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IMPACT OF STRATEGIC PROACTIVITY ON REVERSE LOGISTICS AND SUPPLY CHAIN PERFORMANCE: A CASE OF PHARMACEUTICAL INDUSTRY OF PAKISTAN

Impacto da proatividade estratégica na logística reversa e no desempenho da cadeia de suprimentos: um caso da indústria farmacêutica do Paquistão

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ABSTRACT

This research throws light on the supply chain performance of firms in various conditions of reverse logistics settings. The main purpose of the research is to explore the reverse logistics practices in pharmaceutical sector of Pakistan and its outcomes. Reverse logistics is a comparatively newer term for this region as approximately no research has been done in this area, this was identified as the research gap. The multinational companies have a very well developed systems of reverse logistics in supply chain departments. The local manufacturing setups out-number the multinational companies, though the processes of reverse logistics are carried out more or less in every firm, but, the proper systems have not been developed. Reverse logistics capabilities and innovation were the main focus of the study with respect to their effect on all over supply chain performance and backed by resource commitment and strategic planning going on in firms. To test the model data were collected from pharmaceutical companies of Pakistan. A total of 150 responses were received. Smart PLS 3.4 is used to perform structural equation modeling and results proved the impact of reverse logistics innovation directly and as a mediating variable between resource commitment and supply chain performance. Study limitations and future research directions are given at the end.
Keywords Survey: Supply chain performance, pharmaceutical reverse logistics, resource commitment, strategic proactivity.

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IMPACTO DA PROATIVIDADE ESTRATÉGICA NA LOGÍSTICA REVERSA E NO DESEMPENHO DA CADEIA DE SUPRIMENTOS: UM CASO DA INDÚSTRIA FARMACÊUTICA DO PAQUISTÃO

Impact of strategic proactivity on reverse logistics and supply chain performance: a case of pharmaceutical industry of Pakistan

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RESUMO

Esta pesquisa lança luz sobre o desempenho da cadeia de suprimentos das empresas em várias condições de configurações de logística reversa. O principal objetivo da pesquisa é explorar as práticas de logística reversa no setor farmacêutico do Paquistão e seus resultados. A logística reversa é um termo comparativamente mais novo para esta região, já que aproximadamente nenhuma pesquisa foi feita nesta área, isso foi identificado como uma lacuna de pesquisa. As empresas multinacionais possuem sistemas de logística reversa muito bem desenvolvidos nos departamentos da cadeia de suprimentos. As instalações fabris locais superam as empresas multinacionais, embora os processos de logística reversa sejam realizados mais ou menos em todas as empresas, mas os sistemas adequados não foram desenvolvidos. As capacidades de logística reversa e a inovação foram o foco principal do estudo com relação ao seu efeito em todo o desempenho da cadeia de suprimentos e apoiados pelo comprometimento de recursos e planejamento estratégico em andamento nas empresas. Para testar o modelo, foram coletados dados de empresas farmacêuticas do Paquistão. Foram recebidas um total de 150 respostas. O Smart PLS 3.4 é usado para realizar a modelagem de equações estruturais e os resultados provaram o impacto da inovação da logística reversa diretamente e como uma variável mediadora entre o comprometimento de recursos e o desempenho da cadeia de suprimentos. Limitações do estudo e direções de pesquisas futuras são dadas no final.

Palavras-chave Pesquisa: desempenho da cadeia de suprimentos, logística reversa farmacêutica, comprometimento de recursos, proatividade estratégica.

INTRODUCTION

Reverse logistics (RL) is a vital segment of the supply chain and has become a proficient consideration for the researchers and industry practitioners (Jayant, Gupta, & K Garg, 2012).

As stated by Stock (1998), RL:

"…refers *to the role of logistics in product returns, source reduction, recycling, materials substitution, reuse of materials, waste disposal, and refurbishing, repair and remanufacturing"*

The global importance of revere logistics cannot be denied, so, the expansion of research is expected as more propositions will emerge (Wang, Chen, Rogers, Ellram, & Grawe, 2017).

Reverse logistics studies in the pharmaceutical sector are needed to be studied at the global level in both developed and developing countries. The activities and practices of direct and indirect logistics and their collaboration must be integrated and professionals must be trained to design effective healthcare logistics (Campos, Paula, Pagani, & Guarnieri, 2017).

The introduction of reverse logistics practices for the improvement of the sustainability of pharmaceutical industry is pivotal. The level of competitiveness in the pharmaceutical sector can be felt by the fact that high visibility is needed to ensure the quality and effectiveness of pharmaceutical and healthcare products. The poor quality products affect sustainability, so sustainable practices such as take-back and reconciliation have recently emerged (Narayana, Pati, & Padhi, 2019). So examining the reverse logistics in the pharmaceutical sector is of utmost importance, and the related Supply chain performance (SCP) will be assessed through the data collection and analysis, specifically from the pharmaceutical industries of Pakistan.The world's most populous nations like Indonesia, Pakistan, Russia and Nigeria have almost no research in the field of RL and are strictly needed to be implemented (Prajapati, Kant, & Shankar, 2019).

The theoretical background of the resource commitment is provided by the resource-based view. The resource-based view of the firm suggests that the assets and capabilities of the firm will be having a direct effect on the strategic decisions and the competitive advantage (M. Peteraf, 1993).

The assurance of higher sustainable performance of the organizations is possible with research and by efficiently executing the diversified reverse logistics and closed-loop management practices (Kazemi, Modak, & Govindan, 2018).

Strategic proactivity is defined as a 'firm's tendency to initiate voluntary changes instead of reacting to events in the environment'. The decisions of the pro-active responsiveness lie in the interface of the environmental and business benefits and are closely related (Sharma & Vredenburg, 1998). Strategic orientation of the firm has the underlining factors such as external pressures from the customers, governmental organizations, and stakeholders which affect the level of pro-activity in strategy. It dictates what must be the degree of priority for the pro-environmental activities to be incorporated in the framework. The proactive attitude of the top management plays a vital part in the development of the pro-active business strategy and also imparts its effect in the internal configuration of the company's capabilities and ultimately the performance. Top management develops the environmental strategies, policies, metrics and targets as the priority for the attainment of long-term goals (Darnall, Henriques, & Sadorsky, 2010).

The commitment to the resources (e.g. physical, managerial, technological, and financial) leads to the sustainability of the supply chain (Morgan, Tokman, Richey, & Defee, 2018). The resource commitment leads to the efficient ongoing of reverse logistics processes so the reverse logistics must be given due attention concerning resource commitment. Industry-specific research is needed for generalizability (Genchev & J. Daugherty, 2005). Therefore, we will focus on the pharmaceutical industry specifically as this area is under-researched yet.

The capabilities of the closed-loop systems have the highest influence on the performance of the firm in the terms of cost savings, competitive strategy, and the satisfaction of the customer. (Vlachos, 2016b). The reverse logistics benefits and ultimately the better performance of the firm is achieved by adopting the RL strategies, dependent upon the RL antecedents that are customer orientation, customer opportunism, resource commitments and

contractual arrangements. Amongst these the former two are the customer-focused factors and the latter two are the firm's focused factors (Jack, Powers, & Skinner, 2010).

