

UNIVERSIDAD ESAN



***“Impact of reverse logistics practices and
competitiveness in medium and small textile sector
companies in Lima metropolitan”***

In collaboration with:



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**Research work presented in partial satisfaction of the requirements to obtain the
degree of *Magister en Administración* by:**

Pablo David COVENAS MANYARI - 1704747

**Advisors: Mlinar, Tanja
Reihaneh, Mohammad**

Maestría en Administración a Tiempo Completo – MATC 54

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This Research work:

“Impact of reverse logistics practices and competitiveness in medium and small textile sector companies in Lima metropolitan”, ha sido aprobada.



Luis Francisco Rosales Marticorena
(Jurado)

Universidad ESAN

2020

A mis padres, José y Liliana, por su incansable dedicación, motivación, compromiso y amor en guiarme por el sendero del desarrollo como ser humano. De igual manera a mi hermana que con su ejemplo me enseñó con más claridad el camino del éxito a seguir.

Pablo David Coveñas Manyari

Table of contents

ABSTRACT	10
1 The Literature review	13
1.1 Conceptual Background	13
1.1.1 Supply chain	13
1.1.2 Reverse logistics	14
1.1.3 Small and medium-sized enterprises	22
1.1.4 Competitiveness in textile SMEs	22
1.1.5 Corporate social responsibility	24
1.1.6 Competitive strategy	24
1.1.7 Previous studies	26
2 Methodology	31
2.1 The Research objective	31
2.2 Problem description	32
2.3 Conceptual model.....	33
2.4 Research questions.....	34
2.5 Hypotheses	34
2.6 Methodological choices	34
2.6.1 Qualitative research	34
2.6.2 Quantitative research.....	35
3 Research design explanation	36
3.1 Research type.....	36
3.2 Research design.....	37
3.3 Research constructs	39
3.4 Research contribution	39
3.5 Research method relevance	40
3.6 Research scope and boundaries	40
3.7 Population and sample	41
3.7.1 Population	41
3.7.2 Sample.....	41
3.7.3 Data collection	41
3.8 Type and sources of data.....	42
3.9 Data processing	42
3.10 Results of data collection	43
4 The Data analysis.....	43
4.1 Survey method	43
4.2 Modeling	44
4.3 Descriptive data analysis	45
4.4 Research reliability	47

4.4.1	Coefficient of determination	47
4.4.2	Reliability coefficients	47
4.4.3	Discriminant Validity	49
4.4.4	Model results	49
4.5	Discussions, implications, and limitations.....	51
5	<i>References</i>	56

Pablo David Coveñas Manyari

pablo1288@msn.com

<https://www.linkedin.com/in/pablocov/>

+51 989 093 190



Profesional con más de 7 años de experiencia en el área de Supply Chain Management, generando valor agregado en la implementación y ejecución de las operaciones a lo largo de la cadena de abastecimiento de gran envergadura con visión transversal estratégica de la empresa.

Orientado hacia la utilización de tecnología de punta para la reducción de costos y aumento de la productividad. Experiencia en la coordinación de actividades relacionadas con los stakeholders en la cadena de suministro. Asertivo y cómodo trabajando con personas de diferentes niveles. Alta capacidad para gestionar por rendimiento de equipos. Seguidor del modelo de gestión ORA (organización de rápido aprendizaje). Nivel de inglés Avanzado.

EXPERIENCIA PROFESIONAL

Empresa de generación Huallaga S.A.

La segunda central hidroeléctrica del Perú ubicada en la ceja de selva de Huánuco, con capacidad para producir 456mw. Durante la ejecución del proyecto empleo a 5000 peruanos y posee un valor 1,400 millones de dólares.

Junior Manager - Logística

Mar 2014 – Abr 2017

Responsable por la gestión del equipo de logística y operaciones del proyecto central hidroeléctrica de Chaglla, liderando la responsabilidad de la adquisición, distribución (nacional e internacional), control, recepción y almacenaje de todos los equipamientos, herramientas, mobiliarios y maquinarias para la correcta ejecución y construcción del proyecto. Dentro de las áreas de responsabilidad se encuentran la gestión de: Compras (Locales e internacionales), activos fijos, facturación, distribución, contractual, almacenaje y cierres financiero – logístico.

- Se logró la reducción del lead times de todos los suministros provenientes de importaciones en un 5% en base al despacho anticipado con Aduanas.
- En base a una gestión eficiente de almacenes se logró el suministro oportuno a todas las áreas trabajo del proyecto, esto gracias al diseño y ubicación estratégica de almacenes satélite a lo largo de todo el proyecto.
- Cumplimiento en concordancia con la normativa de almacenaje de materiales explosivos e inflamables a lo largo de los 7 años de proyecto, de igual manera se cumplió con todos los estándares nacionales e internacionales en materia de protección al medio ambiente.
- Reducción en 2% en los costos de contratos de distribución en base a oportunas y continuas rondas de negociaciones con proveedores de materiales estratégicos para el proyecto.
- Premio a la eficiencia logística por la Sociedad Nacional de industrial por mantener el mejor Lead Time en el sector infraestructura.

Responsable del programa Logística

Enero 2012 - Febrero 2014

Administración y control de los procesos operativos de las actividades desarrolladas en el área logística orientadas a incrementar la eficiencia y productividad de los objetivos de la gerencia financiera.

- Rediseño del flujo operativo del proceso de recepción y distribución de materiales estratégicos del proyecto.
- Implementación y control de la modelo curva ABC de materiales a fin de incrementar el nivel de precisión de compras.
- Rediseño del flujo de aprobación de compras en base al ERP Oracle a fin de evitar cuellos de botella al solicitar y ejecutar la compra de materiales. Esto redujo los retrasos de las operaciones en un 9%.
- Inclusión del “modelo de anidación” de compras el cual permitió ejecutar ordenes de compras en mayor volumen permitiendo tener mayor poder de negociación y reduciendo los tiempos de espera.
- Implementación del sistema de control RFID para el control de activos fijos y facilitando su

inventariado.

- Digitalización de facturación física de adquisiciones locales a fin de evitar pérdidas y errores en el control de las compras.

Supervisor Logístico

Enero 2011 – Diciembre 2011

Responsable por el manejo exclusivo de suministros operativos del proyecto contando a disposición con herramientas para eliminar potenciales riesgos de suministros a lo largo de la cadena de abastecimiento. Diseñando modelos de rutas de distribución desde Lima hasta la región de Huánuco a fin de identificar riesgos de accesos, dimensionamiento entre otros potenciales riesgos que pondrían en riesgo el correcto suministro de materiales del proyecto.

FORMACIÓN PROFESIONAL

IESEG School of Management – FRANCIA Master in Management	2018-2019
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ESAN GRADUATE SCHOOL OF BUSINESS - LIMA Maestría en Administración	2017 - 2018
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UNIVERSIDAD RICARDO PALMA – LIMA (TERCIO SUPERIOR) Bachiller en Administración de Negocios Globales	2005 - 2010
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OTROS ESTUDIOS

MICROSOFT POWER BI	2020
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ORACLE ERP - PROCUREMENT BUILDER CERTIFICATION INGLÉS AVANZADO – CERTIFICACIÓN TOEIC	2015
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HABILIDADES PROFESIONALES

MS PROJECT
SAP PROCUREMENT
ORACLE ERP - FINANCE
SMART PLS

RESUMEN EJECUTIVO

Grado: Magister en Administración

Título de la tesis: “Impact of reverse logistics practices and competitiveness in medium and small textile sector companies in Lima metropolitan”

Autor(es): Coveñas Manyari, Pablo David

Tomando conciencia sobre el crecimiento exponencial y dinamismo de las pequeñas y medianas empresas peruanas y su gran contribución con el PBI, es de vital importancia facilitarles herramientas que les permitan afrontar con mayor efectividad la complejidad del mercado global. En tal sentido, dentro de este gran número de herramientas que brinda la gestión contemporánea se encuentra la Logística inversa la cual abre nuevas oportunidades competitivas a estas pequeñas y medianas empresas, más aún en el caso de las PYMES del sector textil las cuales están ávidas por adecuar nuevos enfoques que les permitan incrementar su competitividad y reducir los sobrecostos en la cadena logística. Con este fin, se propone trazar lineamientos que permitan determinar cuáles podrían ser las consecuencias de una correcta implementación de las prácticas de Logística inversa en la cadena logística de las PYMES textiles de Lima metropolitana:

Determinar el grado de asociación entre las prácticas logística inversa y la competitividad de PYMES del sector textil.

Determinar como la gestión devoluciones, proceso de devolución y descarte de productos defectuosos pueden contribuir a mejorar la productividad y efectividad de los procesos a lo largo la de la cadena logística.

Determinar cuál de todas estas prácticas son relevantes para ser consideradas dentro del análisis estratégico de competitividad de una pequeña y mediana empresa textil ubicada en Lima Metropolitana.

Con el fin de identificar posibles prácticas a considerar dentro del estudio, se procedió a plantear 10 prácticas de logística inversa las cuales fueron incluidas sobre la base teórica existente en diversas experiencias en todos los sectores de la economía peruana, para ello se procedió a entrevistar 5 expertos los cuales hayan tenido experiencias previas en el campo de logística inversa, como conclusión se determinó que las 3 prácticas más relevantes y factibles fueron: el número de devoluciones de productos defectuosos, la gestión del productos defectuosos y el descarte de productos no reutilizables (defectuosos sin provecho). Estas prácticas son la base para el modelado de los ejes del estudio. Por otro lado, dentro de los teóricos de competitividad se encontró que existían diversos casos de estudio que tenían como denominador común la búsqueda del incremento de la competitividad empresarial, y varios de los estudios se basan en como incrementar la productividad y efectividad de las empresas en el mercado. Tomando como referencia los estudios previos fue necesario construir un modelo que nos permita determinar cuál es grado de asociación o cuan relevantes son estas prácticas para mejorar la competitividad.

Por otro lado, para determinar el área de influencia del estudio se procedió identificar el área con el mayor nivel de concentración de PYMES textiles en el Perú y se llegó a la conclusión que por su número esta se encuentra en Lima Metropolitana ya que tenemos

emporios textiles como el de Gamarra o áreas en crecimiento como Villa María del triunfo o Villa el Salvador.

Para el proceso de recolección de datos se determinó que la modalidad de recolección sería de manera virtual y estaría orientada a todo empresario del rubro textil que pertenezca a una pequeña y media empresa que este localizada en Lima Metropolitana. Es importante mencionar que el número de personas encuestadas para este estudio fue de 327 encuestados lo cual nos permitió hacer que el estudio tenga la confiabilidad necesaria para cumplir con los parámetros de fiabilidad.

Posteriormente, el modelo planteado por el estudio podría arrojar 5 escenarios posibles los cuales están contemplados en la validación de los posibles escenarios que se obtendrían en el estudio, los cuales pueden ser:

El planteamiento principal podría ser validado, es decir la hipótesis que la logística inversa pueda contribuir a mejorar las prácticas de competitividad de las PYMES exista.

El planteamiento principal podría ser rechazado, es decir la hipótesis que la logística inversa pueda contribuir a mejorar las prácticas de competitividad de las PYMES no exista.

El planteamiento secundario exista, es decir que todas las prácticas de logística inversa incluidas en el estudio sean validadas por ende contribuyen con la competitividad de las PYMES.

El planteamiento secundario sea validado parcialmente, es decir que algunas las prácticas de logística inversa comprendidas en el estudio sean validadas.

