

CASE STUDY

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# Patterns of co-evolution: analyzing fashion brand and sewing contractor company dynamics

Ki Yong Kwon<sup>1\*</sup> 

\*Correspondence:  
gaprules@naver.com

<sup>1</sup> Department. of Textiles,  
Merchandising and Fashion  
Design, Seoul National University,  
1, Gwanak-ro, Gwanak-gu, Seoul,  
South Korea

## Abstract

The purpose of this study is to identify the entry conditions that could form a co-evolutionary relationship between a sewing contractor company and a fashion brand, and reveal the outcome of such a relationship. In the Republic of Korea, many fashion brands and sewing companies coexist, and the situation in the fashion industry changes with the rapid development of the country, so it is a suitable environment for investigating their co-evolution strategies. A qualitative research methodology was used to examine the co-evolution process of the fashion brand and the sewing industry. In addition, an objective evaluation was conducted by using interviews with sewing contractor companies and fashion brands that have business relationships with the sewing contractor companies. The results indicated that sewing contractor companies evolve into either mass production or small production systems. In the co-evolutionary process, relational resources and business-to-business transaction suitability are the main entry conditions for sewing contractor companies to coevolve with fashion brands. Knowledge exchange, experience optimization, off-season ordering, and investment in trading companies were observed among sewing contractor companies that formed a co-evolutionary relationship with their fashion brand partners. This study identified and conceptualized factors that played a major role in the process of co-evolution and proved suitable for each production system of sewing contractor companies.

**Keywords:** Co-evolution, Fashion brand, Sewing industry, Fashion marketing, Supply chain

## Introduction

The fashion industry has a complex structure. It includes the up-stream industry that supplies the raw material for fashion production; mid-stream industry that plans and manufactures fashion products; and down-stream industry that distributes, sells, and manages fashion products. From planning apparel products to actual sales, a wide variety of industries are connected to value chain (Birtwistle et al., 2003).

Out of those three industries, the mid-stream industry that is in charge of fashion production consists of manufacturers that perform diverse functions. These manufacturers are the major companies that own well-known fashion brands that

has nationwide distribution networks and other companies that design high-end products and designer apparel. They also include sewing contractor companies that receive contract-based commissions from these fashion brands (Ahn & Kim, 2018; Kaya, 2011; Wu, 2016).

As economy developed, consumers began to use apparel products as a means to express themselves (Bishnoi & Guru, 2023; Kim & Sullivan, 2019). That being so, fashion brand started to use their resources in designing various apparels in order to meet the needs of the customers' diverse desires and personalities. Therefore, fashion brand focused more on designing rather than manufacture, and that lead to outsource the manufacture-related process (Kim & Lee, 2004). Such transition has given more responsibilities to the sewing contractor companies, making them to become more important agents in the fashion industry.

In the fashion industry, a sewing contractor company can be defined as a specific type of partnership amongst companies that are responsible for product manufacturing, according to the specifications provided by a fashion brand (Gereffi et al., 2010). As such, there are several types of sewing contractor companies that have different roles and functions. Some are simply responsible for sewing the garment after receiving the design and fabric from the fashion brand, while others have the ability to manage the entire production process from raw materials to the final product (Gereffi et al., 2010). Thus, the role and influence of sewing contractor companies within the fashion industry is steadily growing. They contribute to efficient production and high-quality product delivery by meeting the diverse needs of brands and reacting quickly to changes in the market. Despite such significance, there is still a lack of research on the sewing industry. Considering its influence and potential, the sewing industry needs more academic support and socioeconomic attention. Unfortunately, the majority of current studies on the fashion industry focuses on retailing businesses (Jin et al., 2021; Lee et al., 2020; Lorenzo-Romero et al., 2023).

There have been few attempts to understand sewing sector from the academic perspectives. In relation to sewing contractor companies, some studies narrowed down the scope of research to a certain region and examined the significance of geographical and spatial attributes based on the manufacturing procedure of the sewing contractor company (Kang & Choi, 2019). In addition, while some studies focused on improving sewing techniques and processes, others just briefly surveyed the role of sewing contractor companies as a part of the supply chain in the fashion industry (Aus et al., 2021; Chan et al., 2017; Khurana, 2022; Lee and Lee, 2023; Manaia et al., 2023).

Therefore, it is necessary to study the situation, any changes, and the survival strategies of sewing contractor companies. The sewing industries of developed countries face several challenges. They must compete on price with developing countries that rely on low cost labor (Nhung & Thuy, 2018). Internally, they must also deal with institutional factors, such as the minimum wage system and working hours. Conversely, if they choose to produce in developing countries, they face the problems of increasing production time and maintaining product quality. Therefore, it is difficult to respond to the rapidly changing needs of consumers and

their demand for high-quality products (Haraguchi et al., 2017; Routroy & Shankar, 2014.) Despite these problems, fundamental research investigating the structure and changes in the sewing industry following environmental changes is still lacking. Therefore, examining the evolution of sewing contractor company structures in response to changing environments is crucial in understanding how they can respond to future changes.

The sewing industry forms a trading relationship with fashion brands on the strategic business process. In order to investigate the sewing industry thoroughly, we need a theory that can analyze the trading relationship as a basic unit. The theory of co-evolution, which is applied in business administration, presumes that the evolution of a company does not occur independently as it affects other business partners (Ehrlich & Raven, 1964; Volberda & Lewin, 2003). According to the theory, companies evolve through the process of resource selection and adaptation by considering circumstantial factors such as system and technology, and the adapted resources affect the evolution of partnering companies in a business relationship. Therefore, through co-evolution with business partners, companies can evolve and become more competitive within the industry. Based on the co-evolution theory, the present study examines the process of sewing contractor companies' evolution through interaction with fashion brands. To understand the transformation and development of sewing companies, it's essential to not only consider global phenomena like offshoring and reshoring (Casadei & Iammarino 2023) but also to closely examine transactions with various fashion brands. Sewing companies adopt different strategies, such as labor cost reduction, quality control, and quick response systems (Pal et al., 2018; Warburton et al., 2002), because it can vary depending on the type of fashion brand they deal with. Therefore, an environment that allows the observation of both internal and external changes is necessary to thoroughly understand the evolution of sewing contractor companies.

The South Korea sewing industry, encompassing a variety of fashion brands and sewing companies, has been observed implementing the diverse strategies previously mentioned (Ahn & Kim, 2018). Therefore, the researcher identified South Korea as an ideal environment to study the patterns of any changes and evolutions in the manufacturing processes amongst diverse sewing contractor companies. In this sense, this research aims to deepen the understanding of the sewing industry from a macro perspective and establish a theoretical framework for the mutual development of the sewing industry and fashion brands as a whole.