The green RL innovation leads to enhanced customer satisfaction and hence competitive advantage. The customers become willing to buy more products so more revenue is generated. The diffusion of innovation to the conventional processes impacts on the cost-saving by the adoption of the green RL activities (Hazen, Wu, Cegielski, Jones-Farmer, & Hall, 2012). The product returns from the customers usually end up as a substantial price to the firms. The pricing strategy adopted by the companies for the competitive market helps them to manage the sustained business for their companies. The frequency of the returned products and the policies implemented at the strategic level have their impact on the market share and the profitability of the firm (Chen & Chen, 2016). Effective product return policies are part of the RL activities and the one of the strategic decisions of the firm. They define the percentage of the product purchase versus product return so leading to the cost-saving and increasing the revenue resultantly (Janakiraman, Syrdal, & Freling, 2015).

The designing and re-designing of performance measurement is the firm's agenda (Neely, Gregory, & Platts, 1995). Choosing the most suited supply chain performance measure is a tedious task. Resource, output and flexibility are the key performance measures for the supply chain (Beamon, 1999). Commitment to the resources is critical for the performance and reverse logistics is highly reflective in nature (Genchev & Daugherty, 2005).

The industry-specific study of the RL segment will deduce the practical interpretations for the managers to use the organizational resources for the desired supply chain performance. (Mahindroo, Samalia, & Verma, 2018). The current research will provide the managers the benefit of better utilization of the resources to enable the achievement of the reverse logistics capabilities which will in turn improve supply chain performance.

The new structural solutions emerge as the reverse logistics capabilities grow, the pathway between the reverse logistics and the supply chain performance has been supported empirically by general sampling procedure but the detailed examination is required. The researchers must perform the confirmatory work with a different nomological network examining the reverse logistics and supply chain performance in the specific industries (Morgan, et al., 2018). Therefore it is the researchers must have a great understanding of the RL and the supply chain performance.

The objective of this research is to study the relationship between strategic proactivity and resource commitment to sustainable supply chain management, reverse logistics capabilities, reverse logistics innovation and the supply chain performance of the pharmaceutical industry of Pakistan.

RQ no 1: How strategic proactivity affects the resource commitment and ultimately the supply chain performance of the firm?

RQ no 2: Does the resource commitment affect the reverse logistics capabilities, reverse logistics innovation and supply chain performance?

RQ no3: Do reverse logistics innovation and reverse logistics capabilities have mediating effect between RC supply chain performance?

RQ no4: Has return frequency a moderating effect on the relationship between RL capabilities and supply chain performance?

1 LITERATURE REVIEW AND THEORETICAL FOUNDATION

1.1 Reverse Logistics in Pharmaceutical Supply Chains

Devising a systemized supply chain for pharmaceutical products, is a tedious task for supply chain managers with special reference to reverse logistics. Because if the unused medicines are not properly handled and disposed-of, they might cause deleterious effects on living organisms and the environment. Also, the ineffective way of reverse supply chain causes the dissatisfaction of the end-user that is, the patient. The pharmaceutical RL goes around the concepts of "return or exchange" and "throw in the garbage" (Abbas & Farooquie, 2013). The concept of RL is

implemented recently by the pharmaceutical industries for the sake of sustainability. But still there is a need for devising policies in the areas of effective product returns in sustainable RL models. The category in which the specified product falls is a sensitive matter when it comes to return-policies. The structural changes to the existing RL models can help to solve these issues (Rossetti, Handfield, & Dooley, 2011).
The managers of the value chain of pharmaceutical companies must adopt the rational RL practices equally, specifically for the end of life and end of use pharmaceutical products as much as they consider the effectiveness of the direct flow logistics of pharmaceutical products (Campos, et al., 2017). The weaknesses in pharmaceutical supply chains are the communication gaps between the logistics personnel, service providers, focal-firms, and end-users. 3PLs are employed and can be used as the bench marking (S. Kumar, Dieveney, & Dieveney, 2009). The dire need for the build-out of sustainable supply chains in the pharmaceutical industries is evident due to climate change. The development of the superstructure network for the optimization of networks and management of tradeoffs between environmental and economic factors is urgent and compelling (Halim, Ang, & Adhitya, 2019).

1.2 Theoretical consideration

The resources of the firm define the strategies and capabilities not the products they manufacture. The products are dependent upon the resources, the activities of the firm and diversity that define the resource commitment required. The attractive resources include: machine capacity, customer loyalty, production experiences and technological leads (Wernerfelt, 1984). According to RBV (Resource-based view), the resources are the key. The performance of the organization is dependent upon its efficient selection and allocation of resources. The resources may remain hidden unless the capabilities of the firm are clearly visible which then shows their effect in the form of enhanced competitive advantage in performance. In the market place the firm's performance is dependent upon different characteristics of the specific industry it deals with. The competition in the industry is overcome by effective collaboration with-in the supply chain and with the external entities and also the management and improvement of relations with different tiers. The innovation in the structure of the supply chain brings on a sustainable competitive advantage and above-average supply chain performance (Mweru & Maina, 2015). The resource-based view is deep-rooted with strategic decisions and policy research history. The heterogeneity of firms concerning their resources and capabilities provides diversification which serve the purpose of gaining a competitive advantage (M. A. Peteraf, 1993).

The RBV is used to describe the concept of capabilities of the organization. The organization's resources are the key factors of the capabilities and also define the sustained competitive advantage of it. There are four main verifiable indicators of potential resources of which further generate the strategy; these are value, rareness, imitability and substitutability. All these indicators are controllable and would lead to better performance dependent upon the strategic decisions of the firm (Barney, 1991).

1.2.1 Strategic Proactivity

According to natural resource-based-view, the role of an organization's resources is inevitable in the pro-environmental strategy. The resources can be managerial, technological or financial. The managerial interpretations and perceptions have a direct effect on the strategy (Arag, xf, n-Correa, & Sharma, 2003). The business strategy is reframed according to the lines of sustainable supply chain for the sole purpose of attainment of improved performance (J. Alberto Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008).

The companies are compelled to adopt the environmental management strategies as their core competitive strategy and the implementation of the pro-environmental business strategy in a business imparts the better performance and greater profitability. Also the responsible provision of the suitable and effective environment through the application of the business strategy-proactivity (Alt, Díez-de-Castro, & Lloréns-Montes, 2015). RL provides the accomplishments of strategic benefits i.e. cost savings through all the means also at the operational level

the cost-benefit analysis on the re-manufacturing, recycling and re-packaging have shown the successful results by the RL systems (Dowlatshahi, 2000).