El planteamiento secundario no exista, es decir que todas las prácticas de logística inversa incluidas en el estudio sean validadas no contribuyen con la competitividad de las PYMES.

Finalmente, luego de la recolección se procedió al procesamiento de datos los cuales estuvieron basado en el estudio estadístico de la regresión de mínimo cuadrados parciales, lo cual nos permitió determinar con mayor nivel de precisión estadístico el grado de correlación de las variables del modelo. A su vez, se consiguió agregar mucha más fiabilidad al modelo gracias a coeficientes de fiabilidad a fin de ofrecer un modelo que pueda ser lo más confiable posible en los resultados. Los resultados obtenidos nos mostraron los siguientes resultados:

La existencia de las prácticas de logística inversa en la operatividad y gestión de la cadena logística efectivamente incrementan la competitividad de la PYMES del sector textil de Lima Metropolitana. En lo concerniente a las prácticas de logística inversa como: el número de devoluciones de productos defectuosos, la gestión de los productos defectuosos y el descarte de productos no reutilizables se puede validar que tienen influencia relevante sobre la competitividad de las PYMES del sector en la productividad y la efectividad. En ese sentido, podemos dejar precedente que las prácticas de Logística inversa contribuyen positivamente hacia el mejoramiento de los performances empresariales y a su vez trae nuevos aires en la gestión más eficiente de la cadena logística beneficiando la toma de decisiones estratégicas de la empresa como la reducción de costos operativos y de producción que a su vez se ven reflejados en la mejora de la responsabilidad social corporativa de la misma.

ABSTRACT

In the last decade, companies have been increasing their efforts to make more efficient processes. Additionally, the market dynamics are pushing companies to redesign and adapt processes to the new way to do business. In this context, logistics processes play an essential role in enhancing company responsiveness and competitiveness to the market because logistics offers a wide range of possibilities to redesign and adopt new concepts into a supply chain of any company.

In Latin America, specifically in Perú, the implementation of better logistics practices is one of the most challenging tasks for companies because companies experienced problems as overproduction, failed products, demand uncertainty, and over cost. Under this situation, reverse logistics offers several possibilities, and it transforms the traditional logistics perspective into a dynamic perspective because it changes the concept of logistics flows. These flows should be bidirectional; it goes from the company to the client and from the client to the company. This change in the traditional logistics perspective does not cover waste management as a strategy. Traditionally, companies consider non-profitable products those which have any defect (originated during the manufacturing process), returned products, or manufacturing waste.

For this reason, reverse logistics wants to include new supply chain practices, which are reuse, redesign, and waste reduction. Besides, reverse logistics practices influence all the levels of the life cycle because these practices involve stages from the production to the customer. Besides, reverse logistics has been considered as a relevant subject since company strategies have affected because profits have been affected by overproduction, defective production, customer returns, and more considerable amounts of waste management (Naturvårdverket 2013).

Peruvian textile industry is the second largest sector in Perú. It contributes to 1.3% of the total Peruvian GDP (INEI- National Institute of Statistics, 2015). Besides, the industry contributes 412 thousand as a labor workforce yearly. Also, part of the success of this industry is thanks to Small-Medium Enterprises (SMEs), which contribute 60% of textile sector production (Ministerio de la producción, 2016). On the other hand, SMEs are facing several problems related to over costs as a result of inefficient waste management. SME's profits are being affected by this inefficiency and inappropriate logistics practices. Consequently, SME performance is not well performed because they are not conscious of the reverse logistics advantages. This reverse logistics practices lack into the SME supply chain represents an

opportunity for this study to determine which are the critical factors that contribute to enhancing the efficiency and competitiveness of SME in the textile of Lima metropolitan.

This research is intended to identify which reverse logistics practices influence the competitiveness of the Small-Medium enterprises in the textile sector of Lima Metropolitan. According to previous studies, Peruvian SMEs are facing critical problems with logistics practices; these problems are related to the low supply chain visibility and arduousness to manage a reverse flow. Besides, previous studies indicate some benefits of reverse logistics practices. However, those benefits are hard to measure if they are not reflected in the company's competitiveness. Consequently, it focuses on identifying the relation between reverse logistics and SME's competitiveness. For the analysis of this relation, the study considers the following constructs: number of returns, returns process, final disposal of returns, productivity, and effectiveness. These constructs allowed us to understand which reverse logistics practices can enhance the SME's performance in the textile sector of Lima Metropolitan. Then, the proposed hypotheses are validated for average variance extracted (AVE) and composite reliability coefficients. On the other hand, to measure the relevance of each valid relation, the study considered the Partial Least Square (PLS) method as a statistical method for the analysis.

During the data collection, we noticed that companies wanted to integrate into supply chain new logistics practices as reverse logistics practices. Still, they did not integrate well because they consider these practices are hard to integrate into a supply chain of SMEs. Another difficulty for these companies was the lack of information about the benefits of reverse logistics.

After the data collection analysis, this study proves the benefits of the reverse logistics practices implementation for the competitiveness of textile companies in Lima Metropolitan. Results provide us several insights for companies and future studies about how a deeper awareness and new practices of reverse logistics can provide benefits for Small Medium Enterprises. Additionally, these benefits are not only monetary, but they might also provide benefits like efficiency, productivity, and company responsiveness. Finally, as an industry, the Textile sector should consider reverse logistics as an excellent allied to increase the competitiveness of their members, and reducing lack of information related to benefits could be a way to make these practices easier to put in practice.

INTRODUCTION

Since the beginning of this decade, Perú has been experiencing a fast development of its productive sectors. This development by cause of the change in the country's economic policy actions. Most of these actions have been oriented to increase the number of free

agreements between several developed countries. In this context, the dynamic of the Peruvian economic has allowed small Medium-sized enterprises contribution being higher than the previous decade. Also, this economic development has permitted an increase in the level of the company's needs. This development is due to an increase in the demand market. In this sense, logistics practices are relevant for small, medium-sized enterprises development. It should be pointed out that in the previous decade, logistics chains were not considered relevant for these companies due to low enterprise revenues. Nowadays, things have changed, and small, medium-sized enterprises are relevant for the Peruvian economy, and they need more and more ways to improve the level responsiveness in their supply chains to the market. However, the Peruvian entrepreneurs always considered logistics from the traditional perspective, which means that logistic flows should be unidirectional (from the company to the client) oriented to the client's product deliver. These traditional logistics perspectives affect the supply chain effectiveness due to manufactured products should satisfy all market standards (quality, price, so on), reducing the manufacturing timing and third service provider delivers caused by defective products. Also, this impact affects to wholesalers, retailers, and clients. Commonly this issue is known as the bullwhip effect, and more broadly, the affections involve all the supply chain stakeholders (direct or indirect related).

In this circumstance, logistics' non-traditional perspectives have known by entrepreneurs of many different economic sectors, especially in the case of the textile sector. Nevertheless, most of them are not sure about the benefits of these non-traditional perspectives caused by a lack of tangible benefits in other small, medium-sized enterprises. This lack also means an establishment of traditional practices into the supply chain and a rejection in the way to include new practices in the company strategy.

For example, the clothing consumption has increased over the last ten years in Sweden; this increase became process production into a fast maker; however, at the same time, the level of waste has increased as well. This excess of waste represented a profit decrease by 12% in comparison with the 2011 annual profit as a result of high investment in waste management (Naturvårdverket 2013). The way how to doing business has changed because the demand is rising, and there is a high risk of customers' returned products. This is the case of Bata, this is a clothing and shoe manufacturer, and it has stored over the world. In the year 2008, It was affected by the higher demand. However, Bata has outsourced its production to Chinese suppliers, and some products had not the proper quality. This issue affected the number of

products displayed in the stores, profit reduction, non-selling inventory, and the company responsiveness along the supply chain (Kinyanjui & Ah Kagiri, 2017).

In contrast, H&M implemented one of the most successful reverse logistics examples. This company included in the company's strategy reverse logistics practices, and receive second-hand clothes to create a recycled clothing line. This kind of practice lets the company enhance its reputation and gain more costumers that use clothes from other brands (H&M, 2014). This change in the logistic perspective offers a wide range of opportunities for companies because it includes new perspectives to face the company responsiveness.

Regarding new logistics perspectives, reverse logistics appears as a new way to understand how the supply chain's concept can be perceived. Furthermore, reverse logistics reveals that supply chain flows are not only unidirectional. In contrast, reverse logistics consider supply chain flows are bidirectional as a consequence of defective products; excess of manufacture and production waste might be reused or reprocessed to reduce the impact in the competitiveness of Small, medium-sized companies.

Finally, the research is oriented to identify the existence of a relation between reverse logistics practices and competitiveness. Research efforts are focused on determining if this relation might enhance the competitiveness of these textile companies in Lima. The research-oriented its target in Lima because the largest concentration of SMEs is established in this area, and most of them are profitable companies in the textile sector.

1 The Literature review

1.1 Conceptual Background

1.1.1 Supply chain

Following Ramirez (2010), the supply chain is a sequence of processes and flows that take place inside and outside the company, at the same time, it has different stages that to satisfy customer's needs. The approach of supply chain is oriented to observe characteristics of procedures which are cycling and push/pull. In the cycling approach, processes are split in cycles; each cycle is carried out between two continuous supply chain stages, such as customers and warehouses. The push and pull process approach depends on whether the processes take place in response to an order, requested by the customer, or anticipation of it.

On the other hand, supply chain works as a network, it is a link between the company and customers. This network has essential elements as: persons, data, tasks, process, and resources. In addition, this network is the main responsible to transport products from the company to the customer and vice versa.

1.1.2 Reverse logistics

According to López (2010), reverse logistics covers aspects derived from moving goods from the consumer or distributor to the manufacturer, those goods are collected in most cases to be included in a new production process. In addition, reverse logistics picking is oriented to collect used products because those goods have a value that might be used in a new production process. Reverse logistics define which procedure will be the most appropriated for those goods, in most of the cases, those procedures might be reuse or destruction.

As stated by Santos (2011), reverse logistics is a process that considers forecast, implementation, and control as a production flow. This flow includes raw materials, inventory processes, final products, and data in the supply chain from the beginning to the end. An efficient flow must be measured, according to efficiency and delivery time parameters. These parameters have as an objective recover the value of the product from the customer.

Also, according to Rodriguez (2014), reverse logistics is that process that covers waste management practices from the client to the producer (or manufacturer); However, some companies make the mistake of assuming that direct logistics works is exactly the same as reverse logistics.

Additionally, the main objective of reverse logistics considers a process that moves goods from the end of the supply chain (customer) to manufacturing process in order to capture value of used products; sometimes reverse logistics provides only a proper disposal (Kaynak et al., 2014).

Reverse logistics also refers to the use of one of the 3 R's: recycling, reuse and remanufacture of materials. The elimination or reduction of waste is the essential support of any reverse logistic activity, the most common reverse logistics activities look for repairing old components or reusing old parts without any previous modification. The introduction of Reverse logistics is the result of the growing environmental awareness in industrialized countries, and nowadays most companies want to contribute with the reduction of the environmental impact. (Alvarado et al., 2008).

Planning, implementation, and control are the main drivers of the supply chain management flow and demand a deep understanding of each one. Besides, reverse logistics is an excellent opportunity to improve the company's process and also develop excellent customer relationships handling an ethical supply chain management performance.

