

Practices and Challenges of Supply Chain Management: Evidence from the Hawassa Industry Park

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ABSTRACT

The study's main objective is to assess the practices and challenges of supply chain management in the Hawassa Industry Park garment industry. The study used a descriptive research design with a quantitative approach. The data were collected through questionnaires from company employees. The data were analyzed using descriptive statistics with the help of SPSS software version 26. The study's major findings indicate that the garment industries under Hawassa Industrial Park practice supply chain management in a good condition. The main challenges that hinder the smooth application of supply chain management in the industry were the degree of willingness to share needed information, the level of establishing relationships based on shared risks and rewards, the degree of adequacy of information systems, and the degree of employee resistance to change. Thus, the researcher recommended that industries improve and invest in information technology facilities to enhance information sharing internally and externally.

Keywords: *Hawassa Industry Park; Garment Industry; Supply Chain Management.*

1.0 Introduction

Textile and Apparel production is an important catalyst for developing countries' industrialization. It has played an important role as a springboard for economic development. Due to its low fixed costs and labor-intensive manufacturing, it is often a starter industry for countries seeking to industrialize (Gereffi *et al.*, 2011). As a result of globalization, emphasis on time and quality-based completion, and contribution to environmental uncertainty, organizations now find that it is no longer enough to manage their own business but also the supply chain. They must be involved in integrating and coordinating the flow of materials along the chain and

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competing along the supply chain on time and product quality. This is because, these days, for customers getting ‘defect-free’ products faster than the competitor is not a ‘competitive advantage’, but rather a ‘requirement’ (Mentzer *et al.*, 2001).

The Textile and garment industry is characterized by low qualities of raw material and accessories, utilization of unacceptable levels of machinery and equipment, shortage of skilled manpower, application of an improper methodology of production techniques, and unbalanced supply and high demand in the market (Negede *et al.*, 2011).

Even though Supply Chain Management is no longer a new strategy, some serious practical problems still have yet to be addressed. As Fawcett and Magnan (2017) explained, challenges in implementing SCM are a lack of top management support, unwillingness to share information, lack of trust among supply chain members, and others. Most of the research on supply chain management was carried out in developed countries with different economic, political, technological, social, legal, and cultural statuses. However, different researchers identified problems related to implementing and managing the supply chain (Hussain & Mohammed, 2010; Naude & Badenhorst, 2011).

There is little empirical evidence on supply chain management practices and challenges targeting garment industries, particularly in the Hawassa industry parks. Therefore, the main objective of this study is to assess the practices and challenges of supply chain management in the garment industry of Hawassa Industry Park.

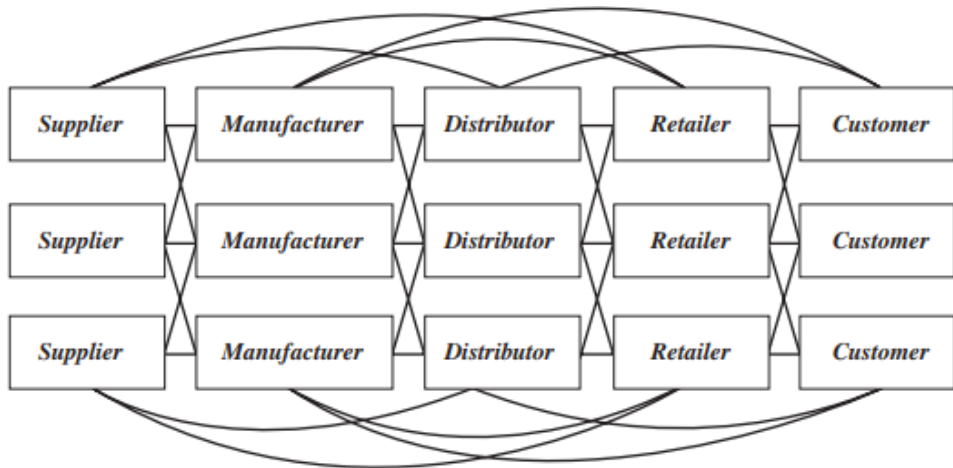
2.0 Literature Review

2.1 Supply chain

A supply chain includes all parties involved in fulfilling a customer request, either directly or indirectly. Not only does the supply chain include the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers. The supply chain encompasses all functions involved in receiving and fulfilling a customer request within each organization, such as a manufacturer. New product development, marketing, operations, distribution, finance, and customer service are examples of these functions. A dynamic supply chain is one in which information, products, and funds are constantly exchanged between stages (Cavinato & Joseph, 2002).

