trust,

commitment, cooperative norms, organization compatibility, and top management support. The main intention to take trust and commitment (Uddin 2019)

- Trust is an important aspect which refers to extending the willingness to depend on exchanging partners (Moorman *et al.* 1993)
- The commitment represents the long term orientation with the parties, which helps to maintain long term relationship (Huo *et al.* 2015)
- Compatibility defines as the abilities in creating synergies between partnering organization (Sarkar *et al.* 2001)
- Cooperative norms refer to having a belief that the parties involved in supply chain activities must combine their efforts and integrate them to be successful in the market (Shanmugan 2012)
- Top management support is vital for the firm for the successful implementation of supply chain management across firms

Above stated attributes have a close association with supply chain performance (Croom *et al.* 2018; Acar *et al.* 2017; Tinney 2012). However, the researcher identified that no studies focus on aspects in recent years. Hence the study developed to assess the aspects and their association with the supply chain performance. From the wide extensive literature assessment, the study finds that no reverse logistics performance indicators available separately. The authors (Yoo, Cheng 2018; Handayani 2019; Javaid 2018) utilized supply chain performance attributes as an indicator to assess reverse logistics performance.

First objective of the study is to identify the association between the intangible attribute and reverse logistics performance. The outcome shows that all the variables has a strong association with reverse logistics performance. Most of the current evidence supports the intangible attributes, namely trust (Mesic *et al.* 2018; Shin *et al.* 2018; Susanty *et al.* 2018), commitment (Tsanos, Zografos 2016; organization compatibility (Rajaguru 2019; Dhaigude 2017), top management support (Truong *et al.* 2016; Shee *et al.* 2018) and cooperative norms (Hamid *et al.* 2017) have a close association with reverse logistics performance

Second is to find out the effect of intangible attributes of reverse logistics performance. The study finds that the highest effect was identified in cooperative norms, whereas the least effect due to organization compatibility. There are no previous studies made to offer direct evidence on the impact of attributes on reverse logistics performance (Acar *et al*. 2017; Cai *et al*. 2011; Eng,

2006). To sum up this section, it has been demonstrated that the intangible attributes had a linear association with reverse logistics performance. The highest effect was identified due to cooperative norms whereas less importance given to compatibility affects the organization's reverse logistics performance.

3.12. Implications

The above findings will unravel and strengthen the relationship between intangible attributes and reverse logistics performance. The correlation shows that the variables such as trust, commitment, and cooperative norms have a high association with reverse logistics performance. However, moderate strength of association was observed between organization compatibility, top management support, and reverse logistics performance. Even though organizations have a high strength of association, it is vital to follow the below implications to sustain the impact of attributes on reverse logistics performance for a long period.

Trust and Commitment: Reverse logistics performance relies on trust and commitment. The organization has to find out the ways to strengthen the relationship with supply chain partners. Transparency with the supply chain partners induces them to have a cordial relationship with the organization. The organization can integrate the supply chain partners through transparency to pave the way to gain a competitive advantage

Organization compatibility: The organization has to pay considerable attention to the attributes to integrate the supply chain partners because the study finds a moderate association between organization compatibility and reverse logistics performance. It is vital to reconfigure the resources to maximize the benefits accruing from supply chain integration to strengthen the association. The action can create a collaborative and integrative relationship with supply chain partners. Thus, it leads to accelerate reverse logistics performance.

Top management support

- Enable a good cordial relationship should exist inside the organization
- Induce the employees to take part in formal and informal meetings
- Developing information technology systems to enhance integration inside the organization

Finally, it enhances the internal organization influences directly the reverse logistics performance.

Academic contribution

The reseracher gets a conceptual knowledge of reverse logistics, reverse logsitics attributes and reverse logistics performance through the literature support. Also, it helps to identify the theory which supports the attributes and reverse logistics performance. In addition, the study offers a clear overview of how reverse logistics attributes plays a key role in influencing the reverse logistics performance.