## **Case description**

### **Role and significance of the sewing industry**

Fashion industry is composed with many different fields such as the departments of design, production, manufacture, and distribution (Dickerson, 2003). Such industry forms an extensive value chain that connects the series of design-manufacturing-sales system as a whole (Dicken, 2011). Within that system, in order to analyze the design and manufacture part of the fashion industry, this study focuses on the companies that use the fabric and materials.

As the economy developed and household income increased, people began to use fashion products to express themselves (Bishnoi & Guru, 2023; Kim & Sullivan, 2019). The fashion market started to rapidly change depending on consumers' lifestyles. By going through such process, fashion brands faced the limits of the self-sufficient system that solely relies on internal resources that cover the whole system, ranging from designing apparel products to manufacturing them (Capasso et al., 2013). That being said, a new system was necessary to design and produce a wide variety of apparel products that can satisfy customers' different preferences as time goes by. As one of the solutions, fashion industry used an outsourcing strategy to catch up with the trend. To meet with consumers' rapidly changing desires, the fashion industry tried to concentrate their resources only on production design and planning (Kim & Lee, 2004). To do so, they separated their resources for production from their system and began to outsource their resources. The industry could improve their competitiveness by running a sewing factory and cut down their expenses, such as the costs of operation, machinery, and labor.

Such pattern of outsourcing can be found in various countries as well (Caniato et al., 2015; Capasso et al., 2013). In Italy for example, most of the fashion brands do not own sewing factories that are directly managed by them, except for few major companies; instead, they commission sewing contractor companies or jobbers to take in charge of production (Gereffi, 2005; Merk, 2015). Considering such transition, the role of sewing contractor companies that first-hand produce fashion products has become more important and started to play a pivotal role in the international fashion industry.

#### **Production method and contract type of sewing contractor companies**

Types of sewing contractor companies can be largely divided into type1 company that simply performs cutting and bundling, sewing, trimming, and managing the subsidiary materials, and type2 company that performs pattern and grading, managing raw material, and design in addition to the work performed by company1 type. The type1 company can carry out two types of the terms of the contracts: a contract for the sewing process and a contract for the Cutting, Managing, Trimming (CMT) process (Ahn & Kim, 2018). For type1 companies that are subcontracted for the sewing process, the main office of the fashion brand provides the sewing contractor company with raw materials, subsidiary materials, patterns, and grading for producing apparel. After this, they commission the sewing contractor company to take charge of the functional capabilities processes such as cutting, bundling, sewing, and packaging. As for type1 company that are subcontracted for the CMT process on the other hand, the fashion brand provides patterns, grading, and raw materials to the processing company and let the processing company take charge of performing cutting, bundling, sewing, packaging, and procuring of subsidiary materials (Ahn & Kim, 2018; Reimer, 2016). Thus, the key factor that differentiates the two types of the term of contracts between sewing and CMT is whether if they manage the subsidiary materials or not.

According to the literature, the terms of contracts that only type2 companies can implement are the original equipment manufacturing (OEM) method and the original design manufacturing (ODM) method. As for the OEM method, once the fashion brand provides the product design, the type2 company carries out the rest of the process as follows: cutting, bundling, sewing, trimming, managing subsidiary materials, managing

the pattern, grading, and raw materials (Ahn & Kim, 2018; Kaya, 2011). As for the ODM method, the type2 company carries out the entire process from designing apparels to manufacturing apparel products (Ahn & Kim, 2018; Feng & lu, 2011). In this case therefore, the key performance that distinguishes the OEM from the ODM is designing fashion products. Table 1 shows the types of sewing contractor companies and contract types observed in the current sewing industry.

## Theoretical framework and research questions for case analysis

### Concept of co-evolution and entry condition

The concept of co-evolution was first introduced to the field of biology that studied the relationship between flowers and bees (Ehrlich & Raven, 1964). When bees take nectar from flowers, the bees widely spreads the pollen. As time goes by, certain flowers begin to produce more nutritions that bees prefer, so that the flowers can propagate their species. In return, bees could increase their survival rate by feeding on their preferred nutrition. In short, co-evolution refers to the evolutionary process in which different species reciprocally affect each other through constant interaction (Wong, 1975).

Such phenomenon can be observed in human's industries as well. The growth of a particular company in a certain industry gives a positive effect to the development of the other companies; the development of partnering companies gives positive influence back to the company. Companies within the industry's ecosystem become more competitive by forming a co-evolutionary relationship, just as the flowers and bees do so. This concept of co-evolution has also been applied to various fields such as medicine and food services ever since it was introduced to the academia (Kolk & Tsang, 2017; Nelson, 1994; Niederman et al., 2016).

The concept of co-evolution applied to industries refers to a mutually cooperative relationship in which both parties in a transaction work together over the long term to satisfy the demands of customers while also recognizing that their own success is dependent on the success of their transaction partner. Various prerequisites are required to build such bonds in transactional relationships.

**Table 1** Type of sewing contractor company

Sewing contractor company				
Firm type	Type1 company		Type2 company	
Terms of contract	Sewing	CMT	OEM	ODM
Functional capabilities	Cutting and bundling	Cutting and bundling	Cutting and bundling	Cutting and bundling
	Sewing	Sewing	Sewing	Sewing
	Trimming	Trimming	Trimming	Trimming
		Managing subsidiary materials	Managing subsidiary materials	Managing subsidiary materials
			Pattern making and grading	Pattern making and grading
Sourcing level			Managing raw materials	Managing raw materials
				Design
	Level1	Level2	Level3	Level4

Ahn and Kim (2018), Feng and Lu (2011), Reimer (2016)

According to previous research, factors such as contract terms, communication, level of conflict, mutual understanding of tasks, and organizational culture have been shown to influence partnerships in long-term trading relationships. Trust is regarded as the most fundamental element in establishing business relationships between companies (Brinkerhoff, 2002; Jang & Lee, 2006).