The purpose of the text was to look for the analysis of the implementation of reverse logistics practices for Spanish companies making a diagnosis of their current situation to examine those that are influencing more significant in the way how to manage reverse Logistics activities. The study was applied to a multisectoral sample of Spanish companies whose results reflect the great variety of activities of Reverse Logistics by activity sectors. Also, the management of numbers of returned materials and investments made in reverse logistics systems. Especially in companies more proactive, which want to become companies with adequate levels of competitiveness. It should be noted that the primary research aim is to determine the degree of association of reverse logistics practices on the competitiveness of SMEs in the industrial textile sector of metropolitan Lima.

For this reason, this research wants to be relevant to the study of supply chains based on reverse logistics management. According to the previous investigations, reverse logistics is affected by factors such as the high costs of the resources that are used and having to face the requirements of the market that demands a variety of products with increasingly smaller life cycles. These changes have allowed reflecting the impacts on the textile industry, as they have generated the redesign of the organizational and productive structures, to reach satisfactory levels of competitiveness to remain within its field. On the other hand, it also infers and describes how competitiveness is related to management through reverse logistics strategies of textile SMEs. Since that, it is possible to identify the aspects that should be corrected, as well as from the management aspect to company benefits, to generate a competitive advantage to them. However, some of the studies have some weaknesses reflected mainly in their limitations regarding their information. Many of them do not have such direct information from the environment, due to lack of time, budget, or confidentiality. Besides, some researches come from foreign cities or are not specific to the town, so the information provided is based on experiences or company cases, which, although they have certain similarities concerning the researches that have been carried out and are from others, cities differing to the study place (Mihi et al., 2012). Finally, researches mentioned along this document have a descriptive type, meaning that their results are based on perceptions or opinions of those involved, but not on real experiences, since no research has implemented their proposals in their places of study.

1.1.2.1 Recovery process

One main reverse logistics activity is the recovery process, its main objective is picking up products from customers, suppliers or retailers in the most efficient way. The main objective of this process is to assure the quality of used components. Recovery process part of the 3 R's which are reuse, remanufacture and recycling. As we will see in this section, there are 3 types of methodologies to assure the efficiency of the waste management.

- **Reuse**

Determined by the number of simple activities that we will do to recondition the product, these activities typically are minors repairs and cleaning, and also, at the end of the process, the product keeps its same structure. Reused materials are those outputs that are included into a new production line and contribute with the production of a new product. It is important to mention that a reused output keeps its same characteristics and functionality (Rubio & Jimenez, 2014). Along this new production process reused outcomes suffer some corrections as cleansing, painting, polish or some other minor adjustments. In addition, to be included into a production line reused items have a previous process to validated the product's quality standards to reduce potential risk along the production process. Reuse demands a strong support of production department because the production line should include a new flow. This new flow should be responsible to track all reused outputs from the customer to the company. At the same time, company should be aware that not only reused item collection is addressed to customers, it might be also addressed to third party service provider because they also discarded products and consider them as non-reusable. Companies should be aware of the contribution of reuse practices because those might improve the performance of the production line and cost reduction. The purchase of new raw materials might be low because production line will include reused items into production (Taha et al., 2010). According to the international organization for standardization – ISO (2015) Products with reused items should be the same at the end of the process, and should have the same characteristics and functionality, no matter what other components were added. As were mentioned above there are some economic benefits that the company might take advantage, but there are another perspectives that should be favorable for example the fact of company's contribution with the environment, this fact is essential because customer's perception about company responsibility with the environment might be positive. On the other hand, reverse logistic practices should consider reuse activities as

driver that contribute with the waste management because these activities might create a closed loop system where a conglomerate or co-operating group of companies contribute and share used outputs between each other to reduce the level of waste creating a synergy (cooper et al., 2015). In addition, this synergy is a great business opportunity because companies might share costs or trade used products for a lower rates. Another benefit of closed loop system that information exchange about used products between companies is easier and faster. This exchanging information build a long term relationships and it also makes companies reliable between each other. Finally, reusable products is a great opportunity for companies that are needing to enhance their company efficiency and responsiveness because there are several benefits for entrepreneurs, stakeholders and customers that reusing activities offer.

- **Remanufacturing**

The activities that include a combination of refurbish, reused and new inputs are called remanufacturing. Remanufacturing activities are profitable practices for any production line because those activities contribute with the reduction of production costs and amount of waste. One of the differences between other waste management practices is that manufacturing uses old or discarded raw materials in a new production process, this new process recovers components from previous production flows. At the end of this process, the final product has the same quality and characteristics as any non-remanufactured product. Most product recycled inputs has been designed to be reused several times, for that reason the use of these products do not have any potential negative impact for the quality standards of the final products. On the other hand, there are some other remanufacture components that need some previous procedures to be considered as proper to be used in a new production line. These previous procedures might be rebuild which means that all used parts should be part of a testing process to meet the specifications of the production line (Afrinaldi et., 2017).

Another perspective about remanufacturing is the process of reuse products from a specific product and these products should be evaluated, repaired, and reassembled to be considered as valid for a new production line. Most of remanufacturing practices are addressed to technical products, however, there are some other applications on food industries, mining or textile sectors. If a product might be manufacture , it can also be remanufactured. What it tries to express the previous sentence is the idea of that any product that has several components it is able to include the possibility of add old,

refurbish, or rebuild components on its manufacture because it might enhance the performance of the production line, waste management and responsiveness to the market (Lee et., 2017).

There are some others facts about remanufacturing which are essential for the success of a remanufacturing strategy. The corporate social responsibility of any company that has remanufacturing practices might be improved because the perception of the customers about these practices most of the times are positive, however, in the case of remanufacturing practices are even better because there are some examples where customers understood the contribution and efforts of the company to reduce the waste that already exists in the environment. For example, in the case of H& M inclusion of textile components for new products were important to enhance the reputation and the compromise of this company with the environment. The result of this strategy was a success of these products and positive comments of these collection.

Another fact about remanufacture activities is a clear communication to all the stakeholders because they must know what kind of components these products have, this communication should be clear and direct in the fastest way as possible because a proper communication increase the reliability of remanufacturing practices. For example, Apple opened a remanufacturing dashboard for all its stakeholder for the Iphone 8. This strategy was created to enhance communication to the market, at the same time, they were showing that the quality standards of this Iphone is the same according to Apple's standards.

Finally, about the warranty of remanufacture products must be the same as any new products because when a implementation of remanufacture practices take place the quality standards always should be the same. Remanufacturing practices are so popular nowadays because these practices are beneficial for entrepreneurs and customers. Entrepreneurs produce a cheaper product and enhance company's reputation and customers get a cheaper product with the same quality (Ulrike, 2017).

- **Recycling**

This process focus on recover the value of the outcomes of the raw elements, so that means that product identity will not be the same. The main target of recycling process is based on used waste materials as part of the manufacture of a new product. Waste materials as new input raw material open a broad range of new opportunities for

supply chain because it allows us to reduce the level of disposal and reduce the impact of gas emissions. On the other hand, recycling practices avoid potential risks related to high level of energy usage, higher production costs, and corporate social responsibility affection. Also, there are another potential risk like air pollution or water pollution, those kinds of pollutions not only affect the supply chain, it might affects stakeholders as customers, suppliers, communities so on (Goodship, 2007).

Recycling practices is always attached to a production process, however, recycling goes beyond that because recycling might be implement it in several ways, for example, discarded products by the customer, damaged products along transportation flow, defective products and low quality standard products. For all those kind of products, recycling practices might contribute to enhance the productivity of the production process and profitability (Jayashree et., 2016).

Recycling is an essential element for a waste management strategy because it contributes with the environmental sustainability. It is focus on reduce the usage of new raw materials and use old materials to add value along the production process. It is common to identify production process that only consider new inputs and waste materials cannot be part into a new process because it might not satisfy the final output, however, according to ISO 15270:2008 production processes should be addressed to reduce the impact of production waste, enhance waste control based on traceability of discarded, damaged and returned products. In order to get an efficient recycling control, companies should be aware of the product life, type of components, potential usages of outputs, replacements , so on (Field et., 2007).

Finally, recycling perspective could be a strategic support for the supply chain because a complex production process might be easier if old outputs contribute to reduces operational cost, productivity and lead times.

1.1.2.2 Reverse Logistics in the Textile Sector

According to Persiani (2013), excellent management performance in logistics companies operations is related to the textile sector. This sector has been acquiring greater importance in the markets supported by worldwide demand. Besides, reverse logistics management in the textile sector open a broad range of benefits, one of them is the competitive advantage because companies are more responsive to the customers, and reverse logistic

strategies leads a company to the leadership. This leadership is based on a diverse operational and functional strategy that enhance the performance of logistics procedures of textile companies.

The excellent supply chain management performance is supported by a productive processes, warehouses handling, distribution, and reverse logistics management. Reverse logistics provides a competitive advantage to all levels of logistics activities and provides differentiation from competitors.

Reverse logistics has become a useful tool for companies in the textile industry, as the management of clothing recovery failed, off-season clothing, recalls, and quality management. Also, quality management let to the companies re-entering clothing to the value chain. Nowadays, those activities improve the company performance providing a competitive advantage in the textile sector (Persiani, 2013).

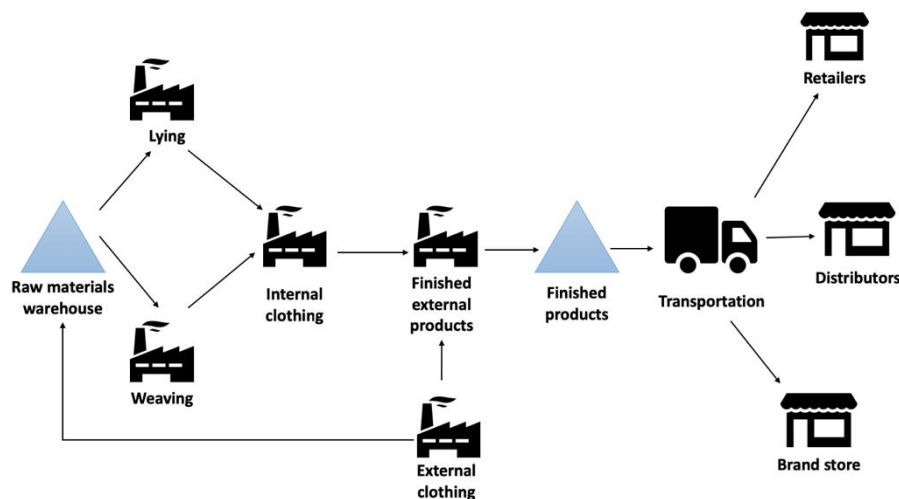


Fig. 1 - Reverse logistic process in the textile sector
(*Logística en la Industria Textil*, 2013)

On the other hand, reverse logistics practices has becoming popular in textile companies because they have shown that the implementation of these practices allow them to recover a monetary value and contribute with the environmental protection (Navarro, 2015).

1.1.2.3 Life cycle product analysis

López (2010) mention about life cycle product analysis. Its objective is to examine the environmental impacts associated throughout their life cycle. The uses of raw materials, energy,

waste, and polluting emissions are identified and quantified. Through this analysis, valuable information is obtained that will allow achieving improvements in the design.

1.1.2.4 Return management

One of the critical causes that contributes with the reverse logistics of products is the returns of products. For that reason, the return flow of products from the distributor to the manufacturer through the supply chain represents a specific kind of management that might generate a high complexity and requires equal attention as any logistics procedures. In this sense, a good return policy means a better competitiveness and customer loyalty (López, 2010).