1.2.2 Resource Commitment

The resources of the firms can be divided into physical, technological, financial and managerial resources (Das & Teng, 1998). The SCP (structure, conduct and performance) model for the resource commitment to SSCM via RL results in improved performance, in both, within and across the supply chain. The management of the resources includes physical (i.e. vehicles for transport), Financial (i.e. total costs utilized for the operations), technological (i.e. software for the tracking the flow of materials) and managerial (i.e. trained workforce for the logistics) (Morgan, et al., 2018).

Mapping the RL processes guide the allocation of the resources in the supply chain environment that is highly dynamic (for instance the application of technology and the allocation of trained human resources need the financial commitment too.) The resources committed to the RL must be combined with the efforts to improve the over-all performance of the supply chain (Morgan, Richey Jr, & Autry, 2016). The efficient allocation of the resources of the organization is related to the achievement of commitment to sustainable SCM. The commitment to the resources in a company includes the proper time dedication of the workforce, the conduct of the employees and pre-defined key performance measures. The creation of the integrated and inter-dependent structure of the team leads to the achievement of the sustainability goals for the company's sake (Carter & Rogers, 2008). The commitment to sustainable SCM affects the RL capabilities which in turns affects the better performance (Morgan, et al., 2018).

1.2.3 Reverse logistics capabilities

The capability of the firm is the combination of knowledge and skills enabling the coordination of its activities and maximization of the profit by the efficient deployment of its resources. The activities and resources are the inputs to the firm and products are the output, both inputs and outputs are responsible for the profit generation. The tacit and intangible resources are called the capabilities of the firm including the knowledge and skills of the firm's employees as well as their past experiences. As capabilities are complex themselves so they are developed and sustained via learning and experience. Also, the routinization of the capabilities lead to efficiency, flexibility and in reduction of risks (Den Hond, 1996).

The capabilities of the firm demonstrate the differential effects on financial as well as the market performance of the firm. The marketing, technological and production capabilities are the kinds of capabilities mostly used in the firms under the lens of the resource-based view (Ju, Fung, & Mano, 2013). The firm is the center of focus when seen in the arena of economic growth. The strategic management principles are applied for the creation, organization, competence, innovation and growth of the firm. The capability theory renders the decision-makers of the firm to allocate the resources in the contemporary revolutionary and dynamic business environments. Also, it gives the policy insights into the development and growth of the firms (Teece, 2019).

The evolution of reverse logistics capabilities is considered as the basic element in the structure of the supply chains (Stock, Greis, & Kasarda, 1998). The RL strategic benefits are influenced by the execution of the reverse logistics capabilities, which are the combination of the firm's inner and outer activities and their connectivity. It involves the accurate and timely sharing of the RL information and other information related processes (Jack, et al., 2010).

The companies adopting the extant concept of sustainable reverse logistics must have to strengthen themselves in this particular area to ensure the maximum output in the form of improved performance and to gain advantages competitively as the concept of RL is included in the infrastructure of the supply chain (Morgan, et al., 2018). The company becomes more competitive by embracing RL practices (Rogers & Tibben-Lembke, 2001).

1.2.4 Reverse logistics innovation:

Innovation is the process of creativity that results in the development of new processes, products and services (Tushman & Nadler, 1986). The Logistics innovation process includes inter-organizational learning, setting the stage activities, gathering customer's responses, and negotiating the clarified activities. It encompasses all the direct and in direct methods of gathering and analyzing data , engaging the customers and employees, also the social interaction in the organization (Grawe Scott, 2009). Logistics innovations are mainly based on direct customer demands and feedback (Bensalem & Kin, 2019).

The logistics innovation constitutes the unique additions to the RL processes e.g. training and education of the employees, addition of technological solutions and speedy systems which has a great impact on the process effectiveness and smooth running of the RL programs. The process effectiveness includes both cost-effectiveness and operating-effectiveness (Richey, Chen, Genchev, & Daugherty, 2005). The sustainable supply chains have eco-innovation in their strategic orientations which enable them to develop them, both economically and ecologically. Also the performance measures adopted in this context of green supply chain management lead to a competitive advantage (Hsu, 2016). RL innovation positively influences the economic and environmental performance. The institutional pressures like customer limitations, regulatory affairs and competitor factors affect the innovation process as a whole (Huang, 2014).

1.2.5 Return Frequency

Reverse logistics has as a strong link with the product returns which might be the product or container-recycling, product life-cycle returns, warranty returns or defective items. The more are the product returns the more are the RL processes are developed. But this is highly critical in different industries (Mahindroo, Samalia, et al., 2018). The reverse supply chain (RSC) is constituted of few functions which include recovery, re-collection, repair and resale of the products. The takeback procedure allows the liberal approach to the return policy. The RSC functions give the firm in return, increased revenue. The exogenous contingency factors are also involved in the size of RSC contribution to the revenue. These include the firm's customers, market and products. The green image of manufacturers is valued by green customers. The multiple-use cycles are devised for the products conforming to RSC operations. Similarly a perfect suited distribution network is established for the specific product type (Larsen Samuel, Masi, Feibert Diana, & Jacobsen, 2018).

The strategic policies of the return of products are defined by the type of industry. The leniency of the policies can be in time, money, effort scope and exchange. The leniency in the policies affects the purchase of the products positively (Janakiraman, et al., 2015). The RL management processes result in the quantitative gains as well as the qualitative and intangible benefits to the firm such as value generation and improvement of internal processes.

1.2.6 Supply chain performance

The performance measurement which is used and implemented has to interact widely with the environment, depending upon the scenario it may be the internal environment of the organization or the external environment or both (Neely, et al., 1995).The supply chain performance measures can be categorized as resources, output and flexibility. This framework causes the reconfiguration of the supply chain if adopted in the models of the supply chains (Beamon, 1999). The better performance of the company is dependent upon investing more on the collective structure of the supply chain at the strategic level (Morgan, et al., 2018). The RL practices must be studied quantitatively too as the issues of management of the RL practices impacting the performance, RL has been discussed theoretically and qualitatively in past years (Rubio, Chamorro, & Miranda, 2008). The environmental and economic RL channel for the re manufacturing of the end of life products needs the separate production processes and hence specialized designed supply chain (Korchi & Millet, 2011). The cost reduction, better results, increased

profits and enhanced customer satisfaction are the benefits which are proved by the implementation of the reverse logistics practices in a supply chain. The resources must be used in an innovative way for the sole purpose to get maximum advantage out of the reverse logistics programs (Genchev & J. Daugherty, 2005).

2 HYPOTHESES DEVELOPMENT

2.1 Relationship between strategic proactivity and resource commitment in reverse logistics

The issues related to RL and closed loop supply chains have become the center of attention for both practitioners and academia (Govindan, Soleimani, & Kannan, 2015). The environmental sustainability includes conservation or less wastage/consumption of natural energy resources, recycling, limiting of the usage and commitment to the resources. All of them are considered to be the part of the natural resource-based view of the organization. The strategic-orientation of the firm defines the principles to be followed to become a successful corporation both in terms of sustainability and profitability (Juan Alberto Aragón-Correa, 1998).The SSCM research in RL is much enhanced and has rich groundings in the theory when it comes to the framework and infrastructure of the supply chain, but the imperative and the strategic area is still needed to be explored (Carter & Liane Easton, 2011). The empirical relation-ship between the sustainability and RL is inseparable as the reverse logistics is itself a sustainable practice (Morgan, et al., 2018). The concept of sustainability is introduced in the economic, social and environmental aspects of the organization for the sole purpose of integration of the long term economic performance and to logistics literature. The framework of SSCM suggests the managerial implications in the integration of TBL. The broad theoretical lens for the sustainable supply chain framework is provided by the resource based view, which shows that incorporation of sustainability practices to the SCCM activities result in long-term visibility economically (Carter & Rogers, 2008).