This concept of co-evolution and its preconditions can also be applied to transactions between a fashion brand and a sewing contractor company, as the relationship between a fashion brand and a sewing contractor company lies between a buyer and a supplier. Fashion brands want to enter into long-term transactions with sewing contractor companies that can fulfill their brand strategy and market needs. As sewing contractor companies operate in various forms depending on production scale, technology, expertise, and sourcing (Ahn & Kim, 2018), they want to enter into long-term relationships with fashion brands that are appropriate for their resources. However, for co-evolution to occur between these firms, they must first meet each other's requirements. Therefore, for successful co-evolution between firms, it is necessary to identify the necessary conditions that allow fashion brands and sewing firms to enter into a co-evolutionary relationship. Therefore, we proposed the following research questions:

Currently, the majority of global clothing production is concentrated in underdeveloped or emerging industrialized countries. However, due to disadvantages, such as longer production times and reduced flexibility when engaging in overseas production, some sewing contractor companies have hesitated to expand abroad (Pourhejazy & Ashby, 2021). These companies appear to leverage advantages, such as shortened production times, quality management, and swift responses to situations, to secure competitiveness within their home country (Wang et al., 2014). Therefore, this study aimed to differentiate between sewing contractor companies engaged in domestic production and those involved in overseas production, focusing on examining their co-evolutionary processes.

#### *Research question 1.*

*Entry condition: What conditions are required to start their co-evolutional relationship between a sewing contractor company and its partner, fashion brand*

#### ***Process of evolution [variation–selection–retention (VSR) process]***

In order to understand co-evolution, it is first necessary to understand the mechanisms that appear in the evolutionary process. The concept of evolution, which stems from the universal Darwinism in biology, has also been applied to the field of social science. Many literatures argue that the theory of evolution can be applied to human industries, as long as the key components of biological evolution are clearly identified (Aldrich et al., 2008). In biology, evolution refers to the process of the fundamental property of organic life form changing as a result of accumulated changes throughout many generations. The evolution process of living things takes place through three basic stages: variation, selection, and retention. This process is called VSR (Aldrich & Pfeffer, 1976). If the phenomenon of each VSR stage can be accurately defined, not only biological phenomena but also social phenomena can be explained universally (Hodgson, 2004).

The garment industry is labor-dependent. Therefore, taking advantage of labor market differences can reduce costs. Therefore, sewing contractor companies with factories in



developed countries have begun to set up production in countries with lower labor costs. Currently, most of the world's apparel production is concentrated in underdeveloped or emerging industrialized countries (Tate et al., 2014). However, certain manufacturing companies have been reluctant to expand into international markets due to the lengthy production time and inflexibility associated with overseas production. Instead, they have focused on leveraging advantages such as faster production, quality control, and quicker response to situations to maintain their competitiveness at home (Pourhejazy & Ashby, 2021). Therefore, this study attempted to examine sewing contractor companies that mass-produce through labor cost reduction and sewing contractor companies that produce small amounts through strategies such as the quick response system.

### **Variation**

The variation process is manifested in the field of biology as follows. Organic life forms inherently contained genetic information, and when genetic information is passed on to the next generation, a life form is born according to the genetic information imprinted in the gene. If environmental changes or mutations occur over many generations of organic life forms, the information imprinted in the gene is altered (Aldrich & Pfeffer, 1976; Campbell, 1960; Ingram, 1961). The altered genetic information functions as a new genotype. For example, lions need fast-running legs to effectively hunt antelopes. If lions developed fast-running legs through the variation process after being stimulated by the environment over a long period of time, this becomes a new genotype.

The variation process in biology can be applied within a company in a similar manner. The variation process of a company can be defined as a learning process to cope with the external environment, such as the emergence of new technology and changes in customers' needs (Aldrich & Pfeffer, 1976; Helfat & Maritan, 2023).

Company change their internal processes to survive and remain competitive. Previous research has shown that resources are the basic unit that organizations change to survive (López-Gamero et al., 2009; Knight et al., 2019). In other words, Change is considered an essential factor in ensuring the long-term survival of an organization. The sewing industry is sensitive not only to the regulatory environment, such as minimum wage increases and labor laws, but also to the demands of the companies with which they have business relationships. In response, sewing contractor companies have pursued various changes.

There are currently various types of sewing contractor companies in existence. Certain firms engage in local production, whereas others operate offshore manufacturing facilities. Additionally, some have relocated their factories from foreign to other countries (Pourhejazy & Ashby, 2021; Tate et al., 2014). This suggests that there is a lot of variation within the industry. Therefore, it is important to examine the types of change that have taken place and the resources used to achieve co-evolution among sewing firms. This analysis will help develop an understanding of how sewing firms adapt to market changes and global competition and how they innovate their business models to co-evolve.

### **Selection**

In biology, selection can be defined as a stage in which an organic life form with a genotype that is more advantageous for survival in a certain environment is selected by the

environment (Fisher, 1930; Gilad et al., 2006; Urry et al., 2014). From the perspective of an organization, selection can be defined as a stage in which a company selects resources or routines (Schaltegger et al., 2016). In other words, companies can select new resources to change or strengthen their competitive resources. Firm resources include various aspects such as the company's structure, operational procedures, and the collective experience and learning of its employees (Esteve-Pérez & Mañez-Castillejo, 2008). Company resource selection is influenced by changing environment (Barbieri et al., 2018). The decisions made by top executives regarding which resources to keep and which to discard are critical to the organization's ability to adapt and thrive. For example, Adidas, a global fashion brand, illustrates the importance of resource selection. The company's decision to invest in automated production technology and establish a smart factory in Europe was a strategic move to innovate (Galluccio & Agrell, 2022). However, due to misplace issues, the factory was eventually closed. It shows that a wrong decision can lead to a loss of competitive advantage. On the other hand, firms that choose eco-friendly technologies like zero-waste production methods can gain a competitive edge through sustainable practices (O'Rourke & Strand, 2017). This approach not only benefits the company internally but also enhances its reputation externally, potentially leading to a stronger market position.

The role of top executives is therefore crucial in the resource selection process (Abernethy et al., 2019). Their decisions can have far-reaching implications for the company's future. It's not just about choosing the right resources but also about how these resources are managed and integrated into the company's operations. The success of a company, especially in fast-changing industries like fashion, depends significantly on how well its leaders can navigate these complex decisions. Therefore, the selection of resources and the systems through which they are selected are crucial to the successful evolution of the firm. As such, to examine the successful co-evolutionary process of sewing firms, it is necessary to examine their resource selection systems.

### **Retention**

In biology, retention refers to the process of replication and reproduction of the acquired genotype. When altered genetic information acquires a new genotype and becomes selected by nature, successful evolution takes place once it is passed down to the next generation. When replication and reproduction do not continue evolution fails (Sober, 2014). In other words, when the genotype is not retained through replication and reproduction, the species cannot evolve.