1.1.2.5 Discarded products in the process

According to Casimiro (2015), discarded merchandise is a product that has defects and cannot be corrected economically. Therefore, It has to be sold as second quality items, also includes the products that are returned by the customers. In most of the cases those products have severe damages, and they are irretrievable.

1.1.2.6 Product reuse

According to Belmonte (2009), the reuse of a product contributes to reduce the waste of production, as long as it is acceptable from an environmental point of view.

Considering a high level of awareness about sustainability, if it is impossible to avoid the production of waste, at least, it must be reused, or its materials and/or energy must recover.

Therefore, in any sustainable waste management policy, valuation becomes a key factor. Within the evaluation, there are two differentiated options. The materials costs, consisting of the total or partial transformation of the material used to produce new products. On the other hand, the energy recovery requires the reuse energy mode for energy production.

1.1.2.7 Asset recovery

Conforming to Jorge (2009), the assets recovery consists of repatriating goods from corrupt behavior and hiding in foreign jurisdictions. Work is being done to return those assets (money, luxury cars, mansions) to the citizens of the country from which they were stolen.

Olmos (2013) facilitates the tracking and identification of the proceeds of criminal activities and other assets related to the crime that may be the subject of a freezing, seizure, or forfeiture order issued by an authority in the course of criminal proceedings.

1.1.3 Small and medium-sized enterprises

SME is a kind of enterprise that supports many countries' economies. Two several drivers define these kinds of enterprises as staff headcount, turnover, or balance sheet. In the case of medium-sized companies, the maximum staff hired is 250 people, while in the small-sized companies, the team hired is 50 people. On the other hand, turnover and balance limits depend on the reality of each country; in the case of Europe, medium-sized company turnover is € 50 million. In the small-sized company, it is €10 million (Wynarczyk et al., 2016).

1.1.4 Competitiveness in textile SMEs

Gomero (2003), the textile sector, represents one of the leading industries of Peru and has a tremendous economic repercussion, which has shown a high potential for the development of the country. Despite the weaknesses that it presents, it is one of the most important strategic activities in the country. However, this degree of importance might be better if all the sectors linked in some way contribute with the productive activity, create a strategic alliance to enhance and develop a business community to develop strategies for country's sectors.

The latter implies that the competitiveness of any SMEs depends on the capacity to manage each company process. Additionally, competitiveness depends on the quality of the interactions that the firm has established with the business environment.

1.1.4.1 Productivity

Gonzales (2014), productivity is a relation of the products manufactured and input resources to assure the production. In addition, productivity is an association between outputs and time manufacture. If a company has a positive, productive process, it means that the manufacture process time should be as short as possible.

The relation between inputs and outputs explains the productivity ratio during a specific time. Productivity is oriented to consider quality in this relation. Another way to express productivity is the relation of product manufactured and resources used. In the manufacturing

industry, productivity is applied to determine any performance related to human resources, machinery, and processes (Koontz & Weihrich, 2006).

1.1.4.2 Efficacy

Efficacy is defined as "the achievement of the objective, the service over its beneficiaries". On the other hand, efficiency "shows the relationship between the effects of a program, service and the corresponding expenses of financial, human and production resources." Hence, both conceptual criterias are currently parameters to seek the social sustainability of plans, programs, actions, among others, developed by governmental and non-governmental organizations (Anthony & Govindarajan, 2003).

On the other hand, efficacy measures the compliance degree of the proposed objectives, based on what should be done. For this measurement, we should understand and determine the client's requirements along the process to compare the process delivers against client expectations (Gonzales, 2014).

1.1.4.3 Effectiveness

Cervera, (2011), organizational effectiveness has a social meaning. Since they are human beings, either individually or in groups that are somehow related and interested in the organization who will judge it as useful or not, and this will be done based on their demands and expectations and how well the organization has adapted to meet them.

1.1.4.4 Efficiency

Alvarez (2001), the technical efficiency that is the optimal relation between inputs and production. It is achieved when the entity does not waste resources; this is at the points of the production possibility frontier, which is formed by the combinations of inputs and outputs located on the production function.

Production efficiency consists of producing some given level of product at the lowest possible cost and producing a product level that corresponds to the minimum average price of a long-term firm (Sarmiento et al., 2008).

In the case of SMEs, some of them produce their products directly. However, the vast majority outsource some services, which does not allow to measure with a degree of certainty

the efficiency in their products, it is mainly worked according to the cost of the products (Gonzales, 2014).

1.1.5 Corporate social responsibility

The corporate social responsibility (CSR) is a topic with many different points of view, but it is essential to understand that CSR that involves all the stakeholders in a common goal that is the honest business practices over internal and external processes. Also, this CSR research provides several insights related to which ones are the most common CSR criteria in business governance as low power distance, high-quality CSR reports, and the cultural transformation in the business (Mohamed et al., 2018).

1.1.6 Competitive strategy

According to Porter (1985), It is oriented to develop a defensive strategy according to five competitive forces. This defensive position will provide superiority in comparison with competitors in the same industry. Company position is the primary driver of a competitive strategy and demands the company value maximization that increases the company differentiation from other companies. Meanwhile, a generic approach is intended to generate buyers worth.

On the other hand, competitive strategies define the company's strategic option based on the relative position that occupies concerning the competing units that operate in its market (Rodriguez et al., 2008).

1.1.6.1 Competitiveness motivation

According to Porter (1985), a competitive enterprise requires a proactive government policy, offering a proper environment for developing a profitable business. Also, the government should ensure a robust legal framework that encourages the companies to cooperate, associate, and react to market dynamics. Some required conditions to be a competitive country are an optimal government regulation that lets companies develop their trading activities in a usual way without any risk (legal or monetary).

The actions that the countries should take into consideration to improve its performance might be:

- Tourist industry structure.

- Public institutions strategies.
- Improve company competition.
- Conditions and factors demand.
- Clear market regulations.
- The fair taxation framework regulated clearly by the government.

1.1.6.2 Competitiveness strategy formulation

The strategic management process takes into consideration the analyzes, decisions, and actions that a company does to create and maintain competitive advantages. This process is composed of three stages: strategic analysis, formulation of the strategy, and later implementation (Torres & Vega, 2007).

The formulation of a strategy takes place on three levels: first, at the business level (competitive advantages), second, at the functional level (value chain), third, at the corporate level (where should we compete?) And finally at the international level (How to create value in the world markets).

According to Buendía (2014), the first steps before developing the strategy are: understand where you are, and visualize where you would like to be. Once we know where we are and where we would like to be, we can start planning the path that takes us from one point to the other:

- The first step, therefore, will be to know how the company is in the current moment and what the environment offers. For this, we will need to carry out a strategic analysis, both internal and external, that will allow us to know in depth the current situation of the company, and allow to point out the strong and weak points of it, as well as the opportunities and threats that we find in the environment.
- Subsequently, the objectives to be achieved can be established. Then the action plans will be marked to accomplish these objectives, prioritizing the actions to be carried out based on the available resources. In the next point, we will see what a strategic analysis consists of, and we will put it into practice to review the current situation of the company in our study.

1.1.6.3 Total quality management

Total quality management (TQM) has been created in the manufacturing industry, and it has more relevance and appliances in manufacturing more than services companies. Also, it is strongly related to the operational risk that means, in other words, how much impact the manufacture errors in the financial losses. Beside, TQM shows up that exists a cost related to quality management (Cruz & Pinedo, 2008).

1.1.6.4 Competitive advantage

Quispe (2015), Competitive advantage of a company looks for the ability to reduce costs. It may be linked to certain factors such as efficiency and the appropriate selection of suppliers and creditors. Also, products and services are determined by the quality and ability to meet the needs of the client. It allows the company to achieve a higher performance in the industry average and, therefore, greater competitiveness.

"It is the maximum objective of productive competitiveness, which every company seeks to achieve by applying competitive and effective strategic actions in the required improvement of productive activity, which ultimately implies being able to obtain a direct advantage over the products of direct competitors." (Carro & Gonzales, 2013)

1.1.7 Previous studies

1.1.7.1 Rials company:

Altez (2017), in his bachelor thesis, states the following:

In this research, we sought to analyze the SMEs Supply Chain in the industrial clothing sector under the SCOR methodology to determine relevant factors that involve ethical and corrupt practices in supply chain management. Under descriptive research with surveys support with in-depth interviews and observations to the participants, it was applied to a sampling that involves clients, suppliers, subject experts, and an observation process. In Latin America, and specifically in Peru, supply chain performance is analyzed by the SCOR model. The Rials supply chain was developed in the textile sector, and the theoretical framework evidences the use of the SCOR model for its supply chain.

Finally, it concludes that after the analysis of the RIALS supply chain, detected many processes within its chain do not comply with the minimum standards suggested by CSCMP (Certification that audit the knowledge and company skills applied to all integrated tasks in the supply chain). This fact evidences the precarious and disinterested attention of the planning of the supply chain in Rials, and that does not generally supply strategies in its process with more significant benefits and efficiencies in its operation.

1.1.7.2 Textile sector regulations

Gonzalez (2014) Perú, in his bachelor thesis, states the following:

The general research objective was to understand how the Law with number 28015 influences the management and competitiveness of SMEs in the textile sector in the Victoria district, Lima Perú. Taking into account that the critical point of this type of company is that they do not carry out adequate business management since their activities are carried out many times empirically.

The results in the field showed a big group of companies that have a lack of knowledge about how to deal with the Law N ° 28015. Also, this reflects poor management performance. On the other hand, this lack of knowledge affects directly to company competitive performance, the export process, financing management. Furthermore, many SME managers in the textile sector have not the proper expertise to an associated company, which represents a significant disadvantage; for the author, some aspects must be corrected to improve the management performance.

1.1.7.3 SMEs competitiveness

Quispe (2015), in his bachelor thesis, states the following:

The author proposed as the research objective to determine what relationship exists among strategic planning and enterprise competitiveness in the Ponceca Eco-friendly recreational area of the Andahuaylas district in Perú, 2015. In Perú, the strategy is not yet fully assimilated, especially in the SMEs, the continuous crises have blocked the long-term vision. Nowadays, companies are focusing on cost reduction.

As a result, a significant relationship was founded between strategic variables, planning, and business competitiveness. The owners must take into consideration that these variables are

individually part of the business development. Considering that, with a good plan, the orientation will have its future preserved, facilitating the constant decision-making, always framed in satisfying the needs of the consumer, which will allow remaining competitive in the local and regional market and its progress in the national context.

1.1.7.4 Knowledge management in textile SME

In a growing and increasingly dynamic economic environment, it is possible to see different types of organizations and business models that interact with each other. As part of this congregation, we find the textile and clothing factories located in the district of La Victoria and known as the Emporio commercial de Gamarra. Gamarra, as it is commonly called, which have approximately 24,000 SMEs companies specialized in the textile industry, clothing, and branding clothes (National Institute of statistics [INEI], 2015). Every ten people are working in this place, eight focus on the manufacture and/or marketing of textiles and clothing (Valdivia et al., 2014).

This area is one of the most important in its field. It is considered the place of the enterprising and thriving class of the country since it is not only surrounded by stories of survival but also entrepreneurship and success stories nationally and internationally. While it is true, new techniques in clothing, more specialized technology, and financial tools are considered essential, the enrichment of the human factor should not be ignored. The adequate knowledge of a company is precious for the context to be dealt with, and its correct development must be guaranteed so that it is understandable and accessible for its stakeholders ".