CONCLUSION

Logistics management is vital for the organization to gain success in the market and direct it to sustain it for a long period. Effective management of logistics operations is done with the help of supply chain partners. To maintain a good cordial relationship with them, the firm must develop intangible attributes like trust, commitment, cooperative norms, organization compatibility, and top management support. The above-stated elements are the main behavior which assists the firm in creating effective logistics management. Thus, all the aspects have been taken into account. Consequently, the study aims to determine the correlation between logistics management's intangible attributes and reverse logistics performance. Besides, it is also keen on assessing the impact of logistics management's intangible attributes on reverse logistics performance. Reverse logistics performance evaluation is based on three aspects: quality, responsiveness, and value recovery. With resource-based theory, the study finds that the variables have a strong association with reverse logistics performance. Also, the strength of association between the variables such as trust, commitment, and cooperative norms is associated with reverse logistics performance. Besides, individual assessment of intangible attributes finds that cooperative norms have the strongest impact among five attributes (74.6%), whereas the least impact was organization compatibility (22.2%). Thus, the study concludes with the implications that firms have to enrich compatibility between partnering organizations. In turn, the action can upsurge the supply chain relationship, which directly accelerates reverse logistics performance.

Scope for further research: The present study restricts its limit to variables like trust, commitment, cooperative norms, organization compatibility, and top management support. From the assessment, the researcher finds that compatibility is of three types, namely technical, operational, and cultural. But the study did not consider the three types of aspects, and hence adding those could be extended for the possibility of future studies on the present aspects. However, incorporating further attributes like organization design followed by human resources, organizational measurement, and information technology into the existing method is another direction of research. Because one of the emerging concepts is reverse logistics, and there are no

attributes added so far to support it with reverse logistics performance. Hence, adding variables is needed to uncover the detail of the reverse supply chain phenomenon.

Limitations of the study: Due to the pandemic, the researcher did not have a chance to meet supply chain members to measure logistics management's real impact on its reverse logistics performance. Besides, the study conducts the survey using google form. The researcher could not be able to communicate with the highest number of people. Thus, it leads to fix sample size being very low. The outcome of the sample did not portray the whole population. Among many attributes, the study selects only five independent variables related to intangible determinants of logistics management. Credibility, benevolence may change the impact percentage to a great extent. The study assesses the output based on one pharmaceutical organization. Assessing the entire industry can provide a different outcome for the study.

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APPENDICES

Appendix 1. Questionnaire

1. Name
2. Education qualification
3. Work experience
4. Designation

This questionnaire is designed to understand the extent to which logistics management impacts reverse logistics performance. The below section question framed based on a five-point Likert scale (5-Strongly agree to 1-Strongly disagree)

Choose the one which seems to you to be the most appropriate response for a particular situation.

Trust

Particulars	5	4	3	2	1
Supply chain members who involved in the supply chain activities are trustworthy					
Supply chain members in the organization keep their interest in mind					
Supply chain members want the business to succeed in the market					

Commitment

Particulars	5	4	3	2	1
The organization is working hard to establish good friendly relations with supply chain participants					
Relationship with members of the supply chain is essential for an organization					
Organisation expects the relationship with supply chain members will last for an extended period					

Cooperative norms

Particulars	5	4	3	2	1
Organisation prepared to make adjustments for leaders of the supply chain					
The organization believes that its necessary to make the activities competitive in the market for supply chains members					
The organization views the supply chain as a critical function in creating value for the business					

Organization compatibility

Particulars	5	4	3	2	1
Organization goals and objectives consistent with key supply chain members					
The culture of the organization is quite similar to the critical supply chain members					
Top officials have a style similar to that of key supply chain members					

Top management support

Particulars	5	4	3	2	1
Enhance long-term partnerships with key members of the supply chain					
Share valuable information with the key members of the supply chain to make the business unit win					
Sharing risks and rewards with key supply chain members					

Reverse logistics performance

Particulars	5	4	3	2	1
Quality					
Percentage of defects					
Customer complaints resolved					
Responsiveness					
Return rates by returns reason					
Return rates by quality					
Value recovered					
Revenue from reselling repaired products in value-recovery					
Cost avoidance by reusing refurbished parts/products in the forward supply chain					

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