Organizations also need the retention process to continue to keep their altered resources or routine. Within the organization, the standardization of data related to specialized knowledge of each role and experience becomes a core asset to keep their business run during a rapid environmental change (Volberda & Lewin, 2003). Thus, at the retention stage, all experiences obtained through a successful adaption process are systematically passed down to the members of a company. According to previous researches, Such information is conveyed either through physical or word-of-mouth channels. Compared to the physical channel, the communication through word-of-mouth is more likely to alter the information. Once several processes of responding to environmental changes are accumulatively documented, they eventually become



established rules and norms of the organization. These rules are essential resources for retention (Scherer & Ross, 1990; Thornton & Nardi, 1975). This is how organizations can evolve successfully. To identify the co-evolutionary process of sewing firms, it is necessary to examine systems that can retain the changed resources or routines. Therefore, we proposed the following research questions:

*Research question 2.*

*Co-evolutionary process VSR: How do mass and small-scale production sewing companies manage the co-evolutionary process?*

*Variation: What are their changes and new attempts to co-evolve within their partner relationship?*

*Selection: How do the companies select practices and resources among many variations?*

*Retention: How do they manage to make the selected retainable?*

### **Co-evolution outcomes**

In biology, organisms that engage in co-evolutionary relationships evolve in mutually beneficial directions. The outcomes of such co-evolutionary relationships are also observed in the context of businesses. It has been shown that firms in long-term trading relationships can reduce operating costs through resource sharing and gain strong competitive advantages through information exchange and market risk sharing (Brinkerhoff, 2002; Srivastava et al., 2017). This suggests that the purpose of mutual cooperation is for firms to establish strong positions in the industry.

Fashion brands and sewing contractor companies produce products with the common goal of satisfying consumers. Fortune brands offer designs to sewing contractor companies, which utilize their own technology to manufacture high-quality products. Throughout this process, the two companies collaborate across various domains, leading to observable co-evolutionary outcomes in various aspects. Consequently, it is essential to assess the performance of the companies engaged in such co-evolutionary relationships.

*Research question 3.*

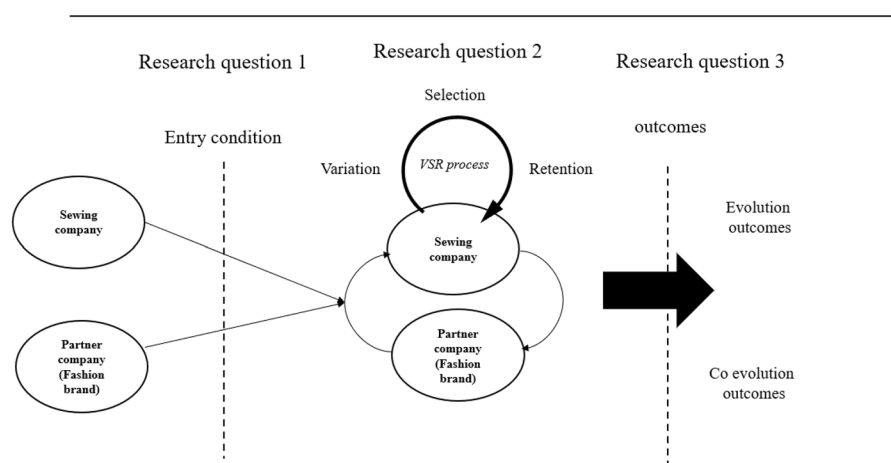
*Outcomes of co-evolution: What are the outcomes of co-evolutionary relationship with their partners for the sewing contractor companies?*

The research questions of this study are summarized below (Fig. 1).

## **Methods for case analysis**

### **Pre-interview**

To identify a sewing company that is suitable for the co-evolution case, pre-interview was conducted with sewing contractor companies that are currently running their business in the industry. Pre-interviews were conducted with one sewing company CEO and two large fashion brand managers who oversee various sewing companies. The interview results indicate that sewing companies specialize in mass and small-scale production were the most successful cases in the fashion industry. Based on such result, sewing companies specializing in mass and small-scale production were selected as the target group to represent the current study.



**Fig. 1** Research model

## Methods

Qualitative research methods were selected as the main research methodology, for they are suitable to explore the evolution process of the sewing industry from the co-evolution perspective. Qualitative research methods are mainly used in the fields where pre-existing research is lacking. It is also commonly used when exploring a new phenomenon or studying from a new perspective. This research method enables the researcher to generate results and draw conclusions directly from the interview data, rather than establishing hypothesis based on theories (Strauss & Corbin, 1997).

The collected data were analyzed using thematic analysis, which is an inductive approach. Thematic analysis is a method for identifying and reporting themes through recurring patterns in the data collected through interviews (Braun & Clarke, 2006). Open coding was performed to gain new analytical insights into the phenomena emerging from the collected data. Open coding involved repeated readings of the entirety of the statements made by the participants and breaking them down into sentences and paragraphs to catalog the necessary parts of the study. This process was conducted by two fashion experts (a Ph.D. researcher and a professional with 10 years of experience) to ensure objectivity. Finally, themes were derived and organized to fit the purpose of this study.

## Interview content and procedures

This study involved conducting interviews with each participant, lasting between 60 to 90 min over a 3-month period (January to March 2020). Participants gave their verbal consent after they were informed about the study's objectives, methodology, and the broad topics of the interview. With their agreement, the interviews were recorded. The questions and procedures were conducted in accordance with IRB regulations, and the IRB approval number is IRB No. 2002/001-005.

To investigate the co-evolutionary process of sewing contractor companies, a questionnaire was formulated with reference to relevant previous studies and the business model in block 9. The main themes of the questions were the respondent's position and basic information about the enterprise, trading resources and interactions within the

trading company, communication channels, general information about the trading company, core resources and changes in resources, decision-making, and internal systems of the company.

The questions included specific contents as follows (only some items are included): (1) Regarding transaction-related content, what is the core value that your company provides to customers (fashion brands)? What differentiates your company's values from those of other companies? (2) Regarding channel-related content, through which channels does your company communicate its value propositions to other companies? Does your company have internal communication channels? (3) Regarding content related to trading company segments, what is the size of the partner companies' business targets? Are resources exclusively provided to certain companies? (4) In terms of company management, does your company have a system for managing corporate resources internally? Does it manage trading companies by considering long-term benefits? (5) What are your company's overall core resources? What changes have occurred in the core resources? (6) Related to partnerships, with which companies do you primarily conduct business? Why do you engage in long-term transactions with these companies? Are any special resources or support provided exclusively to long-term partner companies? (7) How is the company's decision-making process conducted?