The internal strengths and weaknesses and external opportunities and threats are responsible for the firm's strategic planning capability. The plans are devised in the light of the corporate vision and mission. (Yam, Guan, Pun, & Tang, 2004).

Supply chain initiatives include the backward movement of products to the manufacturing plants from the consumers but also the merchandise, the products which are unsold or needed to re- assemble or recycled. The products which are returned are resold and used to create revenue. The organizations must lay the emphasis on the benefits associated with the supply chain initiatives and not only on the RL costs. This will provide more advantage to the firm to become environmental friendly and yet producing more profit (Hsu, Tan, & Mohamad Zailani, 2016). The elements of the supply chain are very intricately linked with the RL. As the four R's of the reverse logistics that are reuse, re-manufacture, recycle and reduce play a key role in the maintenance of environmentally stable world so establishing an environment conscious organization (V. N. S. A. Kumar, Kumar, Brady, Garza-Reyes, & Simpson, 2017). The deployment of the resources, if done correctly has a positive influence on the attainment of the goals strategically (Daugherty, Autry, & Ellinger, 2001b).

Therefore, the following relationship is hypothesized:

H1: The strategic proactivity has the positive effect on the resource commitment of the firm**.**

2.2 Relationship between resource commitment and supply chain performance

The supply chain performance of an organization is affected by the commitment to the resources and the product route efficiency. The revenue generation of the organization is impacted by the proficient usage and efficient management of the resources and by the adoption of efficient product routes for the transportation of the goods to the end customer. The actual empirical effects prove that the resource commitment has a positive impact on the profitability and the SCP of the firm (Weeks & Mileski, 2013). The contextual factors involved in the process of reverse logistics include product complexity, portfolio variation, and volume of returned goods and loss of returned

product value over time. The improvements in technological, organizational and physical resources lead to the configuration of the logistical functions and hence the performance of the firm. These include integration of technical and managerial competences as well as the IT and physical resources, this can be achieved by the efficient combination and separation of forward and reverse movement of products (Hansen Zaza Nadja et al., 2018).

Therefore, the following relationship is hypothesized:

H2: The resource commitment is positively related to the supply chain performance.

2.3 Relationship between resource commitment and RL capabilities and mediating role of RLC

Resources comprise of all the assets and capabilities of the firm. Resources can be tangible or in tangible. Assets are included in tangible resources and capabilities as the intangible. Capabilities may reside in the individual employees but mostly they are shared between the groups of employees. The capabilities perspective takes into account the resources and their deployment for the activities which lead to the competitive advantage in the form of profit maximization (Den Hond, 1996).

The organized usage of the resources that is the physical resources (e.g. refurbishment of the returned inventory), technological resources (e.g. software for the refurbishment), financial resources (e.g. for cost coverage of the process) and the managerial resources (e.g. for the supervision of the process) results in the overall steps ahead performance of the supply chain through the reverse logistics capabilities which are influenced by the sustainability (Morgan, et al., 2018). The RL capabilities related to the information sharing includes the accuracy and availability of the information, real-time information and timelines of the information provided. Also the internal and external connectivity and compatibility (Jack, et al., 2010).

Therefore, the following relationship are hypothesized:

H3: Increased levels of resource commitments are positively related to reverse logistics capabilities**.**

H4: Reverse logistics capabilities mediates the relationship between RC and SCP.

2.4 Relationship between reverse logistics capabilities and supply chain performance and return frequency as the moderator of this relationship

The strategic decisions in the supply chain are strengthened by the implementation of the structural practices and they lead to the effective conduct of the supply chain. The firm's structure influences the conduct of the firm which in turns influences the better performance and aids in achieving the financial and organizational goals. Provided that the assessable outcome for the conduct of the supply chain is performance (Clifford Defee & Stank, 2005). The application of the SCCM to the RL programs has proved positive results for the superior performance of the supply chain. For instance, better logistics performance (i.e. capacity utilization and time of delivery) is observed by the implementation of the sustainable strategy (Morgan, et al., 2016). It is evident that by the adoption of the closed-loop structure in RL is a way more economically profitable. The logistics and SC managers must take into account the closed-loop supply chain practices which in turn will provide the innovative and efficient tools for managing the flow of materials, information and funds through the supply chain for the sole purpose to bring about the fitter supply chain and logistics performance (Turrisi, Bruccoleri, & Cannella, 2013).

The degree of the product returns and the commitment to the resources of the firm defines the level of achievement of the strategic outcomes in the shape of better supply chain performance(Mahindroo, Samalia, et al., 2018).

Therefore, the following relationship are hypothesized:

H5: Reverse logistics capabilities positively impact supply chain performance.

H6: The frequency of product returns moderates the relationship between RL capabilities and supply chain performance.

2.5 Relationship between resource commitment and RL innovation

The innovations not only depend on the capabilities but also the critical areas like resource allocation and strategic planning. High performing firms develop an efficient system of management of resources and innovation capability. The resource allocation capability is the ability to use technology, capital and man power appropriately for the innovation of products and processes (Yam, et al., 2004).

RL programs become more efficient and effective by resource commitment. The smart use of the resources must be developed to determine the innovative approaches for the implementation of RL programs (Genchev & Daugherty, 2005). The adoption of green RL practices in the lens of innovation diffusion produce results in the form of increased sustainability, satisfaction and profit (Hazen, et al., 2012). The internal innovation is costly sometimes in smaller firms so the RL software could be outsourced if making one is not cost-effective. RL innovation make-or-buy is an important strategic decision when it comes to RL innovation implementation (Richey, et al., 2005). Therefore, the following relationships are hypothesized:

H7: Resource commitment has a significant impact on RL innovation.

2.6 Relationship between reverse logistics innovation and supply chain performance and the mediating role of RLI between RC and SCP

RL innovation is one of the antecedents of performance. This can be taken into account of cost reduction, customer satisfaction and better environmental performance. Enhanced supply chain performance is anticipated when the firm implies innovation in its RL practices and activities (Huang, 2014). Flexibility towards the innovation of the firms creates operational service quality. The customization of the RL programs helps in gaining a competitive advantage and the better performance (Genchev & Daugherty, 2005).

The innovation in logistics consists of environmental factors as well as the organizational factors both having positive influence leading ultimately to the diffusion of innovation and hence the competitive advantage in the shape of improved supply chain performance (Grawe Scott, 2009).