The objective of every supply chain should be to maximize the overall value generated. The value (also known as supply chain surplus) a supply chain generates is the difference between what the value of the final product is to the customer and the costs the supply chain incurs in filling the customer’s request (Mendi, 2013).

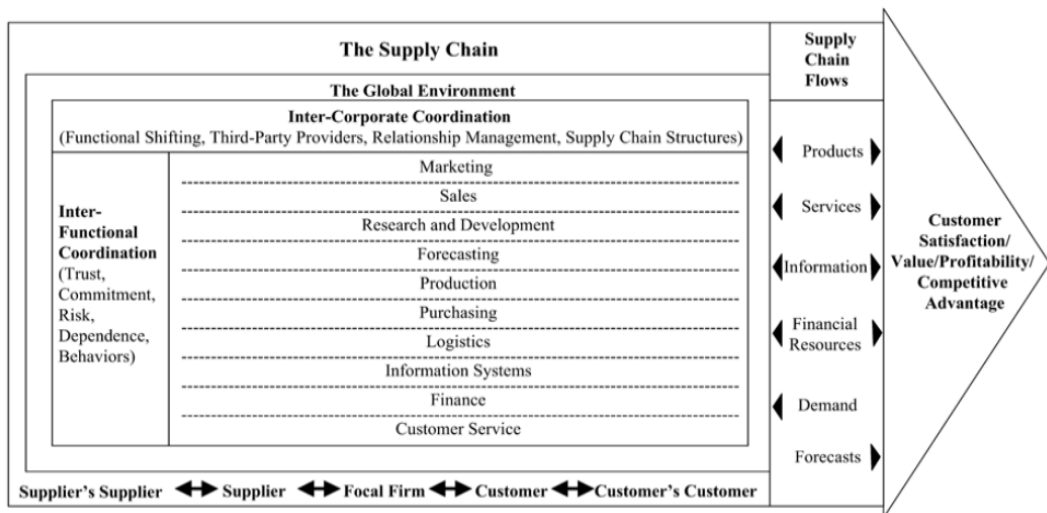
Figure 1: Stages of Supply Chain



2.2 Supply chain management

Supply chain management consists of managing the flow of resources across the enterprise for efficient business processes. These resources can be people, materials, information, and other organizational assets such as vehicles and machinery (Vivik, 2009).

Figure 2: A Model of Supply Chain Management



The term Supply Chain Management was coined in the 1980s, making it a relatively new discipline within management theory, with tools and concepts still in development. According to (Tan, 2002), the concept of SCM has received increasing attention in recent years from academicians, consultants, and business managers alike. Furthermore, as many organizations have begun to recognize that SCM is the key to building a sustainable competitive edge for their products and/or services in an increasingly crowded marketplace, (Li *et al.*, 2006) identified SCM as the key to building a sustainable competitive edge for their products and/or services. According to (Burgess *et al.*, 2006; Harland *et al.*, 2006), the academic debate over the last 20 years has contributed to the development of SCM understanding and its relevance to firm strategy.

2.3 Supply chain management practices

SCM practices have been defined as an organization's activities to promote the effective management of its supply chain. SCM practices are multidimensional, affecting partners' performance in the supply chain. These SCM practices were seen and discussed by different researchers from different perspectives. Donlon (1996) discusses the most recent evolution of SCM practices, such as supplier collaboration, outsourcing, cycle time compression, continuous process flow, and information technology sharing.

According to Arawati (2011), SCM dimensions include: strategic supplier partnership, which fosters trust and collaboration among supply chain partners and customers; lean manufacturing is associated with the continuous pursuit of process improvement, a philosophy of eliminating all non-value adding activities and reducing waste within an organization. Keeping products semi-finished allows for greater flexibility and customization in finishing the final products, as well as allowing a company to respond to the market demand more quickly. Innovation and new technology: the application of the most recent scientific or engineering discoveries to the design of operations and production processes is referred to as new technology and innovation.

2.4 Challenges of supply chain management

Supply chain management executives face distinctive challenges, with respect to integrating supply chain strategies (Hussain & Mohammad, 2010). The implementation of SCM is not an easy task. As Handfield and Nichols (2002), explained, managers who decided to do so will most likely face at least three challenges categorized into several categories, i.e. information systems, inventory management, and in establishing trust between SC members.