The questionnaire was structured in the same manner for both sewing contractor companies and fashion brands. However, some items were modified to suit fashion brands. For example, Question 4 was transformed to ask whether they perceive that the sewing contractor companies they deal with have an internal resource management system and, if so, what kind of system they think it is. We expect that this would enable a clearer understanding of the interactions and synergistic processes between these two industries.

#### **Data collection and selection of research subjects**

This survey was conducted on type 1 and type 2 companies that classified the sewing contractor companies described in the theoretical background as interviewees, particularly companies that operate based on the OEM agreement. The objective of this study is to examine the evolution process of sewing contractor companies from the perspective of co-evolution. To examine the evolution process of sewing contractor companies objectively, we conducted in-depth interviews with the executives at sewing contractor companies as well as executives at fashion brands that are in a direct business relationship with them. Tables 2 and 3 each show an overview of the interviewees from both sewing contractor companies and fashion brands.

When comparing each table, companies that are in identical codes refer to being in direct business relationships with each other (ex: Sc/a-Fb/a). In specific, the fashion company Fb/a,b,c,d owns multiple fashion brands. For in-depth interviews, we selected 6 people from sewing contractor companies and 9 people from fashion brands. Thus, a total of 15 people participated in this study. On the other hand, the sewing contractor company from Table 2 that has a business relationship with the companies Fb/g,h,i in Table 3 canceled their interview due to COVID-19. In this case, the in-depth interviews with the participants who could not form a pair (g, h, and i) were conducted and

**Table 2** Characteristics of sewing contractor companies participating in the interview

Code	Sewing contractor company				Interviewee characteristics
	Sewing contractor company type	Factory type	Factory size	Factory type	Position
Sc/a	Type2 company	South Korea (owner) + developing country factory (owner)	Full time: 20–30 people Peak season (temporary): 100–130 people	Mass	General manager
Sc/b	Type2 company	Domestic (partnership) + overseas factory (owner)	Full time: 20–30 people Peak season (temporary): 100–130 people	Mass	Executive director
Sc/c	Type1 company	Domestic factory (owner)	Full time: 12 persons Peak season (temporary): 40 persons	Small	CEO
Sc/d	Type1 company	Domestic factory (owner)	Full time: 35 people	Small	CEO
Sc/e	Type2 company	Overseas factory (owner)	Full time: 20people Peak season (temporary): 100–130 people	Mass	CEO
Sc/f	Type2 company	Overseas factory (partnership)	Full time: 14 people Peak season (temporary): 100–103 people	Mass	Assistant manager

**Table 3** Characteristics of fashion companies participating in the interview

Code	Fashion brand company		Interviewee characteristics
	Brand type	Apparel type	Position
Fb/a	Major fashion brands	Sports wear	General manager
Fb/b	Major fashion brands	Sports wear Casual wear	General manager
Fb/c	Major fashion brands	Men's wear, Women's wear	General manager
Fb/d	Major fashion brands	Sports wear	General manager
Fb/e	Designer fashion brand	Pants Casual wear	Manager
Fb/f	Designer fashion brand	Women's wear	CEO
Fb/g	Designer fashion brand	Women's wear	CEO
Fb/h	Designer fashion brand	Women's wear	CEO
Fb/i	Designer fashion brand	Men's suit	CEO

Major fashion brand is a company with multiple brands

Designer fashion brand which is a company that has one brand

focused more on the role and impact of sewing contractor companies on their business. The fashion brand manager responded that the sewing contractor company that has a business relationship with G, H, and I has a factor and a small-volume production system in South Korea. As shown through Table 1, the sewing contractor companies that participated in this study did not have ODM agreements. The fashion brands that did not have their own factories were selected, as the purpose of this study was to examine the evolutionary process of sewing contractor companies through transactional relationships with fashion brands.

## Discussion and Evaluation

### Co-evolution entry conditions

The goal of this study is to explore the evolution process of the sewing industry based on the pattern of co-evolution. Because co-evolution is the phenomenon of companies evolving together by forming a business relationship, the business between companies must be continued. Thus, this study defined co-evolution entry conditions as the trade condition that can yield the outcomes of co-evolution through a long-term business. The interviews with sewing contractor companies and fashion brands revealed that relational resources and business compatibility between companies are necessary for entry conditions to build a co-evolutionary relationship (Table 4). In particular, fashion brands value relational resources, and business compatibility was observed to be important for sewing contractor companies.

### Relational resources

The interview data showed that reliability and communication were the fundamental conditions for entering the co-evolution process. Below analysis shows how reliability and communication became the two major factors that play pivotal roles in co-evolutionary entry conditions.

*Reliability (fashion brand focus)* According to the data, maintaining trust by meeting delivery deadlines was crucial for fashion brands. Since apparel products are usually seasonal, delayed delivery has a negative impact on sales. This leads to increased stock and consequent financial loss. Therefore, meeting the product delivery deadlines is essential in the business relationship between sewing contractor companies and fashion brands.

*“For fashion brands, it is very important to meet the due date. If the shipment of the product is delayed, the product cannot be sold on time. ...” (Fb/a, similar remark interviewer: Fb/b,c,d,e,f,g,h,i)*

In addition, fashion brands pointed out previous issues they had with the sewing contractor companies. They mentioned unfortunate problems that the sewing contractor companies leaked apparel designs and illegally sold products to the consumers during

**Table 4** Theme of co-evolution entry condition

Main theme	Sub-theme	Concept
Coevolutionary entry conditions for competitive advantage	Reliability	<ul style="list-style-type: none"> <li>• Promises a production date</li> <li>• No information leakage of fashion products and illegal distribution of fashion products</li> </ul>
	Communication	<ul style="list-style-type: none"> <li>• Not making arbitrary judgement</li> <li>• Always discuss issues related to fashion product production</li> </ul>
	Quantity	<ul style="list-style-type: none"> <li>• Depending type of the sewing company there is a minimum quantity for transaction to be concluded</li> <li>• Sewing companies prefer order quantities with little deviation each year</li> </ul>
	Terms of payment	<ul style="list-style-type: none"> <li>• Terms and conditions of transaction that do not accept promissory note or deferred payment</li> </ul>

the manufacturing process. As this negatively affects not only fashion brand profits but also their competitiveness, it is important for fashion brands to trust that sewing contractor companies will not engage in any illegal activities. Therefore, fashion brands tend to request small-scale production at the beginning of their transaction with the sewing contractor companies to prevent any potential issues. After building its trust with the fashion brands through years of trading, the sewing contractor company is recognized as a partner company. Finally, cooperative trading begins between two companies.