1.1.7.5 Human resources practices in SMEs

Angeles (2016), in his master thesis, states the following:

The proposed success model seeks to ensure that small, medium-sized company in the textile sector to achieve profitability, competitiveness, and sustainability over time. Likewise, this model focuses on delivering the SME entrepreneurship in the long term so that they can finally be part of the medium-sized companies in the textile sector. It is for this reason; It is recommended to achieve the SME goals take into consideration each one of the success proposed models as a result of the research work.

Many companies have already established processes; it is recommended that they can be adapted according to the procedures, indicators, formats, among others that this research

group has defined for each of the processes to achieve full success. One of the success critical factors of each proposed model in different textile SMEs is the labor force. Undoubtedly, skilled labor is one of the essential elements in all the sub-models shown and, therefore, in the General Model. For this reason, it is recommended that organizations take into account this crucial factor for the development of this project.

Due to this, it is necessary for companies to train personnel from their entry, thus providing them with tools that allow them to be more and more competent and specialized in their functions to perform. The result of this will be the staff becoming more efficient, and therefore the proposed success model will achieve the established objectives. It is recommended that the SMEs to implement the Human Talent Management model because if the number of employees is minimal, it will not make sense to open each process, but only to mistreat them.

1.1.7.6 Environmental Management in SME

"Initially, the environmental management process is a strategic process, so it should have a direct relation with the planning process because environmental management provides several guidelines that should come from the top company level. On the other hand, these guidelines should be internalized by all the company members providing a better environmental scope to avoid and prevent any environmental risk that could affect the corporate social responsibility image. Likewise, It is essential to approach the Human Management process, with which the company's social aspect must be worked on to achieve the commitment of being a socially and environmentally responsible company. Likewise, Human Resources should be the disseminator of the environmental campaigns; It must be carried out to internalize the concept of environmentally friendly in all company aspects, both aspects: inside and outside of it, workers do not just follow the environmental standards within the company. Also, they can apply them in their daily life". (Felipa & García, 2016)

1.1.7.7 Textile SME challenges

In an article related to the Colombian textile sector, states the following: In this article, reviews and analyze the current problems of the textile sector: confection, design, and fashion. These problematics come from external factors related to the socio-economic situation of the country, the import and export policies, the unfair competition, constant tax reforms, among many others that can make one or more links in the supply chain vulnerable.

A detailed analysis was carried out on the current situation of the textile sector in the country, divided into three stages; Stage 1: Review of the state of the supply chains management; Stage 2: Review of the current state of the textile-clothing sector in Colombia and stage 3: result analysis.

Consequently, the current situation of the sector is showing, actions and possible contributions are proposed, such as introducing policies and strategies in the short, medium, and long term, from the logistics that increase the productivity and competitiveness of the companies that belong to this economic sector (Cano et al., 2018).

1.1.7.8 Supply chain management in SMEs

Markets openness and supply chain globalization require framework changes that make logistics the most relevant driver in strategic planning. Currently, customers consider the product quality, the added value of it, and its period accessibility, hence the need to streamline processes.

Many logistics experts approve the fact that logistics management models are the best way to enhance competitiveness in the market. Some models have a significant scope for small-medium enterprises (SMEs) due to the non-traditional framework and operative knowledge absences. Other ones mention indirectly to internal information flows, so that means system disintegration could be a fact that could affect the relations between the areas. SMEs in Mexico represent 4.2% of companies, generate 31.5% of employment, it contributes to the Gross Domestic Product by 37%; hence, the importance of strengthening its competitive position in the market. This research shows us a design of a theoretical logistics management model for SMEs, so that means that it provides an integrated solution across the control of the variables related to logistics processes. Finally, to verify that the aspects considered by the variables, we need to identify which dimension is the right one to factorial analysis ". (Cano, et al., 2015)

1.1.7.9 International commerce – SMEs

Guisao (2014), in his master thesis, states:

The textile sector, clothing, design, and fashion has been for many years a relevant industry in the Colombian economy and has experienced a high growth rate in its exports. Some figures confirm this; the sector represents 9% of the GDP of the industrial/manufacturing industry and generates more than 600 thousand jobs (Ministry of Commerce, Industry and

Tourism, 2008). It provides 20% of the employment of the industrial sector and 5% of national exports (Mckinsey & Company audit, 2009); fiber-textile imports are more significant than exports, and in confection, the situation is opposite for higher exports. (Miguel Ángel Betancur, 2008). Although foreign investment in the sector fell significantly between 2004 and 2007, since 2008, it has been reporting significant growth; in 2008, it reached \$ 35 million (Banco de la Republica, 2009), and in 2009 amounted to \$ 45.6 million (Banco de la Republica, 2009).

Despite the menaces, the sector can improve its skills to assure its dominant position into the internal market, on the other hand, companies are looking for a regional leadership position and increase its participation in international markets niches. The improvement skills are strongly related to relevant changes across the human resources management, legal market structure, infrastructure, and government promotion.

1.1.7.10 Supply chain management relevance for SMEs

Mora (2016), in his book, mention:

The author analyzed that "Supply chain is relevant for the company's competitiveness, in the case of Latin America supply chain leads companies to be more efficient and productive within the supply chain processes."

The book makes a compilation of the leading companies and their operations, which is based on supply chain management. The impact of this on the operating company processes and as a result of that is correct functional process management that brings competitiveness to the company.

2 Methodology

2.1 The Research objective

The research objective is to determine what is the impact of reverse logistics practices on the competitiveness of SMEs in the textile industrial sector of metropolitan Lima. The objective is oriented to a descriptive analysis since a series of questions, problems, concepts, or variables that will be selected. Also, each question will be measured independently from the others to describe them. This research looks to identify the main characteristics of people, groups of people any other phenomenon.

The need to promote sustainability into the supply chain in the small and medium-sized enterprises (SME) of Lima is the justification of this research, enhancing production processes flow in the reverse logistics context is the research focus. The research work will be useful because it would be possible to integrate reverse logistics into the textile supply chain companies for generating synergies with traditional logistics perspectives in the textile SME's of Lima. The present investigation goes in search of identifying the competitive advantage (or advantages) that reverse logistics could offer through reuse of materials, returns, and partial recovery of the commercial value of the product.

Also, it seeks to reduce environmental pollution, punctually in the reuse of plastic bags, fabrics, cartons, or other inputs used in the textile industry. The research work will seek to highlight people, workers, and textile entrepreneurs on the advantages of reverse logistics procedures to improve their processes, reduce their costs, protect the environment and achieve sustainability of the company in the market (Persiani, 2011).

2.2 Problem description

In Peru, very few companies take advantage of reverse logistics. In particular, companies are not aware of the opportunity that reverse logistics offers to them in terms of operating costs reduction, profits increase, sustainability, retaining and attracting customers, and attaining and keeping competitiveness.

Peruvian textile entrepreneurs have constant problems due to the return of excess inventory, customer returns, goods in defective conditions, obsolete products, use of seasonal stocks (Orlandini, 2006). On the other hand, companies that use reverse logistics are not conscious of the limitations of this topic. Therefore, they cannot complete the reverse logistics cycle throughout their production processes. This problem happens because companies have a traditional perspective about managing logistics flow; this traditional perspective is focused on outputs from the initial activity until its final destination, and do not consider the outputs returns. Reverse logistics can improve the logistics chain by adding processes related to the collection of products, repairs, and returns to the client (Persiani, 2011).

On the other hand, in recent years, recovering product processes have been gaining more attention. These recovering processes focus on end-life products that are discarded by consumers (end of life products, EOL). However, in most cases, these products have to remain economic value, which makes them able to recover this value based on reuse, recycle, or

refurbished processes (Decker R. et al., 2004). According to this concept, the research perspective is to focus on identify if the research constructs are suitable for reverse logistics management.

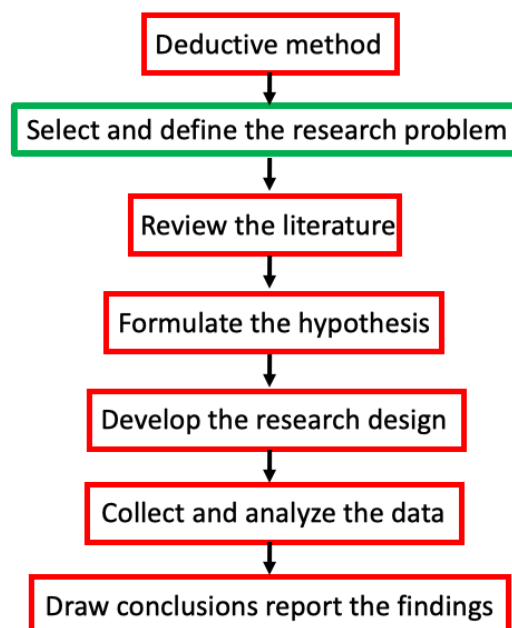
Reverse logistics is the redesigned supply chain to efficiently manage the product flows destined for reprocessing, reuse, recycling, or destruction, correctly using all available resources. The common goal of all activities is to determine how the company can efficiently obtain products and packaging. This goal is to focus on processing, reusing, and recovering.

Therefore, the company needs to define what kind of products will take part in the reverse logistics process to recycle and maximize its value along the reverse logistics process. On the other hand, reverse logistics will be in the next years a revolutionary concept that will transform the business world and probably will be a significant opportunity to increase the growing business rate (Rogers y Tibben-Lembke,1998).

Besides, reverse logistics offers a vast potential for reducing costs for companies as well as one of the most innovative business solutions of the last decades.

2.3 Conceptual model

To define the thesis conceptual model, we are considering seven steps to go through the research and also provide regular outlines to understand how to face a correlational analysis.



*Fig. 2 – Methodological research steps
(Research methodology, 2014)*

2.4 Research questions

- Will the practices of reverse logistics impact on the competitiveness of SMEs in the textile sector in Lima metropolitan - Peru? Will the number of returns that occur in the supply chain of the textile sector impact significantly on the SME's competitiveness in the textile sector in Lima Metropolitan – Perú?
- Will, the return processes impact considerably on the SME's competitiveness in the textile sector in Lima Metropolitan – Perú?
- Will final disposal of returns impact significantly on the SME's competitiveness in the textile sector in Lima Metropolitan – Perú?
- Will final disposal of returns impact significantly on the SME's competitiveness in the textile sector in Lima Metropolitan – Perú?

2.5 Hypotheses

- H0: Proper implementation of reverse logistics practices leads to greater SME's competitiveness in the textile sector in Lima Metropolitan - Perú.
- H1: Adequate control of quantity returns that occur in the supply chain of the textile sector will positively impact the SME's competitiveness in the textile sector in Lima Metropolitan - Perú.
- H2: An adequate product return process will positively impact the SME's competitiveness in the textile sector in Lima Metropolitan - Perú.
- H3: a Higher amount of the final disposal of returns will negatively impact the SME's competitiveness in the textile sector in Lima Metropolitan - Perú.

2.6 Methodological choices

2.6.1 Qualitative research

According to Hernandez (2014), the approach of qualitative research is to observe and interpret how individuals perceive and understand a specific phenomenon trying to understand insights, interpretations, and consequences of the phenomenon to individuals. A qualitative approach is addressed to those kinds of researches which not have relevant previous studies or are not addressed to a specific sample.

2.6.2 Quantitative research

As stated by Igwenagu (2016), the quantitative approach is determined by the association of research method as surveys, analytics (or experimental tests) to determine phenomena that can be measured by statistics parameters based on data collected. For quantitative researches, it is essential to avoid researcher slant because it might affect the research objective and results.