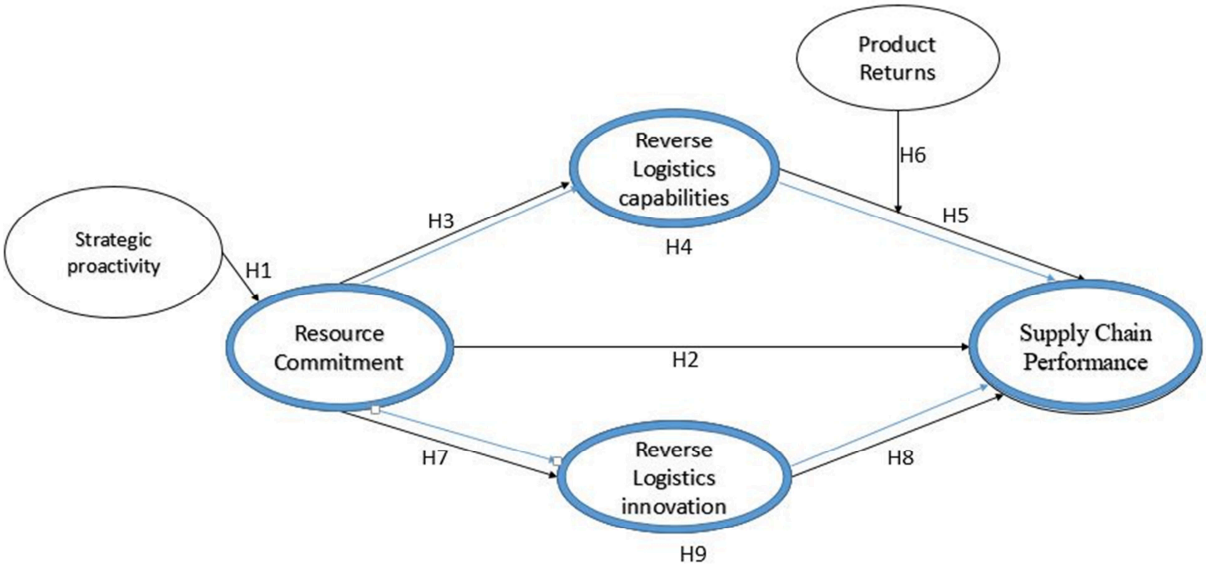
Therefore, the following relationship is hypothesized:

H8: Reverse logistics innovation has a significant impact on supply chain performance.

H9: RLI positively mediates the relationship between RC and SCP.

Based on the above-mentioned hypotheses, the following model is devised:

Figure 1 - Proposed Model



3 RESEARCH METHODOLOGY

Research methodology is a way adopted to declaim the research questions and to explain the phenomenon. This segment explains the research methods that are employed to cater the research questions also the ontological and epistemological assumptions of the research. The details about the research design, strategy, population and survey instrument is also narrated. Section 4.1 describe the ontological and epistemological assumptions of the research. In section, 4.2, 4.3 and 4.4 the purpose, research strategy and research design are explained. The details about population, sample, data collection and data analyses are explained in section 4.5-4.8. Whereas section 4.9 and 4.10 narrates about the design of survey instrument and measures, while section 4.11 addresses the common method bias.

3.1 Ontological and Epistemological Assumptions

The relation between the researcher and the research is a crucial information for the purpose in finding the answers to the research problems (Crotty, 1998). The decision about the research is based on the ontological and epistemological assumptions. Ontology is the "study of being". It is concerned with the decision making about the reality that if it is objective or it is socially constructed. Realism assumes the reality of the object, though it cannot be observed on the spot. Epistemology is the "nature of acceptable knowledge in the discipline" (Crotty, 1998). The Positivism is concerned with the fact that what is confirmed by the senses is called as knowledge. The post-positivism consider the theories and prior knowledge based on the observations (Bryman, 2015). The current study is based on the assumption of ontology that is realism. Objectivism is the epistemological assumption considered in this study. The theoretical perspective is positivism.

3.2 Purpose

Commonly three types of researches are adopted descriptive research, exploratory research and explanatory research (Bryman, 2015). Every type of research has distinct purpose to answer different research problems. If any research explores a phenomenon that has never been addressed to date, it is the exploratory research. Descriptive research has a purpose to describe or explain the phenomenon. While explanatory research tests the theory and explains the causal relationships between the variables (Ritchie, Lewis, Nicholls, & Ormston, 2013).

This study was explanatory in nature as it took into account the effect of strategic proactivity and resource commitment to the reverse logistics capabilities, reverse logistics innovation and on the supply chain performance. Return frequency was used as the moderator between RL capabilities and SCP. On the other hand, descriptive research has an objective to describe or explain a phenomenon. Moreover explanatory research explains the causal relationships between research variables.

3.3 Research Strategy

Research strategy is the path for addressing the research problems (Bryman, 2015). The commonly used research strategies are qualitative and quantitative. The qualitative research is employed when a new and complex phenomenon is studied and no literature is available for the explanation. On the other hand quantitative strategy is adopted when deductive logic is used to discover the concepts already present. Also for strengthening the theories (J. W. Creswell, 1994). This study tested a theory so the quantitative research strategy was used. The constructs and variables were identified by the literature review.

3.4 Research Design

The two most common designs used are known as cross sectional and longitudinal research design (Creswell 1994). Collecting data at one point in time or a single point in time from different groups is known as a cross sectional design, whereas in longitudinal research design, data collection is conducted at various points in time from the same individuals (Crotty, 1998). Cross sectional technique was used in this study.

3.5 Population

In the current study, pharmaceutical manufacturing firms of supply chain will be the population of the study. Pharmaceutical manufacturing firms was the unit of analysis. Data was initially collected through simple random sampling and snow balling sampling with a sample size of 130, because of small sample size.

3.6 Data collection

The cross-sectional design of data has been used in this study. Simple random sampling technique was employed to collect responses. The list and details of registered companies were obtained from Pakistan pharmaceutical manufacturing association (PPMA) website. The questionnaires were sent to the respondents of the pharmaceutical companies with pharma logistics background.

3.7 Pilot test

Pilot test was conducted to test the survey instrument before final data collection. The purpose of pilot study was to check whether all items are measuring what the study aims to measure and whether all questions are easy to understand or not. 20 responses were collected from manufacturing industry. Cronbach alpha of all constructs were above 0.7 threshold which indicated sufficient reliability of survey instrument.

3.8 Hypotheses Testing and Data Analyses

Hypotheses was tested by using structural equation modelling once the data is collected, descriptive measures was determined. After that construct validity was analyzed through content validity, reliability, convergent validity, and discriminant validity (Bryman, 2015). Reliability indicates the extent to which observed variable represents the true value in error free form. A well-known measurement to evaluate reliability is the internal consistency (J. W. Creswell, 1994). Scale reliability were tested through Cronbach alpha. For scale validation, principal component analysis via smart PLS was used.