*"If we entrust domestic production, there will be a copy problem. ...There are frequent problems with sewing contractor companies copying products and distributing them behind the scenes....we want to do business with a reliable fashion sewing contractor company without copying them." (Fb/i, similar remark interviewer: Fb/f,g,h)*

*Communication (fashion brand focus)* In the process of communication between the sewing contractor companies and fashion brands, they share information that is essential for the apparel production with each other. Nevertheless, it was found that most sewing contractor companies are passive communicators and do not communicate with the fashion brands especially on the issues of the sewing process. The main reason was found to be the craftsmen's sense of pride. According to the interview, it was revealed that the craftsmen have been working for many years in the sewing industry, and they have a strong sense of pride on their sewing skills. It was natural for them to have such ego, but such ego sometimes caused conflicts with the fashion brand companies. For example, some of the craftsmen changed the product design or materials on their own without following the job manuals or communicating with the fashion brand in advance. It was because some of the sewing craftsmen had a strong confidence in their sewing skills, and relied on their own taste and experience rather than on the fashion brand company's requirements. Even if their version happened to make a positive result, still the fashion brands did not take their revision positively. Instead, it was taken as an unfaithful misconduct.

*"Our brand puts a lot of importance on communication with sewing contractor companies. When doing business with a sewing contractor company, it is difficult to communicate in more areas than you think. The president or practitioners who deal with the business have been working in the sewing industry for a very long time, so they have a lot of pride in their technology. So if we point out something wrong, they will feel very bad, and there are many people who do not try to correct it well. Currently, the company we deal with is fast in feedback and communication, so we are doing business for a long time." (Fb/c, similar remark interviewer: Fb/f,g,h,I,a).*

Furthermore, fashion products include artistry, which cannot be fully expressed by simply following their required manual. To produce flawless products, transparent communication is important. That being said, such absence of communication caused a negative impact on the quality of products. When such issues of miscommunication happen, both of the fashion brand companies and the sewing contractor companies had to invest more time and money to solve the problem. It is because communication issues lead to lower quality products. In the end, both sides would waste more time and energy for no good. In this context, all the fashion brand companies responded that they would



never do business with sewing contractor companies that have communication issues with them on their interviews.

*"I don't want to do business with the CEOs of sewing contractor companies who modify their products without communication. I'm cutting off the transaction. Without communication, I want to make my own judgments and decisions I think it's a very bad thing." (Fb/b, similar remark interviewer: Fb/a,f,g,h,I).*

In other words, communication was found to be the key condition for sewing contractor companies and fashion brands to form a long-term business relationship and ultimately to enter co-evolution.

### ***Business compatibility between companies***

According to the interview results, the production quantity and terms of payment are the components of compatibility between sewing contractor companies and a fashion brand.

*Quantity (sewing contractor company perspective)* It was found that order quantity was a major factor influencing the long-term business relationship between sewing contractor companies and fashion brands. Mass-production sewing contractor companies had a minimum order quantity that matches with the mass production system. In reverse, sewing contractor companies with small-volume production systems have a fixed maximum quantity they can produce. If the sewing contractor company's system is not compatible with the fashion brand's order quantity, business relationships end in a one-off.

*"Our company mainly produces overseas. That's why the supply quantity is very important. ... So, we always focus on fashion brand companies with high production orders." (Sc/e, similar remark interviewer: Sc/a,b,e).*

*"We don't prefer a lot of production because we're doing our business around domestic production. This is because many quantities are not suitable for the production method we are pursuing." (Sc/c, similar remark interviewer: Sc/d)*

In addition, it was also found that the stable order quantity from the fashion brand is a key factor that influences business relationships with sewing contractor companies. Most of the sewing contractor companies responded that they prefer fashion brands that provide stable orders in their interviews. Keeping this in mind, stable order quantity is the main source of sewing contractor companies' stable operation. Before starting their production, sewing contractor companies secure labor and adjust production first, because a drastic increase or decrease in production can be a problem for them to manage their workforce. This would later negatively impact the company's profits. By predicting the quantity, they can minimize the fixed expenses by adjusting their production workforce in advance. Therefore, quantity-related compatibility of companies in business relationships can be seen as a co-evolution entry condition that can form a long-term business relationship between sewing contractor companies and a fashion brand.

*"The main reason for doing business with fashion brand A is the stable order volume. It can be said that the most important thing is that fashion brand-owned compa-*

*nies supply orders to us stably. From our point of view, we look at the quantity and adjust the size of the factory. ... Stable ordering means that our company can operate the plant in a stable manner." (Sc/a, similar remark interviewer: Sc/b,c,d,e,f).*

**Terms of payment (sewing contractor company perspective)** In the Korean sewing industry, it was found that there are various terms of payment between sewing contractor companies and fashion brands. Some companies had terms requiring payment of production-related expenses within 1 month. There were also terms that required payment within 2 weeks after delivery. In general, good terms of payment for the sewing industry in Korea depend on how quickly the fashion brand can pay production-related expenses to their subcontractor sewing contractor companies. Therefore, the terms of payment are significant because there is a prevalent practice of deferred collection in the apparel industry, which can result in unfair trade. Deferred collection is a practice of making the payment once the actual sale begins instead of paying the production expenses or sewing expenses during the production season.

Such a practice of deferred payment was found to make a negative impact on the overall apparel industry. If a fashion brand on the OEM agreement defers the payment for production expenses, sewing contractor companies may encounter problems of making payment on the outstanding balance to the sellers of raw materials or subsidiary materials on the agreed date. Moreover, if a fashion brand does not make the payment on the outstanding balance due to poor sales performance, not only sewing contractor companies but other companies that supply raw materials and subsidiary materials can also suffer loss as a chain effect. Therefore, all sewing contractor companies that participated in the interviews considered payment terms as the foremost important factor.