According to Cazau (2006), the research has as an objective to identify, analyze, and solve problems to achieve the research target. Moreover, the research is classified by its purpose. Finally, all researches and, in particular, scientific research must have a method and framework.

To define research accurately, we should also define our research type according to the scope of the research. This scope might be correlational, experimental, non-experimental, descriptive, explanatory, and exploratory. These are the possibilities of types of research:

- **Correlational:** A correlational study exists when there is an association between two or more concepts. These concepts might be categories or variables in a context. To determine the degree of association is essential to measure the correlation between variables, measured, analyze, and determine the existence of relations. Hypothesis tests along the data analysis must support these relations. (Hernandez et al. 2010).
 - **Experimental:** In the empirical research, the researcher manipulates one or more variables, to control the variables and effect behaviors, in other words, it consists of make some alterations in the correlation of an independent variable and observing the consequences on the dependent variable (Hernandez et al. 2010).
 - **Non-experimental:** Mayurí (2015), mention that a research design is Non-Experimental when the causal factor is not manipulated, so the analysis is based on the consequence of effects and the interrelation between variables.
- Descriptive:** Descriptive research occurs when the research wants to identify the characteristics and essential properties of any analyzed phenomenon. Also, it details the trends of a research phenomenon. Besides, the research essence is oriented to provide inherent characteristics for the development of a research model. It is essential to mention that in the research process; the researcher can consider different scopes (Hernandez et al. 2010).

- **Explanatory:** Research is considered as descriptive when it goes beyond the description of concepts or phenomena or the establishment of relationships between concepts. These kinds of researches are addressed to explain the causes of the phenomenon. The objective of explanatory research is to explain why a phenomenon occurs and the reasons why a research variable association exists. (Hernández et al. 2010).
- **Exploratory:** Hernandez (2014), mentions that the objective of exploratory studies is to familiarize ourselves with an unknown or not well-studied topic. Usually, this type of research is used as a base of other investigations. This research may cover exploratory purposes, in the beginning, and end up being descriptive, correlational, and even explanatory: all according to the researcher's objectives.

3 Research design explanation

3.1 Research type

This research is about formal research because it is focused on the appliances of the scientific method, which is a method that considers observation techniques. The purpose of this research type is to obtain relevant information to understand, verify, correct, or apply scientific and formal knowledge.

On the other hand, the quantitative approach is based on a hypothetic and deductive method that considers the following steps: observation, hypothesis formulation, hypothesis test. The quantitative approach considers as a research objective only the facts and all those phenomena which are observables and measurables (Kothari, 2004). Besides, correlation variables are the base of the scientific method. Consequently, this research is quantitative because it wants to determine the existence (or not) of reverse logistics (independent variable) and SME competitiveness (dependent variable) based on data collected from surveys according to statistics parameters (see section 4), and statistical hypothesis tests.

This research is a descriptive-correlational type because the objective is to identify the relation between two or more subjects, classifications, or variables in a specific context and also descriptive since it is looking for specific characteristics, properties, and vital traits that any phenomenon has (Hernandez et al. 2010). Also, this research lets us analyze data.

The present research, due to the variables, place, and purpose, is considered as descriptive-correlational research because it seeks to identify, analyze, and measure how strong might be the relation between reverse logistics (Independent variable) and SME

competitiveness (Dependent variable). To determine the existence of this relation, we are supported by constructs that allow us to measure the relevance (or not) of the relationship.

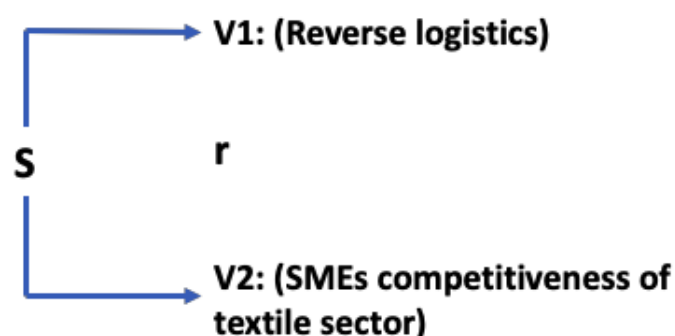
Also, descriptive research is oriented to detail specific and relevant attributes of a research phenomenon.

On the other hand, this research is considered as correlational because the research tries to demonstrate the existence of an association between research variables. For this research type, variables must be identified, measured, and confirm (or reject) associations. Usually, this research type is supported by statistical tests to validate hypotheses (Hernandez et al. 2010).

3.2 Research design

This research is cross-sectional research because the data collection takes place at a specific point in time (Moran & Alvarado, 2010). The research design is non-experimental research because it does not manipulate the causal factor, so that means, the research focus is based on the incidence and interrelation between the variables in a specific moment.

Those variables are described and analyzed (Mayurí, 2015). Moreover, the research is non-experimental when observation and data collection are collected without any researcher interfere. An interference might affect variables and their behavior in their natural environment where the research takes place (Hernandez et al. 2010).



S= Samples taken from observations

V. 1 = Variable 1

V. 2= Variable 2

r = Correlation

To validated the present research, we designed a theoretical model based on the main hypothesis. This hypothesis is called H0, and it provides a broad vision about what we want to achieve conducting this research, as follows:

- **H0:** Proper implementation of reverse logistics practices leads to greater SMEs competitiveness in the textile sector in Lima Metropolitan - Perú.

As we saw previously in the hypothesis, there are two variables types that should be considered to build our research model; these variables are: reverse logistics and SME's competitiveness. As we can see in Figure 2, we classified the variables in 2 groups according to what kind of a variable is:

- **Reverse logistics** —————> **Independent variable**
- **SMEs competitiveness** —————> **Dependent variable**

Moreover, the reverse logistics variable is composed of all the RL practices mentioned in the hypothesis, which are: returns management, order picking system, dispatch, transportation.

Those practices have been chosen as part of the research because any reverse logistics practices are part of the supply chain (Rogers et al., 2002). On the other hand, the variable SME's competitiveness is composed by two drivers: productivity and effectiveness, those drivers were explained in detail the literature review section and provide an insight into how could affect (positively or negatively) the competitiveness. Productivity and effectiveness are the main drivers that enhance the performance of any company only based on the responsiveness of the supply chain (Qureshi et al., 2007).

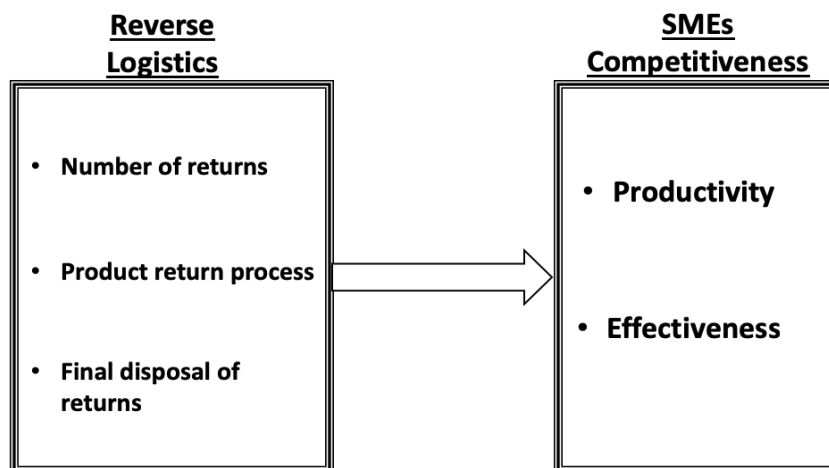


Fig. 3 – Research design

Finally, the research goal is to demonstrate the correlation between reverse logistics (independent variable) and SME's competitiveness (dependent variable) to validate our hypothesis.

3.3 Research constructs

To conduct proper research, we designed a survey (See appendix A), and also we elaborated a table to determine what questions cover our research constructs.

Table 1: Research constructs

Variables	Constructs		Survey question
Reverse logistics	Returns management	Number of returns	7,8
		Returns process	5,6,11
		Final disposal of returns	9,10
SMEs	Productivity		12,16,18
Competitiveness	Effectiveness		13,14,15,17

3.4 Research contribution

The main reasons for using reverse logistics are economical, directly and indirectly, strategic, legal, and also environmental responsibility. Among the contributions of this research is the improvement in the process of using surplus materials, redistribution products, improving customer loyalty (Parada, 2009). On the other hand, from a strategic perspective, the improvement of competitiveness will be sought, as well as the enhance in the return on investment for shareholders and the growth of the corporate textile company's reputation of Metropolitan Lima (Orlandini, 2006).

This research is relevant also because it will be possible to determine if the practice of reverse logistics would impact on the competitiveness of medium and small companies in the textile industrial sector in Metropolitan Lima, in aspects such as:

- Reduction of environmental impact and creation of business image committed to the environment.
- Customer loyalty with product replacement campaigns
- Substitution of raw materials by recycled material, which allows savings in costs.

3.5 Research method relevance

This method is relevant for the research since it measures the perception and opinion of the respondents involved in the research target. Moreover, the researcher must respect and follow the orientation of the research method, which is based on the hypotheses. Also, the researcher expects that all responses are oriented to the objective proposed in the research guidelines. On the other hand, it is a fast, inexpensive, and accurate research method to identify the relationship between two variables.

Data collection method

Table 2: Strength and weaknesses

STRENGTHS	WEAKNESSES
Direct surveying is an accurate method to get the information because it is easy, fast, inexpensive, and also provides order and coherence data.	Surveying is a process that requires the time of the respondents, so sometimes respondents are not available to help us.
Anonymous surveys allow us to get to know the needs and concerns of people in the entire organization, and also, it allows us to know the discomfort that people are not able to say directly.	The configuration, correction, implementation, and evaluation of the surveys can be a tedious and complicated process, requires time and trained personnel to measure the surveys and obtain the results.

3.6 Research scope and boundaries

This research assesses the reverse logistics practices impact on competitiveness in the textile industrial of Metropolitan Lima, which will be carried out in the leading textile companies of Lima, Peru. Along with the present research, we want to apply a research methodology based on surveys that will let us collect relevant data from experts that will provide several insights to determine what are the factors that influence our research problem.

Due to limitations such as time, economic solvency, access to companies, and information about them, this work only addresses up to the recommendations on actions and procedures for a future application of reverse logistics practices in SMEs in the textile industrial sector of metropolitan Lima, (Orlandini, 2006).

3.7 Population and sample

3.7.1 Population

According to INEI (Instituto Nacional de Estadística) report in 2016, the number of SMEs in 2016 was 8257 (According to INEI definition, SME revenue should be from 650,000 up to 10 million soles).

3.7.2 Sample

The study sample consists of 367 SMEs of the textile sector located in Metropolitan Lima. The sample is a random-systematic type, and its size is calculated using the following formula with an estimated error of 0.05% and a success of 95%:

$$n = \frac{z^2 N p q}{e^2 (N - 1) + z^2 p q}$$

n = Sample size
z = Normal curve deviation
p = Probability success (0.5)
q = 1-p = 0.5
N = Population
e = 0.05 maximum error allowed

Replacing:

$$n = \frac{(1.96)^2 (8257) (0.5) (0.5)}{(0.05)^2 (8257 - 1) + (1.96)^2 (0.5) (0.5)}$$

In the beginning, all the research elements have the same probability of being chosen (Hernandez et al. 2010). For that reason, this research considers 0.5 as the probability of success.

3.7.3 Data collection

There are two data collection instrument types: Primary and secondary sources. The primary data will be collected based on a survey that has the purpose of collecting data from companies in the textile sector.