In some cases, the information is available but the supply chain members are unwilling to share it as a result of a lack of trust and the fear that the information will be exposed to competitors. Regarding inventory management, although it has been shown to be improving, the need to accelerate late shipments never seems to disappear entirely. The reasons for late shipments are; slowdown because of customs crossing international borders, adverse weather patterns, poor communication and simple human error, which are always inevitable (Handfield & Nichols, 2002).

3.0 Research Methodology

The study adopted a descriptive research design. Since descriptive research design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation, or population.

The quantitative type of research approach was used in this study. Quantitative research is concerned with numbers, logic, and an objective viewpoint. Quantitative research emphasizes numerical and static data, as well as detailed, convergent reasoning rather than divergent reasoning. That is the spontaneous, free-flowing generation of a variety of ideas about a research problem.

The Hawassa Industrial park is the study area of this particular research. The population of the study is therefore all factories inside this park which are 22 apparel-producing companies. The sampling frame of this study is, therefore, composed of 82 employees who have been working in the factory's supply chain department. These employees have direct or indirect tasks with logistics activities within the applicable area which is the scope of the study and the researcher has collected data from every employee of the mentioned department using the census method.

The data were collected using a questionnaire. Closed-ended questionnaires were prepared and pre-tested before main data collection. The questionnaire includes supply chain management practices such as strategic supplier partnership, customer relationship, level of information sharing, level of information quality and lean internal practices. The questionnaire also includes questions related to supply chain challenges. Among 82 questionnaires distributed, 73 of them were properly filled and returned with a response rate of eighty-nine per cent.

Quantitative data needs to be processed to make it useful, that is, to turn it into information. Thus, the study used statistical software called Statistical Package for Social Science (SPSS) software version 26 to code, enter, edit, and analyze the data. The

researcher applied descriptive statistics such as frequency and percentage to analyze the data. The analyzed data were presented using tables.

4.0 Results and Interpretation

4.1 Supply chain management practices

As was briefly mentioned in the literature part of this study, the most common supply chain management practices are supplier and customer relationships, internal operation, information sharing, information technology and training. This study focused on the Hawassa Industrial Park Supply Chain Management practices from these five perspectives. For each practice, different items were developed and measured based on their mean and group mean values.

Table 1: Perception of Respondents' Supplier and Customer Relationship

Item no.	Statements	1		2		3		4		5	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1.	The level of cooperation with suppliers	2	2.7	5	6.8	14	19.2	39	53.4	13	17.8
2.	Contacting end users of your product to get feedback on the product quality	2	2.7	9	12.3	16	21.9	30	41.1	16	21.9
3.	The establishment of a quick ordering system with our major customer	2	2.7	5	6.8	29	39.7	32	43.8	5	6.8
4.	The extent to share our demand forecast with our major supplier	2	2.7	5	6.8	27	37.0	25	34.2	14	19.2
5.	The degree to regularly solve problems jointly with our suppliers	1	1.4	1	1.4	21	28.8	36	49.3	14	19.2
6.	The degree to share our inventory level with our major supplier	1	1.4	2	2.7	28	38.4	35	47.9	7	9.6

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

In line with item 1, as summarized in Table 1, 71.2% of sampled respondents responded that the level of cooperation with suppliers was high. The result implies that

the majority of sampled respondents responded that the level of cooperation with suppliers was high.

With respect to item 2, the result of Table 1 indicates that 63% of sampled respondents responded that contacting end users of their product to get feedback on the product quality was high, while 15% of them responded low. The result implies that the majority of sampled respondents responded that contacting end users of their product to get feedback on the product quality was high.

On the subject of item 3, as summarized in Table 1, 50.6% of sampled respondents responded that the establishment of a quick ordering system with their major customers was high, while 9.6% of them responded low. The result implies that the majority of sampled respondents responded that the establishment of a quick ordering system with their major customers was high.

Regarding item 4, the result of Table 1 indicates that 53.4% of sampled respondents responded that the extent to share their demand forecast with their major supplier was high, while 9.6% of them responded low. The result implies that the majority of sampled respondents responded that the extent to share their demand forecast with their major supplier was high.