3.9 Survey Instrument

Seven points Likert scales “Strongly disagree” (=1) to “strongly agree” (=7) was used to measure the constructs. For this study, measurement scales were adopted from following studies.

Table 1 - Measurement scales

Concept	References
Strategic proactivity	(J. Alberto Aragón-Correa, et al., 2008)
Resource Commitment	(Daugherty, et al., 2001b)
Reverse logistics capabilities	(Banerjee, 2002) (Morgan Tyler, 2018)
Reverse logistics innovation	(Huang, 2014)
Supply chain performance	(Autry, Williams, & Golicic, 2014)
Return frequency	(Mahindroo, Samalia Harsh, & Verma, 2018)

3.10 Common method bias

The common method bias appears due to the use of similar methods in measurement. Common method create biasness in validity and reliability (P. Podsakoff & Organ, 1986).
The guidelines provided by several studies were implied to remove the common method bias for instance (P. M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Pilot test was performed before the data collection encompassing many alterations provided by the experts. Common latent factor was used to detect the common variance in the observed variables. The shared variance existed in the results which showed that the common method bias was curtailed.

4 RESEARCH FINDINGS

Table 2 - VIF

Variables	VIF
SP	1.326
RC	2.394
RLC	2.513
RLI	2.379
RF	1.108

4.1 Measurement of psychometric properties

The constructs with multi-items in the model deems fit the use of Structural equation modeling (SEM). PSL-SEM seemed suitable for the analysis purpose because the reflective latent variables and formative latent variables can be assessed via this software. The reliability and factorial validity was analyzed through Principal Factor Analysis (PCA).

The structural model containing six variables on Smart-PLS along with their paths and indicators as specified. CFA was used as a loadings pattern of indicators that were pre-specified on relevant constructs and then

results were examined to find convergent and discriminant validity. The face validity of the scale has assessed through measuring convergent and discriminant validity. PLS algorithm was calculated on Smart-PLS software with a weighting scheme of the path and the maximum iteration of 300 and stop criterion was kept 1.0E-7.

4.1.1 Construct Validity

If the factor loading on the intended variable is higher than 0.5, only then the construct validity exists. The relatedness of an indicator of the construct to other indicators of intended latent variables measures the convergent validity. The convergent validity is confirmed by checking the average variance extracted (AVE) and outer loadings of measures (indicators). All indicators were containing outer loadings above the threshold value of 0.708 or above, which gives evidence for the reliability of indicators. Outer loading of RC3 was less than 0.7 but above 0.6 and RF2 had the least loading of 0.4 but the composite reliability was not an issue so all the items were retained.

AVE defined as the "grand mean value of the squared loadings of the indicators associated with the construct". All latent variables contained values of AVE greater than the threshold value of 50% (Fornell & Larcker, 1981), which showed the evidence for convergent validity.

4.1.2 Discriminant Validity

The measure that how much the latent variable in the model is truly different from other variables is known as discriminant validity (Hair, et al., 2014). There are two ways of measuring the discriminant validity that is cross-loadings and Fornell-Larcker criterion. The higher the factor loadings its intended latent variable and lower on the other variables the higher is the discriminant validity. HTMT and Fornell-Larker criterion were found out. For example RF1 had the highest loading of 0.94 on RF and very low loadings on remaining all constructs. The AVE value square root of each construct is compared with the highest value of that variable with others, this is used to assess the Fornell-Larker criterion (Hair Jr, 2017). All constructs have square root value was higher than its correlation with others. For example, the RLC construct has a value of 0.907 obtained by obtaining AVE value of 0.607 and calculate its square root, which compares with all other correlations and highest from all other correlations of RLC with SP, RLI, RF, SCP, and RC. Also, all combinations of latent variables contained the values of the heterotrait-monotrait ratio (HTMT) less than limitation of 0.85. Hence, discriminant validity exists.

4.1.3 Reliability

Reliability is evaluated by a well-known measurement called as internal

consistency (J. W. Creswell, & Creswell, J. D, 2017). Composite reliability (CR) and Cronbach alpha are used to analyze the scale reliability (Santos, 1999). We used Cronbach alpha as a generalized scale for measuring the internal consistency of a multi-item scale. The alpha values above 0.7 are considered acceptable (Nunnally, 1978). The composite reliability and Cronbach alpha values for each independent and dependent constructs were well within the acceptable limit of greater than 0.7.

Table 3 – Reliability and Validity Estimates

Indicator (Cronbach's α, Average Variance Extracted AVE and Composite Reliability CR)	**Item Loadings**

Strategic Proactvity (SP) α=0.721, AVE=0.643 CR=0.843	
SP1	**0.727**
S2P	**0.808**
SP3	**0.864**
Resource Commitment (RC) α=0.828, AVE=0.544 CR=0.875	
RC1	**0.802**
RC2	**0.778**
RC3	**0.515**
RC4	**0.783**
RC5	**0.748**
RC6	**0.759**
Reverse Logistics Capabilities (RLC) α=0.907, AVE=0.607, CR=0.925	
RLC1	**0.778**
RLC2	**0.809**
RLC3	**0.801**
RLC4	**0.784**
RLC5	**0.832**
RLC6	**0.793**
RLC7	**0.702**
RLC8	**0.726**
Return Frequency (RF) α=0.885, AVE=0.543, CR=0.764	
RF1	**0.94**
RF2	**0.402**
RF3	**0.764**
Reverse Logistics Innovation (RLI) α=0.87, AVE=0.66, CR=0.906	
RLI1	**0.788**
RLI2	**0.822**
RLI3	**0.831**
RLI4	**0.736**
RLI5	**0.878**
Supply Chain Performance (SCP) α=0.852, AVE=0.578, CR=0.89	
SCP1	**0.563**
SCP2	**0.76I**

SCP3	**0.837**
SCP4	**0.796**
SCP5	**0.802**
SCP6	**0.772**

Table 4 - Fornell &Larker criteria

Latent Variables	RLC	RLI	RC	RF	SCP	SP
RLC	0.779					
RLI	0.745	0.813				
RC	0.735	0.665	0.737			
RF	0.24	0.131	-.012	0.737		
SCP	0.531	0.651	0.502	0.61	0.76	
SP	0.469	0.426	0.606	-0.076	0.409	0.802

Table 5: HTMT criteria

Latent Variables	BA	AC	II	KS	RA	SCP
BA						
AC	0.834					
II	0.82	0.758				
KS	0.27	0.148	0.18			
RA	0.594	0.74	0.582	0.122		
SCP	0.579	0.536	0.781	0.179	0.515	

4.2 Hypotheses Testing

The PLS-SEM analysis constitutes some initial steps starting with developing relationships between the specific constructs and then weighing the relationships and the hypotheses are estimated (Braunscheidel, 2009). Smart-PLS software was developed by Ringle and co. for setting up and execute the PLS-SEM model (Ringle, 2005). All the variables were the first-order latent variables and of reflective nature. The indicators were loaded on their respective latent variables. The collinearity was fine for the standardized paths and associative significance levels. Bootstrapping was done with 5000 samples with default options and a significance level of 0.05 (Bolin, 2014). The path coefficients were significant at the threshold level of 0.005. $f2$ values for every latent variable were assessed and among all RC has the strongest effect with 1.174 value on RLC which has large effect size according to threshold values as (0.35, 0.15 and 0.02 as large, medium and small effects) described by (Cohen, 1988).