*"In the fashion industry, fashion brand does not pay for sewing immediately, but pays for sewing after the production of the product is finished and the sale is actually made. There are so many fashion brands that don't pay the right balance when they're actually selling, even when they're underperforming. So, payment terms are important for sewing contractor companies." (Fb/c, similar remark interviewer: Fb/i).*

*"The fashion brand B pays within two weeks. This is very good for us (fashion sewing contractor companies). We also have to pay funds to subsidiary companies, but if payment is delayed, we will also be in a lot of trouble..." (Sc/e, similar remark interviewer: Sc/b,c,d).*

## **Sewing contractor company co-evolution process**

### **Variation in mass-production sewing contractor companies**

#### **Casual and sportswear brands and mass production sewing contractor companies**

Fashion brands that plan mass production aim to sell a large quantity of apparel products at the lowest price. Because they generally plan mass production and concentrate on basic apparel products, the level of production skill is comparatively low whereas the market demands a moderate level of quality. Consequently, sewing contractor companies that pursue mass production would change their resources (physical, human, and

**Table 5** Theme of variation in mass production sewing contractor companies

Main theme	Sub-theme	Concept
Evolving to a mass production system to respond to a changing environment	Variation in physical resources	• Reduction of operating costs through overseas factory relocation
	Variation in human resources	• Human resource training and management for continuous improvement of overseas factory production
	Variation in organizational resources	• Strengthening production management through capitalization and dualization of production factories • Change of management system with technology

organizational resources) in suitable ways that can meet the price, quality, quantity and the deadline that their partnering fashion brand desires (Table 5).

*Changes in physical resources: factory location* Out of many types of resources, physical resources are the factors that a company has a direct control over (Barney, 1986), Geographic location is one of the main physical resources (Barney, 1986), which was also found as an important factor in the present study. According to the interview, Korean sewing contractor companies that mass-produced apparel moved their domestic factories in Korea to overseas countries. Sewing contractor companies could not mass-produce in Korea, because they have difficulties maintaining the competitiveness of prices due to high operating costs and steadily rising minimum wages. For this reason, mass-production sewing contractor companies either set up their factories in developing countries such as Vietnam, Indonesia, and China, or they carry out their business with sewing factories located in the countries where the costs of labor and operation are relatively low.

*“If our brand produce on a large scale, the unit price of production will be relatively low. In addition, unlike in the past, the quality of overseas factories has improved a lot except for certain items, so if our brand has a large production quantity, we usually entrust production requests to sewing contractor companies with overseas factories.” (Fb/b, similar remark interviewer: Fb/a,d,e,f).*

*Change in human resources: continuous improvement in quality of overseas production* Interview data shows that fashion brands want to secure a certain level of quality, even for mass-produced products. Sewing contractor companies went through some changes in human resources to improve the quality of suitable products. In this case, human resources include professional skills, problem-solving skills, management skills, and workforce created by members (Brooking et al., 1998). Because the sewing industry is a labor-dependent industry, the sewing experience of employees working at a sewing contractor company is the key factor that affects the quality of apparel products. To improve the quality of apparel products produced overseas, there was a change in overseas human resources. It was reported that the overall quality of apparel products from overseas sewing contractor companies in early years was poor due to the absence of sewing craftsmen and skilled human resources. To solve these problems, the companies sent their skilled workers to the overseas sewing factory on a regular basis and developed overseas human

resources. As time went by, their human resources in overseas countries shifted from low-skill to high-skill workers. Currently, overseas sewing factories can utilize skilled human resources and maintain the quality suitable for mass production.

*"In the early days, there were language problems with overseas workers, and their sewing skills were not verified. That's why we dispatched skilled workers from our company. Of course, I also visit often. I think I kept visiting to teach and manage sewing skills." (Sc/e, similar remark interviewer: Sc/a,b).*

*"Certainly, in the past, I think the overseas factories were generally unskilled, but now.... that have gone beyond the basic six or seven years. .... The workers there have gotten more skilled.... Product quality is good now." (Fb/d, similar remark interviewer: Fb/a,e)*

**Changes in organizational resources: capitalization and dualization of production factories** Literature defines organizational resources of a company as the ability of an organization to create new products or services by combining human and physical resources together (Lev & Radhakrishnan, 2005; Prescott & Visscher, 1980). After a thorough analysis, it was found that fashion brands transform their organizational resource in order to shorten their production time and lower their inventory risk. Among their various organizational resources of sewing contractor companies with a mass production system, a change in their quick response system was their major shift. Sewing contractor companies turned overseas factories into shareholder equity to improve the quick response system.

By turning overseas factories into shareholder's equity, the head office manages multiple tasks: they oversee the overall production process, shorten the lead time, and lead to faster response-based production. An additional change was that, in order to improve response-based production, sewing contractor companies with a mass production system either took over domestic factories or built collaborative networks with factories with domestic production. By allocating some of their productions to domestic factories and the main supply to overseas factories, they could minimize the production gap before the supply that is coming from overseas production arrive in Korea. In other words, it appears that the capacity of response-based production was strengthened by the capitalization of overseas factories and through their collaborative synergy with domestic factories.

*"....Overall production resources must be efficiently controlled, and the most important thing at this time is whether or not the factory is owned. If it's my factory, I can prioritize my work as I please." (Sc/a, similar remark interviewer: Sc/b,e)*

*"We have a sewing factory in Korea. Although overseas factories have many advantages in mass production, some supplies must be used by domestic factories if they have to react and produce. When our sewing contractor company took over overseas factories, we left some domestic factories." (Sc/a)*

#### **Variation in small-production sewing contractor companies**

**Men's and women's clothing brands and small-scale production sewing contractor companies** Fashion brands that plan small-scale production utilize a strategy that introduces

a variety of products to consumers. Their strategy also rapidly produce products that receive a good response during the sales season. Such planning is generally adopted in men's wear and women's wear that have higher standard for product quality under intensive competition. It was found that fashion brands value short lead times and high quality in this market. Therefore, sewing contractor companies that produce in small quantities are transforming their resources to improve the quality of products, reduce lead times, and speed up production (Table 6).

*Change in physical resources: factory re-location for clustering* Fashion brands sell high-quality clothing in small quantities first, followed by selling and producing additional products based on consumer reactions. To satisfy these conditions, sewing contractor companies that produce high-quality clothing products have a short lead time for their production compared to that of mass-produced products. In addition, their quick response system, which is a system that produces additional products based on consumer reactions, must be faster than that of the mass-production sewing contractor companies. Therefore, sewing contractor companies trading with fashion brands that plan high-quality clothing tend to shift their factory locations to increase production lead time and efficiency of the quick response system. Furthermore, small-scale sewing contractor companies produce domestically to achieve a short production time. Overseas production made it impossible to send raw and subsidiary materials to overseas factories and achieve a short return time to Korea after the product was completed.

According to the interview, it was found that sewing contractor companies with small production relocated their factories to a much more convenient location for them to receive and supply raw materials as well as subsidiary materials. By shortening such time of shipping raw materials or subsidiary materials to a sewing contractor company, the overall production time could be reduced. Therefore, among physical resources, changes in factory location were found to improve the response-based production capacity while reducing the lead time.