Concerning item 5, as summarized in Table 1, 68.5% of sampled respondents responded that the degree to regularly solve problems jointly with their suppliers was high, while 2.7% of them responded low. The result implies that the majority of sampled respondents responded that the degree to regularly solve problems jointly with their suppliers was high.

With respect to item 6, the result of Table 1 indicates that 57.5% of sampled respondents responded that the degree to share their inventory level with their major supplier was high, while 4.1% of them responded low. The result implies that the majority of sampled respondents responded that the degree to share their inventory level with their major supplier was high.

Concerning item 1, as presented in Table 2, 72.6% of sampled respondents responded that the level of information sharing on production and sales forecast planning with suppliers was high, while 1.4% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of information sharing on production and sales forecast planning with suppliers was high. In line with item 2, the result of Table 2 indicates that 79.5% of sampled respondents responded that the level of trust among their firm's supply chain members was high, while 4.1% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of trust among their firm's supply chain members was high.

Table 2: Perception of Respondents' Information Sharing

Item no.	Statements	1		2		3		4		5	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1.	The level of information sharing on production and sales forecast planning with suppliers	1	1.4	1	1.4	18	24.7	32	43.8	21	28.8
2.	The level of trust among your firm's supply chain members	1	1.4	2	2.7	12	16.4	34	46.6	24	32.9
3.	The level of information sharing across functional areas of the organization	1	1.4	3	4.1	26	35.6	32	43.8	11	15.1
4.	The level of information sharing with suppliers on inventory and quality of raw material	1	1.4	3	4.1	26	35.6	29	39.7	14	19.2
5.	The extent to share information about issues that affect our business	2	2.7	7	9.6	23	31.5	32	43.8	9	12.3
6.	The level of timely information exchange between us and our trading partners	2	2.7	3	4.1	24	32.9	26	35.6	18	24.7

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

Regarding item 3, as summarized in Table 2, 58.9% of sampled respondents responded that the level of information sharing across the functional areas of the organization was high, while 5.5% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of information sharing across the functional areas of the organization was high.

Concerning item 4, as presented in Table 2, 58.9% of sampled respondents responded that the level of information sharing with suppliers on inventory and the quality of raw material was high, while 5.5% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of information sharing with suppliers on inventory and the quality of raw material was high.

The result of Table 2 on item 5 indicates that 56.1% of sampled respondents responded that the extent to share information about issues that affect their business was high, while 12.3% of them agreed with low. The result implies that the majority of sampled respondents responded that the extent to share information about issues that affect their business was high.

As presented in Table 2 on item 6, 60.3% of sampled respondents responded that the level of timely information exchange between them and their trading partners was high while 6.8% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of timely information exchange between them and their trading partners was high.

Table 3: Perception of Respondents' Training Information Technology

Item no	Statements	1		2		3		4		5	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1.	The level of creating a friendly information system with suppliers and customers	2	2.7	5	6.8	28	38.4	24	32.9	14	19.2
2.	Degree of stable procurement through network with our major supplier	1	1.4	1	1.4	24	32.9	37	50.7	10	13.7
3.	The level of IT-based automated ordering	2	2.7	7	9.6	29	39.7	22	30.1	13	17.8
4.	Adequacy of IT system through the supply chain	2	2.7	5	6.8	22	30.1	32	43.8	12	16.4
5.	Up to datedness of IT technologies throughout the supply chain	1	1.4	5	6.8	24	32.9	32	43.8	11	15.1
6.	The level of IT-based production	2	2.7	7	9.6	22	30.1	29	39.7	13	17.8

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

Concerning item 1, as presented in Table 3, 52.1% of sampled respondents responded that the level of creating a friendly information system with suppliers and customers was high, while 9.5% of them agreed with low. The result implies that the majority of sampled respondents responded that the level of creating a friendly information system with suppliers and customers was high.

In line with item 2, the result of Table 3 indicates that 64.4% of sampled respondents responded that degree of stable procurement through networking with their major supplier was high, while 2.7% of them agreed with low. The result implies that the majority of sampled respondents responded that the degree of stable procurement through network with their major supplier was high.

Regarding item 3, as summarized in Table 3, 47.9% of sampled respondents responded that the level of IT-based automated ordering was high, while 12.3% of them answered low. The result implies that the majority of sampled respondents responded that the level of IT-based automated ordering was high.

Concerning item 4, as presented in Table 3, 60.2% of sampled respondents responded that the adequacy of the IT system through the supply chain was high, while 9.6% of them answered low. The result implies that a greater number of sampled respondents responded that the adequacy of the IT system through the supply chain was high.