H1: The strategic proactivity has the positive effect on the resource commitment of the firm.

The relationship between SP and RC was strong p=0.000 (path coefficient=0.606, t=8.217) and in the expected direction. Also, SP significantly affects the RC Thus, H1 was supported which is, SP positively influences the RC. It proposed that the strategic proactivity in the firm always linked to the resource commitment of that firm and encouraging decision making at strategic levels affect the resource utilization and ultimately reverse logistics.

H2: The resource commitment is positively related to the supply chain performance.

The result did not support H2, as the direct relationship among the RC and SCP was not significant p=0.211 (Beta value=0.095, t=0.802) in the expected forward direction. It is because most of the local pharmaceutical companies are not adopting the RL practices as they are supposed to do, though the multinational companies have the proper systems developed for reverse logistics and therefore, the relation exists somehow but not that significant.

H3: Increased levels of resource commitments are positively related to reverse logistics capabilities.

The path coefficient for the relationship between RC and RLC was 0.735(t=12.867, p=0.000) and also significant. Hence, H3 was also supported. It suggested that RC positively and directly affects RLC and the existence of RC in a firm would enhance the whole of RLC and reverse logistics practices.

H4: Reverse logistics capabilities mediates the relationship between RC and SCP.

H4 hypothesis which posited the mediation relationship was tested by generating coefficients of indirect effects through a bootstrap with a sample size of 5000. This test contained a confidence interval of 95% with corrected bias. H4 was not supported because the direct influence among predictor construct RLC and outcome construct SCP was not statistically significant and both indirect effect of RC on SCP & RC on RLC was also non-significant. As the direct effect and both indirect effect was nonsignificant, so RLC did not mediate the relationship between RC & SCP. Also, the indirect point estimate of RC to SCP through mediator was 0.047 (p=0.335, t=0.427) and bias corrected upper limit of 0.224 and lower limit of =0.134 so H4 is not supported.

H5: Reverse logistics capabilities positively impact supply chain performance.

H5 is not supported as the results were nor statistically significant p=0.333 with the path coefficient value of 0.064 as direct path t value of 0.432. This is due to the fact that the capabilities of the reverse logistics processes are not considered to be cost effective and the sustainability goals are kept separate from the supply chain goals.

H6: The frequency of product returns moderates the relationship between RL capabilities and supply chain performance

H6 was not supported, i.e. RF positively moderates the relationship among RLC and SCP. RLC has an interaction effect of 0.064 and the effect of RF on SCP was -0.018 (p=0.433, t=0.168) so, for the average level of RF, the relationship between RLC and SCP was not positive. This is due to return policies of different companies and the associated procedures adopted by various factions of supply chain.

H7: Resource commitment has a significant impact on RL innovation.

Resource commitment has hypothesized direct and positive effect on reverse logistics innovation. Path coefficient of beta value 0.665 (t=9.87, p=0.000) support the hypothesis. A similar results were also observed in the past researches too. So H7 is accepted.

H8: Reverse logistics innovation has a significant impact on supply chain performance.

The new relation was developed in this hypothesis i.e. the link between SCP and RLI. The path coefficient beta value 0.557 (t=4.005, p=0.000), the result was significant and RLI positively impacts the supply chain performance. H8 is accepted as the result was statistically significant.

H9: RLI positively mediates the relationship between RC and SCP.

The same process was followed in which the indirect effects of the following paths were measured through a bootstrapping procedure with 5000 subsamples i.e. Resource Commitment -> RL Innovation -> SCP to test the mediation. The results indicated that the indirect path with point estimate 0.37(t=3.533 , p=0.000) and a bias corrected lower limit of 0.23 and upper limit of 0.591 support the existence of mediating effect, so H9 is accepted.

The following table shows the path coefficients and results of all hypotheses.

Figure7 - Result of structural model

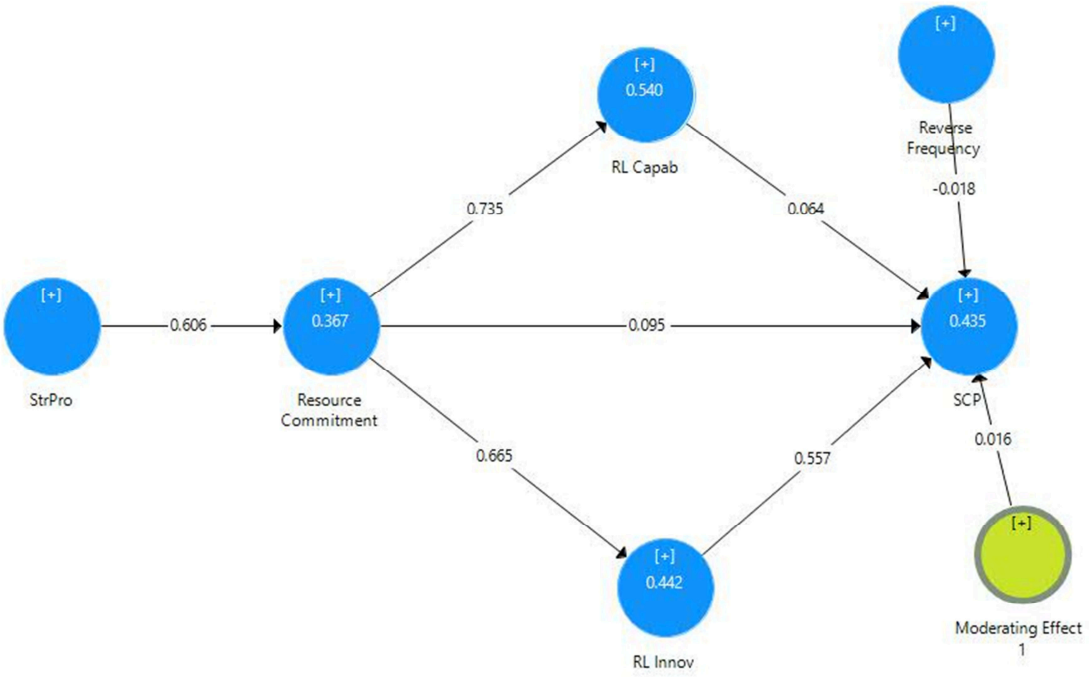


Table 6 - Results of proposed hypotheses

Hypotheses	Standardized Paths	Coefficients	T value	P value	Results
H1	StrPro -> Resource_Commitment	0.606	8.217	0.000	Supported
H2	Resource_Commitment -> SCP	0.095	0.802	0.211	Not Supported
H3	Resource_Commitment -> RL Capab	0.735	12.867	0.000	Supported
H4	Resource_Commitment -> RL Capab -> SCP	0.047	0.427	0.335	Not Supported
H5	RL Capab -> SCP	0.064	0.432	0..333	Not Supported
H6	Reverse_Frequency -> SCP	-0.018	0.168	0.433	Not Supported
H7	Resource_Commitment -> RL Innov	0.665	9.87	0.000	Supported
H8	RL Innov -> SCP	0.557	4.005	0.000	Supported
H9	Resource_Commitment -> RL Innov -> SCP	0.37	3.533	0.000	Supported