The survey is constructed to measure the dimensions that are involved in the research. It will be conducted in an online format using a survey format with 18 questions (14 of which uses a

Likert scale). Each item is designed according to the research variables; the questions allow us to have broad coverage of the research topic, and also it will be validated (See appendix A).

The Likert scale is defined as follows:

- (1)Never
- (2)Almost never
- (3) Sometimes
- (4) Almost always
- (5) Always

The instrument used for data collection in the present research is the observation by conducting a survey in the research target. So it means when the researcher collects data from the respondents, these respondents must be in their work environment.

The survey will be conducted in an online form, using a survey format that includes questions with a Likert scale. Besides, a certain number of questions are designed according to the research variables.

3.8 Type and sources of data

The data type is quantitative, and it will be obtained by the formulation of questions related to variables under study (reverse logistics and SMEs competitiveness in the textile sector), which will be reflected in surveys applied to the sample for this research. These SME respondents must be part of the textile sector, which are our research target, as well as its employees and any close company to SME activities.

3.9 Data processing

The collected data are processed using Microsoft Excel and Smart PLS. Smart PLS software allows the validation of collected data based on the partial least squares method. The combination of analysis of multiple linear regression and latent variable elements is a kind of multivariable method, which is commonly called Partial Least-squares. Partial Least squares (PLS) is used to identify the causality and prognosticate the independent to dependent variable impact. This model uses the factorial loadings of predictors with latent variables to validate the

research model because an irrelevant factorial loading coefficient affects the validity relation among latent variables and affects the model predictability. The PLS model is commonly used when there are several predictors attached to a latent variable, and it is essential to solving the collinearity problem between predictors. The collinearity problems frequently are a problem for the researchers because it affects the model predictability by cause of the predictor overlap, this problem is frequently attached to linear regression models because it might happen when variables are related, and it might affect the correlation coefficient. In other words, this method is suitable for researches which have multi-cross predictor relations and for those variable that are not clear to measure but are relevant for the model (Legato & Alonso, 2013).

This research has considered this specific multivariable method- Partial least square, considering the fact of the numbers of predictors attached to the latent variables (reverse logistics and SME competitiveness) to predict and identify the existence of the association of the variables. On the other hand, the PLS analysis will be carried out to obtain the following results:

- The researcher will describe the data of each variable to calculate the coefficients of average variance extracted (AVE) and Composite reliability to validate the research hypothesis.
- Following Hair et al. (2010), the composite reliability coefficient must be at least 0.6 for validated academical studies.
- Following Fornell and Lacker (1981), the average variance extracted coefficient must be above 0.5 for validated academical studies.

3.10 Results of data collection

The data analysis is based on tables and graphs obtained from data processing, and the results are analyzed and compared with other research.

4 The Data analysis

4.1 Survey method

The research is based on a questionnaire. The research has as an objective to determine the correlation between the independent and dependent variables. This questionnaire is composed of 18 questions, where 14 questions have the Likert scale.

This questionnaire was addressed to 367 respondents, and the target population of this research survey are those Small Medium enterprises related to the textile sector in Lima metropolitan, Perú.

The goal of the collection process is based on collected data using a survey format that was uploaded on the Qualtrics platform according to the academic parameters of data collection. These parameters were based on register potential respondents' email since the beginning. After defined the survey parameters, the researcher was allowed to submit the survey by email from the Qualtrics platform. The survey was submitted to 5347 potential respondents in Lima, Perú. Those respondents are members of companies that are involved directly (or indirectly) to Small, medium enterprises in the Peruvian textile industry in Lima Metropolitan. It is relevant to mention that the treatment of data collected is only for academic purposes, and the researcher protects the confidentiality of respondents according to academic parameters.

Then, the research sample got 387 answered surveys during the collection period. However, 20 answered surveys were deleted because they were incomplete, and they are not part of the research analysis. On the other hand, the valid number of respondents considered in this research is 367. This number represents our sampling number, which it was calculated previously (see sample section).

Finally, after the conclusion of the research collection, respondents got an email thanking them for being part of the research.

4.2 Modeling

As stated in the research design (See section 3.2), the research model is a reflective model and it is designed considering the research constructs. According to the proposed theoretical model is as follows:

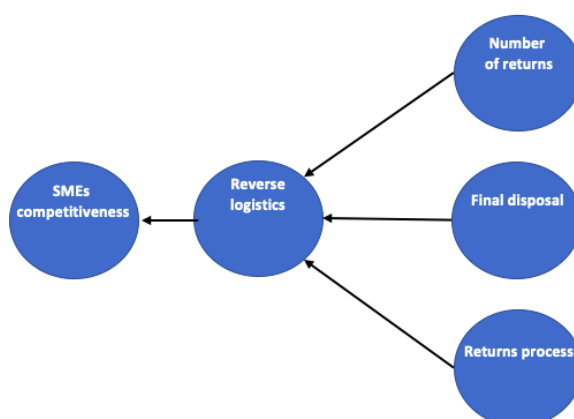


Fig. 4 – Proposed model

This theoretical design of our model considers all the constructs and Variables mentioned in figure 2. Besides, this model includes all the survey questions associations to each construct.

4.3 Descriptive data analysis

As we mention in the sample section, our research target is addressed to all those stakeholders involved in the small-medium-sized textile enterprises in Lima, Perú. Besides, this research has overall questions to detect and verify that our respondents take part in our research subject.

In this section, the research provides an overview of the research sample. This overview content relevant information as to what kind of respondents are according to the research parameters. The researcher determined the research parameters according to the affection degree and relevance to the research topic. Additionally, It is important to mention that another support to define these parameters is also based on previous studies considered in the research.

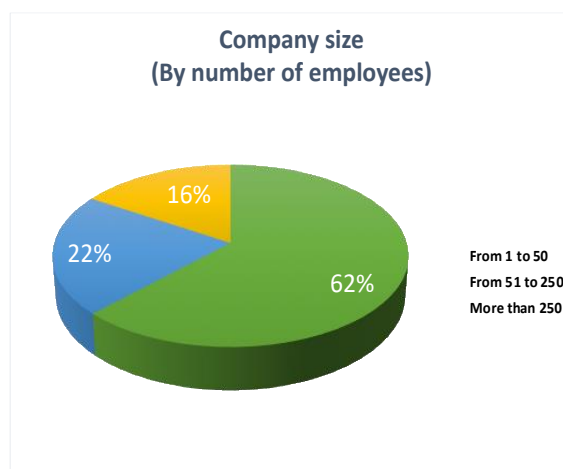


Fig. 5 – Company size results

As shown in the fig. 5, the majority of respondents belong to the range of company size, which has hired employees in a range from 1 to 50 employees. As stated in the literature review section, a small, medium-sized company is determined by the number of employees, for small companies up to 50 employees, and the case of medium enterprises up to 250.

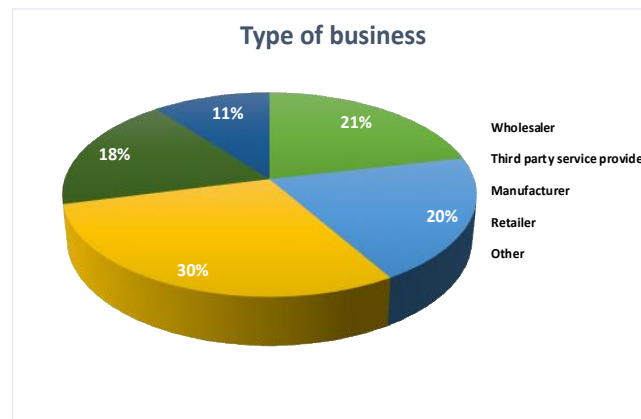


Fig. 6 - Type of business results

Another relevant collected information has shown the distribution of the respondents. According to the type of business in the textile market, this distribution reveals that 30% of the respondents are textile manufacturers. Also, wholesalers are a relevant part of this distribution because It represents 21% of the total distribution. Also, this survey section reveals that third-party service providers represent 20% of our sampling. In conclusion, 71% of our total target sample has a direct relationship to the textile market. However, there is another 29% that has an indirect relation to the textile sector because they are not involved directly in manufacture-trade flow.



Fig. 7 – Reverse logistics awareness results

Besides, 77% of the respondents answered that is awareness of logistics practices implemented in their companies. This question was designed for discriminate respondents because it allowed moving forward to the next search questions. Besides, this question makes our results accurate to the research purposes.

4.4 Research reliability

To validate our study analysis, we must identify our coefficients obtained from Smart PLS software. These reliability coefficients are: Adjusted R squared, composite reliability, and average variance extracted. It is essential to mention that each coefficient has its theoretical acceptance value. Each coefficient and its theoretical explanation will be explained as follows in the upcoming section.

4.4.1 Coefficient of determination

According to Dufour (2011), the coefficient of determination is a statistical coefficient that shows how the level of explained variability affects the predictability of the model. According to the data analysis, we obtained the following results:

Table 3 – Coefficient of determination

	R squared	Adjusted R squared
Effectiveness	0.754	0.753
Final Disposal of returns	0.878	0.877
Numbers of returns	0.963	0.963
Productivity	0.932	0.932
Returns process	0.871	0.870
SMEs competitiveness	0.858	0.858

As stated in Table 3 and making a comparison with the coefficient of determination definition, we can mention that all the constructs are relevant for the modeling.

Besides, each one contributes to explain to the model as follows: the number of returns (96.3%), productivity (93.2%), Final disposal of returns (87.7%), Return process (87%), and effectiveness (75.3%). Also, the construct Small medium enterprises (SME) competitiveness explain the model by 87%. It is relevant to mention that 13% is not covered in this study.

4.4.2 Reliability coefficients

The composite reliability should be at least 0.6 to be considered as a reliable study (Nunnally et al., 1994). As we can see in table 4, results obtained for our constructs have

consistent reliability. Additionally, the composite reliability for both variables "Reverse Logistics" and "SMEs competitiveness" is above 0.9 which confirms the model reliability of the study.

Table 4 – Reliability coefficients

VARIABLES	CONSTRUCTS	ITEMS	LOADINGS	COMPOSITE RELIABILITY		AVERAGE VARIANCE EXTRACTED (AVE)	
				VARIABLE	CONSTRUCT	VARIABLE	CONSTRUCT
REVERSE LOGISTICS	FINAL DISPOSAL OF RETURNS	- Regarding to the returns flows, do you measure the final disposal facilities performance? - Your company current discard procedures enhance the reverse logistics performance	0.891	0.927	0.760	0.809	0.613
	NUMBERS OF RETURNS	- How frequent your company evaluate your product return process ? - Your company current IT system enables the company to forecast efficiently the number of returns.	0.960		0.721		0.563
	RETURNS PROCESS	- Do you measure the amount of returns in your company? - Do you develop an adequate practice of reverse logistics to improve the return process of your company? - Are the reasons for the returns of the product evaluated monthly?	0.950		0.771		0.531
SMEs COMPETITIVENESS	EFFECTIVENESS	- The reverse logistics improved the company's overall business performance. - The reverse logistics enhanced the company's reputation. - The reverse logistics enhanced the company's brand. - Regarding to the customer satisfaction, The company satisfies the client expectations with its products.	0.972	0.942	0.876	0.890	0.640
	PRODUCTIVITY	- Do you measure the performance of production plan in your company? - The company constantly reduces the distribution and manufacturing costs in your - Regarding to the production, We review and improve business processes to achieve optimal level of operations	0.972		0.781		0.544

Besides, the appropriated value that contributes to the reliability of a study should be above 0.5 (Fornell et al., 1981). Conforming to Table 4 above, we can mention that the average variance extracted (AVE) coefficients are above 0.5 for all the constructs. At the same time, for

the case of research variables (Reverse logistics and SMEs competitiveness), these values are above 0.8, which makes the analysis reliable. These previous coefficients permit the research-validated reliability, and it allows us to move on to the next step of the data analysis, which is the modeling and calculation of the data according to the partial least squares method.