On the subject of item 5, the result of Table 3 indicates that 58.9% of sampled respondents responded that the up to datedness of IT technologies throughout the supply chain was high, while 8.2% of them answered low. The result implies that the majority of sampled respondents responded that the up to datedness of IT technologies throughout the supply chain was high.

With respect to item 6, as presented in Table 3, 57.5% of sampled respondents responded that the level of IT-based production was high, while 12.3% of them answered low. The result implies that the majority of sampled respondents responded that the level of IT-based production was high.

Table 4: Perception of Respondents' Internal Operation

Item no	Statements	1		2		3		4		5	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1.	The level of data integration among internal functions	3	4.1	11	15.1	27	37.0	25	34.2	7	9.6
2.	The degree of integrative inventory management	2	2.7	6	8.2	32	43.8	29	39.7	4	5.5
3.	The extent of the utilization of periodic interdepartmental meetings among internal functions	2	2.7	9	12.3	24	32.9	31	42.5	7	9.6
4.	The degree to regularly measure and evaluate customer satisfaction	3	4.1	9	12.3	23	31.5	29	39.7	9	12.3
5.	Level of regularly anticipating customer needs	3	4.1	7	9.6	28	38.4	26	35.6	9	12.3

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

With respect to item 1, the result of Table 4 indicates that 43.8% of sampled respondents responded that the level of data integration among internal functions was high, while 19.2% of them answered low. The result implies that a greater number of sampled respondents responded that the level of data integration among internal functions was high.

On the subject of item 2, as summarized in Table 4, 45.2% of sampled respondents responded that the degree of integrative inventory management was high, while 10.9% of them answered low. The result implies that a greater number of sampled respondents responded that the degree of integrative inventory management was high.

Regarding item 3, the result of Table 4 indicates that 52.1% of sampled respondents responded that the extent of the utilization of periodic interdepartmental meetings among internal functions was high, while 15% of them answered low. The result implies that the majority of sampled respondents responded that the extent of the utilization of periodic interdepartmental meetings among internal functions was high.

In line with item 4, as summarized in Table 4, 52% of sampled respondents responded that the degree to regularly measure and evaluate customer satisfaction was high, while 16.4% of them answered low. The result implies that the majority of sampled respondents responded that the degree to regularly measure and evaluate customer satisfaction was high.

Regarding item 5, the result of Table 4 indicates that 47.9% of sampled respondents responded that the level of regularly anticipating customer needs was high, while 13.7% of them answered low. The result implies that a greater number of sampled respondents responded that the level of regularly anticipating customer needs was high.

In line with item 1, as summarized in Table 5, 28.8% of sampled respondents responded that the level of adequacy of training for management was low, while 23.2% of them answered high. The result showed that the level of adequacy of training for management is moderate.

With respect to item 2, the result of Table 5 indicates that 37% of sampled respondents responded that the degree of providing diversified skill training for employees was low, while 24.6% of them answered high. The result implies that the degree of providing diversified skill training for employees was moderate.

On the subject of item 3, as summarized in Table 5, 35.6% of sampled respondents responded that the level of providing training to downstream supply chain members was low, while 28.8% of them answered high. The result implies that the Level of providing training to downstream SC members was moderate.

Regarding item 4, the result of Table 5 indicates that 37% of sampled respondents responded that the level of providing training to upstream supply chain members was low, while 20.5% of them answered high. The result implies that the greater number of sampled respondents responded that level of providing training to upstream supply chain members was moderate.

Table 5: Perception of Respondents' Training

Item no.	Statements	1		2		3		4		5	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1.	The level of adequacy of training for management	3	4.1	18	24.7	35	47.9	12	16.4	5	6.8
2.	The degree of providing diversified skill training for employees	3	4.1	24	32.9	28	38.4	12	16.4	6	8.2
3.	Level of providing training to downstream SC members	4	5.5	22	30.1	26	35.6	21	28.8	0	0.0
4.	Level of providing training to upstream SC members	3	4.1	24	32.9	31	42.5	13	17.8	2	2.7

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

4.2 Challenges of SCM

The third part of the conceptual framework developed for this study is the challenges to SCM which consist of uncertainties and the bullwhip effect. Concerning item 1, as presented in Table 6, 37% of sampled respondents responded that the level of providing training to upstream SC members was low, while 20.5% of them answered high. The result implies that a greater number of sampled respondents responded that the level of providing training to upstream SC members was low.