Table 7 - Boot strapping results of In-direct paths:

Hypotheses	Path Relationship	Biased Corrected Confidence Interval at 95 Confidence Level					
		Estimate	**Lower**	**Upper**	**P-value**	**t-value**	**Results**
H4	Resource_Commitment -> RL Capab -> SCP	0.047	-0.134	0.224	0.335	0.427	Not Supported
H9	Resource_Commitment -> RL Innov -> SCP	0.37	0.23	0.591	0.000	3.533	Supported

5 DISCUSSION

In this era of massive production and increased threat of healthcare, bio-chemical and environmental degradations, the companies find it difficult to find a balance between their financial gains and active part being played in the society, environmentally. The forward and reverse logistics go hand in hand when it comes to running a business enterprise under the setting of a dynamic market needs and customer demands. The pharmaceutical industry comes under highly sensitive regulatory authorities as it deals with the human life directly and provision of basic and specialized medical amenities to the community.

This research throws light on the supply chain performance of firms in various conditions of reverse logistics settings. The main purpose of the research was to explore the reverse logistics practices in the pharmaceutical sector of Pakistan and its outcomes. Reverse logistics is a comparatively newer term for this region as approximately no research has been done in this area, this was identified as the research gap. The multinational companies working have a very well developed systems of reverse logistics in supply chain departments. The local manufacturing setups out-number the multinational companies, though the processes of RL are carried out more or less in every firm, but, the proper systems have not been developed. RL capabilities and innovation were the main focus of the study with respect to their effect on all over supply chain performance and backed by resource commitment and strategic planning going on in firms. The impact of RL was studied by examining the mediating role of RLC between RC and SCP and the moderating effect of return frequency between RLC and SCP.

The brief literature review was conducted to explore the already done researches in the area of RL and research questions were sorted out for SCP with the associated systems with a regard of resource commitment and strategic proactivity and planning. RLC and RLI were taken as the major constructs and the impacts were studied over SCP. Then the detailed literature study was conducted to establish the relationships between the latent constructs and the mediation and moderation effects of them. Hypotheses were developed according to the relationships and a research model was framed. Nine hypotheses were developed and then scales were set for each construct. Data was collected from supply chain/logistics managers working in the pharmaceutical manufacturing industries of Pakistan. The collected data was analyzed through Smart-PLS and the result of each hypothesis was reported. This research adds contribution to both managerial or practical and theoretical knowledge. The limitation which has to be faced in this study will lead to the opportunity for future research. The detail for research implications and limitations has given in the following sections.

5.1 Theoretical implications

This study addresses three important objectives on the basis of structure, conduct and performance of the firms. The strategic decisions been carried out are the backbone of the conduct that is the commitment to the resources and the capabilities of the reverse logistics and innovation in the reverse logistics. The conduct leads to performance, the impact of enhancing the capabilities and innovation on supply chain performance was studied. Strategic proactivity and planning in the firm is showed by the behavior of the desired systems related to performance, as supported by the previous researches (Madhavaram, 2008).

The previous studies were carried out for studying the operational performance and established its relation with sustainability i.e. the reverse logistics capabilities serve the purpose of attaining the sustainability goals itself if implemented in a real sense. It generates higher production capacity and quality (Morgan, et al., 2018). The commitment to the resources more importantly the training/education of employees would affect the operational performance (Closs, 2011).

But the effect of commitment of financial, managerial, technological and physical resources and to perform the reverse logistics activities in an effective way and the collective effect on supply chain performance was not studied in past. Although some evidences of RC being a key driver in achieving supply chain objectives were reported (Ellinger, Daugherty, & Autry, 1998). The literature shows mixed results in this regard (Daugherty, Autry, & Ellinger, 2001a). This study finds that the sustainability is attained with the implementation of reverse logistics in the firm. The resource commitment contributes to the reverse logistics i.e. via enhancing the capabilities and innovations. The supply chain performance, however, is very much impacted by innovation as compared to the capabilities. Strategic proactivity indicates the strategic decisions of the firm and hence impacting the over-all conduct. Given these findings, this study contributes to the theory of resource based view of the firm with respect of structure, conduct and performance framework.

5.2 Practical implications

The companies are usually under the impression that the growth is linear i.e. the competitive advantage can only be gained by cutting the costs. The strategic virtues are ignored completely, the sustainability is considered not to be cost effective, so they step back from implementing the reverse logistics processes. The managers involved in the strategic planning of the firms must be aware of the long term implications and the associated benefits of RL practices. They must be able to link the general RL practices with SCP outcomes. This study addresses this issue of training and education for the logistics/ warehouse managers and others decision makers of the firms to examine the benefits and building the capabilities lading to competitive advantage.

This study shows that the reverse logistics practices lead to achievement of sustainability goals in this modern era and is the direst need of hour. The strategic questions about whether to adopt it or not is continuous process over time and depends upon diversity of business, technological base and type of industry (Defee, 2010). Some of the stainability initiatives could be cost-centered so small business enterprises avoid them, a probable cause. But, the balance of probability in the case of cost effectiveness and sustainability seems to be the legitimate goal which the managers could imply.

6 LIMITATIONS AND FUTURE RESEARCH

This section reviews the advantages of the research and future aspects, also the limitations in the research. This research was conducted in pharmaceutical manufacturing industry of Pakistan and limited to just that. The relationships found were interesting. But, the generalizability could be an issue so the existing knowledge/research findings should be extended to other areas e.g. the surgical manufacturing which is a separate yet similar entity of pharmaceutical industry and comes under the same regulations of DRAP (Drug Regulatory Authority of Pakistan).

Future research could inculcate the other members of supply chain i.e. suppliers and customers and the expansion of knowledge on both upstream and downstream of the supply chain for enhancing the network relationships.

The findings of the research showed the reverse logistics innovation to have a great impact over supply chain performance but the differential association of natural progression can be studied by adding more constructs which could impact the innovation. This research added value to the resource based view theory, however, by adding other aspects of related theories e.g. knowledge based theory and competing values theory could also be studied under these findings.

This study contributed to literature of reverse logistics capabilities with a special reference to strategic level decisions and linking it with supply chain performance. Though other sections of the marketplace could be included in the research e.g. third party logistics and their impact on the supply chain performance. This study found-out the relation of product returns and its moderating effect of the relation of RLC and SCP, in this regard the return management system and related technological/information systems inclusion in the firm could be taken into account. So, this research would add the contribution to both literature and practice leading to aid researchers and managers in developing sustainability practices in their firms.

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