4.4.3 Discriminant Validity

To avoid the collinearity of the latent variables and as the reliability of the research method, this research considers the discriminant validity test as complement test to validate the reliability of the data, the results of the test are as follows:

Table 5 – Discriminant validity

	1	2
Reverse logistic	0.899	
SMEs competitiveness	0.866	0.944

Bolded values are AVE's square root. Other means correlations

Concerning to chart above, It reveals the non-collinearity between latent variables because of the values bolded mean the average variance extracted square root (see table 4). According to the analysis, these values should be higher than the correlation of the relation Reverse logistics-SMEs competitiveness. In other words, This test reliably reveals the validity of the proposed model.

4.4.4 Model results

A shown in previous sections, the primary study objective is to determine how reverse logistics practices influence small-medium enterprise's competitiveness. To determine the research variables relationship, the researcher propose a model which is supported by the following research's inputs:

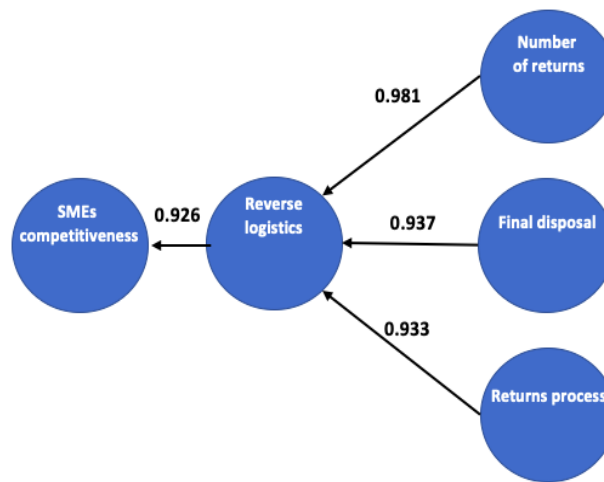


Fig. 8 – Model results

To achieve the research goal, the model has the same research structure which is focus on determine the relationship between Reverse Logistics and SMEs competitiveness. For that reason in the figure 8 both variables are liked by narrow that express the degree of association between them. As you can see in the previous figure, Reverse logistics (Independent Variable) is supported by 3 parameters. Those parameters exists in the research to make reliable, precise and realistic the model. In addition, As you can see in the figure, those parameters (Number of returns, Final disposal and Return process) have a relevante degree of association with the reverse logistics model, Those degrees means that exists an contribution of those parameters that affects (Or contribute) with the performance of SMEs competitiveness and that parameter's contributions are relevant for the model.

On the other hand, the full model structure has the following construction:

- Reverse logistics (Independent variable)
- Final disposal of returns (Attached to Reverse Logistics variable)
- Return process (Attached to Reverse Logistics variable)
- Number of returns (Attached to Reverse Logistics variable)
- SMEs Competitiveness (Dependent Variable)
- Effectiveness (Attached to SMEs Competitiveness variable)
- Productivity (Attached to SMEs Competitiveness variable)

The proposed model, mentioned in a previous section, shows how our research model considers the latent variables (independent and dependent) and constructs interactions as a way to understand and validate our theoretical model. Consequently, the fig. 8 reveals statically how the instrument (survey) supports the idea of the constructs (number of returns, the return of

process, final disposal of returns, productivity, and effectiveness) are the support to validate the idea of the reverse logistics contribute to enhance the competitiveness of small, medium-sized enterprises. The results and managerial insights are discussed in the upcoming section based on interactions between constructs and variables.

4.5 Discussions, implications, and limitations

The main objective of this research is to provide a deep understanding of how reverse logistics practices might be beneficial to enhance the competitiveness of small, medium enterprises (SME), and how these practices are an excellent opportunity to be included throughout the supply chain of any textile SME in Lima, Perú.

Table 5 – Hypotheses test

	Standardized path coefficient (Direct effect)	t - statistics	P- Values	Decison
H0 Reverse logistic -> SMEs competitiveness	0.926	51.12	0.000	Suppoted
H1 Numbers of returns -> SMEs competitiveness	0.981	26.76	0.000	Suppoted
H2 Returns process -> SMEs competitiveness	0.933	36.47	0.000	Suppoted
H3 Final Disposal of returns_ -> SMEs competitiveness	0.937	26.76	0.000	Suppoted

This study wanted to demonstrate how these practices influence positively to SME competitiveness. To validated these research hypotheses, we considered alternative constructs; the study is supported by previous researches as, and this study considers additional constructs to support the idea of the positive influence. As it was explained in the research design section, this study is based on its analysis and results on an empirical method. Also, this method allows us to research the field and get several insights from the main stakeholders. In addition, the empirical method gives a broad range of perspectives to analyze the research topic and get managerial insights. The following parts mention the implications of the influence of reverse logistics to SME's competitiveness.

4.5.1.1 Conclusions

According to Table 4.3, as proposed, we identified that reverse logistics practices have an appropriate affection on SME's competitiveness, which provides several benefits. Nonetheless, some of them are more relevant for SME textile enterprises, according to the previous analysis. These results open a broad range of new opportunities for new and actual

entrepreneurs, because in opposite to the traditional perspective of logistics, reverse logistics change that perspective for a modern and dynamic way of comprehension about how logistics performances can be improved. The research findings reveal that practices as return process, final disposal of returns, numbers of returns boost the competitiveness positively. Besides, effectiveness and productivity are essential factors to take into consideration because efficiency and productivity are potential drivers of the transformation from a traditional supply chain to dynamic supply supported by reverse logistics. According to the research model, predictors support and determine the degree of association between variables; this means that final disposal of returns, numbers of returns, and returns process have a stronger impact on the relation between the research variables. According to the research hypotheses, we can say that one of the most relevant predictors is the number of returns (H1) because it has a higher direct impact on the competitiveness of SMEs. As a managerial insight, companies should increase their efforts on the management of returns because it might increase the SME's competitiveness. Also, product returns allow entrepreneurs to understand and enhance the production process standards as a result of the deep understanding of the negative impact on company revenues. Also, return awareness opens the opportunity to develop and include new production flows as a result of defective product reuse.

On the other hand, according to our hypothesis H2, the research hypothesis test states that the return process is another main driver of SME's competitiveness. As we reported in the literature review section, Peruvian small, medium-sized enterprises are not considering reverse logistics practices into the supply chain. What this research reveals is that the return process might contribute to enhance the company performance as a result of including a reverse flow from the customer to the company. This reverse flow allows the company to pick defective products, returned by the customer, and reprocessed, discarded, or refurbished. The consequences of these practices might reflect it on reputation enhancing, increase profitability (as a consequence of product reuse), and company responsiveness. Also, the third-party service provider should be considered for this new flow development in consonance with the increasing of interactions from the end to the beginning of supply chain flow. Another managerial insight obtained from H2 is that the company involves stakeholders in reverse logistic practices. This involvement means that reverse logistics practices will not only affect small, medium-sized enterprises; it also means that these practices might affect logistics practices and the 3PL logistics strategy positively.

As stated by the hypothesis test, the H3 reveals that the final disposal of returns affects the company's competitiveness. The final disposal hypothesis was addressed to determine if the disposal of the products exists and how fact impact into SME supply chain. According to the hypothesis test, we can state that final disposal management is relevant for enhancing the SME's competitiveness. Also, this fact might be implemented in several ways into the SME's supply chain because companies might consider these hypotheses as an increment in efforts to develop a final disposal warehouse. This fact should be suitable for those companies that cannot reduce more their disposal level, and having this warehouse open an opportunity to have efficient waste management. In contrast, final disposal also means that those companies which have the chance to reduce the level of disposal, but at the same time controlling the disposal level in a small amount. This control means an awareness of the affection of reverse logistics practices and the consequences of inefficient performance of company disposals.

On the other hand, the hypothesis H0 is the confirmation of our model proposal. This hypothesis validated the idea of the association relevance of reverse logistics practices to SME competitiveness. This main hypothesis concluded that reverse logistics practices lead to a greater SME's competitiveness. This main hypothesis explains the research aim because it wanted to determine the relation of existence and if this relation is relevant to enhance company competitiveness. According to our hypothesis, we can affirm that this relation exists, and it is relevant. Small-medium companies should consider these results as proof that reverse logistics practices should be considered into the company's strategy if they want to be competitive; also, they give a market competitive advantage based on the quality of responsiveness, waste management, and returns control.

As stated in the analysis of the study, the possible reason why some constructs are more relevant than others might be explained by the kind of companies that are addressed the research because not all the companies have the same design and magnitude into their supply chains. However, the study provides several managerial insights for futures studies as evidence of the reverse logistics practices benefits.

In addition, small-medium enterprises should consider this study as support to consider reverse logistics practices into the company supply chain strategy as a method to improve company responsiveness from the company to the market and vice versa. The deep understating of this topic by the Peruvian textile entrepreneurs might transform things as the possibility of doing business with third-party service providers, cost reduction, and increase business profitability. Third-party service providers might take advantage of these benefits as a result of

the positive synergy of their clients, including this topic in their supply chain, and the efficiency along with their operation flows. Likewise, there is a potential benefit on cost reduction by cause of the decrease of the level of waste; this factor is a relevant insight that can determine if an SME adopt (or not) reverse logistics practices as a company strategy. As indicated in the study, this subject offers the possibility to contribute to increasing company revenues because waste reduction, for companies, means less fixed and variable costs. In conclusion, the research is oriented to provide managerial insights related to how new logistics practices can be beneficial for a company and what are the potential benefits of these practices for all actors involved in the SME supply chain.

4.5.1.2 Limitations and future research

This study faced four limitations which are explained as follows:

- This subject involves several variables. However, based on previous studies, the researcher took into the analysis only relevant variables according to the researcher criteria. Other variables were omitted for this study.
- The study accentuates the contribution of Reverse logistics practices in the SME competitiveness but does not determine the dimension of this contribution. For futures researches, this can be taken into consideration.
- The period of data collection was a limitation by the cause of the academic deadlines that this research had.
- As it was mentioned in the data collection method, the survey was submitted to several potential respondents. However, not all of them answered or did not complete the full survey.
- Lack of accessible information. It is related to the situation of reverse logistics in Perú insufficient studies that link with the research topic.
- This empirical research is based on cross-sectional information, and this decision supports research findings. However, future outcomes might be different as a result of the choice of the research methodology.
- This research gives a wide range of opportunities for future studies as a result of our research constructs are not explaining the reasons why these constructs influence SME's competitiveness; it only reveals the existence and the degree of association between variables. Future researches will be able to analyze the interactions between the final disposal of returns, the number of returns, and returns of the process with effectiveness

and productivity. Also, they will be able to determine the reason why these constructs are correlated with each other.

- Furthermore, future researches will be able to conduct a multilinear regression model based on the evidence provided by this research.
- Finally, this research provides managerial insights that can be used as a support to conduct qualitative studies, interviewing experts about how they perceive these constructs relevant (or not) to enhance competitiveness in the textile sector.

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