In line with item 2, the result of Table 6 indicates that 41.1% of sampled respondents responded that the degree of willingness to share needed information was high, while 21.9% of them answered low. The result implies that a greater number of sampled respondents responded that the degree of willingness to share needed information was high.

Regarding item 3, as summarized in Table 6, 42.5% of sampled respondents responded that the level of establishing relationships based on shared risks & rewards was high, while 15.1% of them answered low. The result implies that a greater number

of sampled respondents responded that the level of establishing relationships based on shared risks & rewards was high.

Table 6: Perception of Respondents' Challenges to SCM

Item no	Statements	1		2		3		4		5	
		n	%	n	%	n	%	n	%	n	%
1.	Degree of willingness to share needed information	1	1.4	15	20.5	27	37.0	23	31.5	7	9.6
2.	Level of establishing relationships based on shared risks & rewards	0	0.0	11	15.1	31	42.5	24	32.9	7	9.6
3.	The degree of adequacy of information systems	0	0.0	5	6.8	34	46.6	25	34.2	9	12.3
4.	Degree of employee resistance to change	2	2.7	11	15.1	34	46.6	21	28.8	5	6.8
5.	Level of employee loyalty/motivation/empowerment	2	2.7	12	16.4	26	35.6	27	37.0	6	8.2
6.	Level of clear guidelines for managing supply chain alliances	1	1.4	8	11.0	30	41.1	30	41.1	4	5.5
7.	Level of trust among supply chain members	0	0.0	4	5.5	28	38.4	34	46.6	7	9.6
8.	The level of product quality and design	0	0.0	1	1.4	23	31.5	46	63.0	3	4.1
9.	The level of affordability of the cost of the product	0	0.0	1	1.4	32	43.8	37	50.7	3	4.1

Note: 1= Very low, 2= Low, 3= Moderate, 4= High, 5= Very high

Source: Survey data, 2022

Concerning item 4, as presented in Table 6, 46.5% of sampled respondents responded that the degree of adequacy of information systems was high, while 6.8% of them answered low. The result implies that a greater number of sampled respondents responded that the degree of adequacy of information systems was high.

On the subject of item 5, the result of Table 6 indicates that 35.6% of sampled respondents responded that the degree of employee resistance to change was high, while 17.8% of them answered low. The result implies that a greater number of sampled respondents responded that the degree of employee resistance to change was high.

With respect to item 6, as presented in Table 6, 45.2% of sampled respondents responded that the level of employee loyalty/motivation/empowerment was high, while 19.1% of them answered low. The result implies that a greater number of sampled

respondents responded that the level of employee loyalty/motivation/empowerment was high. In line with item 7, the result of Table 6 indicates that 46.6% of sampled respondents responded that the level of clear guidelines for managing supply chain alliances was high, while 12.4% of them answered low. The result implies that a greater number of sampled respondents responded that the level of clear guidelines for managing supply chain alliances was high.

On the subject of item 8, the result of Table 6 indicates that 56.2% of sampled respondents responded that the level of trust among supply chain members was high, while 5.5% of them answered low. The result implies that a majority of sampled respondents responded that the level of trust among supply chain members was high.

With respect to item 9, as presented in Table 6, 67.1% of sampled respondents responded that the level of product quality and design was high, while 1.4% of them answered low. The result implies that the majority of sampled respondents responded that the level of product quality and design was high.

5.0 Conclusion and Recommendations

The garment industries under the Hawassa Industrial Park practice supply chain management in a good condition. The supplier and customer relationship, internal operation, information sharing, information technology, and training were practised at a satisfactory level. However, the main challenges that hinder the smooth application of supply chain management in the industry were the degree of willingness to share needed information, the level of establishing relationships based on shared risks and rewards, the degree of adequacy of information systems, and the degree of employee resistance to change. As a result, the researcher recommended that businesses improve and invest in IT infrastructure to improve information sharing both internally and externally. This can be accomplished by either hiring IT specialists or outsourcing. More importantly, industries must transform their relationships with suppliers from a simple buy-sell relationship to a modern supply chain relationship by establishing strategic or long-term relationships, contracts, and continuous information sharing in order to minimize supply uncertainty, which resulted in demand and supply mismatches and customer dissatisfaction in the case company.

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