*"We used to have our factory in Suwon, but we've moved it to Seoul 00 while winding down the Suwon plant. The head office has been on us to cut down production times lately. Luckily, most of our suppliers for materials are around here, so by producing here, we can shorten the production time by about 1 to 2 days"* (Sc/d, similar remark interviewer: Sc/c)

*In order to quickly solve QC problems and problems occurring in the production process with the headquarters (fashion brand), our sewing contractor company*

**Table 6** Theme of variation in small production sewing contractor companies

Main theme	Sub-theme	Concept
Evolving to a small production system to respond to a changing environment	Variation in physical resources	• Reduced production time through relocation of factory location (change in factory location for clustering)
	Variation in human resources	• Strengthening human resources through internalization
	Variation in organizational resources	• Changes to team-based production

*moved the factory to the location of the headquarters as close as possible in consideration of various situations. Since the QC process conducted by fashion brands is not conducted only once, we can shorten the production time by 1–2 days when we get close to the headquarters.” (Sc/c, similar remark interviewer: Sc/d)*

*Change in human resources: improving human resources through integration* Sewing contractor companies changed their human resources to produce the high-quality apparel products that fashion brands demand. The current trend in fashion industry is that companies tend to hire more temporary workers rather than permanent employees to resolve the issue of fixed expenses related to minimum wage. In contrast, sewing contractor companies that produce in small quantities are internalizing human resources by increasing the number of permanent employees to manage their production well and keep their quality of apparel that requires high-level skills. Consequently, highly skilled workers are used to produce high-quality apparel products, paving the way for efficient management and training of human resources.

*“I’ve actually tried using subcontractors several times due to labor cost issues, as well as specialized sewing teams. But product quality control always ended up failing. After about three years of trying these methods and only experiencing failures, I’m now running the company by increasing the proportion of regular workers.” (Sc/d)*

*Change in organizational resources: from line production to team-based production* To meet fashion brands’ demand for high product quality, changes in organizational resources related to production method was also observed in sewing contractor companies. In the early days, the sewing industry played a subcontractor role for global brands; therefore, they used a line production method that is suitable for mass production. Line production is the method of dividing the sewing process into steps for making apparel products. Sewing contractor companies that produce in small quantities usually do not adopt the line production method; instead they adopt the team-based production method to maintain their production system of high-quality products that are difficult to manufacture. In the team-based production mode, two or four people group a team and carry out the entire sewing process that is necessary for producing apparel products. This method enables the production of high-level products and maintains the quality of the products, because the human resources experience a variety of sewing methods for making apparel products. For this reason, a change from line production to team-oriented production was observed among organizational resources of small production sewing contractor companies.

*“We have a sewing team that deals exclusively with our company. They produce their products only for our company every season. The sewing teams have been producing the fashion brand products we ordered for a long time, so they understand the characteristics of the products and sew them well.” (Sc/d)*

### **Selection and retention**

In this study, changes in various resources were observed in the process of co-evolution of sewing contractor companies. Based on the results of the in-depth interviews, we



**Table 7** Themes of selection and resource retention

Main theme	Sub-theme	Concept
Resource selection system in a changing environment	Selecting resources	• CEO's dependent choice
Resource retention system in a changing environment	Maintain resources	• Retention of resources through education of top management • Retention of resources through manualization and organization

examined the system in which sewing contractor companies choose to change resources, and how the modified resources are maintained (Table 7).

*CEO-dependent selection* It is observed that CEOs are the ones who decide any changes in resources of sewing contractor companies. This phenomenon may be caused by the structural characteristics of sewing contractor companies. Currently, Korean sewing contractor companies are operated separately by producers and production managers. Producers focus on sewing, whereas production managers focus on managing producers and taking care of issues that rise in the production process. There are no experts or a system that can select and manage resources based on apparel industry trends and fashion brand's demands that encompass the resources of sewing contractor companies. In addition, all fashion brand employees who participated in the interview responded that they work directly with the CEO of the sewing contractor company, when it comes to the production progress or anything related to the fashion brand's requirements. As such, the selection of resources is inevitably CEO-dependent.

*“When I decided to move from domestic production to overseas factories, I thought about it almost alone and made the decision. The members of a sewing contractor company mainly have know-how in the actual production process, but no one has expertise in matters such as matters to be considered externally.” (Sc/e, similar remark interviewer: Sc/a,b,c,d,ef)*

### **Retention**

When resource change occurs in a form that is suitable for a small-scale or mass production system within a sewing contractor company, a new resource form must be maintained for cooperative co-evolution with partners. For instance, if the production quality is improved to the level desired by the partner company through changes in the resources of the sewing contractor company, the sewing contractor company employees must be able to learn the new resources to maintain the modified resources. The interview results indicated that human resources are maintained through training, whereas organizational resources are maintained in a manualization or organized manner.

*Retention of resources through training by CEO and production manager* As the sewing industry is labor-intensive by nature, sewing techniques and skills related to quality improvement cannot be achieved by documentation. For this reason, sewing contractor

companies were retaining the their changes in resources by directly engaging with the CEOs or production managers to provide an on-site training for employees.

*“We need to understand the recent trends to improve the product’s completeness. This is because the style of clothing products is clearly different from what I understand and make without understanding. ... So, I participate in the production process together and always try to educate them. These days, the trend shows directly that this part should be sewn in this way, and ...” (Sc/d, similar remark interviewer: Sc/a,c)*

**Retention of resources through manualization and organization** Interview results shows that the changes in organizational resources could happen through the manualization and organization structure at the company level. As mentioned earlier, companies go through major changes in their production system, such as dualization of production system, quick response system, and many more. This means that the company’s resources started to transform along with the system. To keep up with such changes, the company adapts new ERP that is suitable to their modified system.

*“Even after the quality confirmation (QC) from the fashion brand, we check it once more with the mock-up sample internally. We re-seal or process areas that may obviously be problematic. We made the risk management system into a manual and made it essential to understand the contents of the manual when a new production manager comes.” (Sc/c, similar remark interviewer: Sc/d)*

*“We have managing teams for product quality and risk management. Since we deal with various fashion brands, each brand’s products have their own unique characteristics, you know. That’s why it’s crucial for us to efficiently manage the information we have...” (Sc/f, similar remark interviewer: Sc/a,e,f)*

### Outcomes of co-evolution

In the co-evolution process of sewing contractor companies and a fashion brand after forming a long-term business relationship, some aspects of co-evolution were observed.

**Table 8** Theme of co-evolution outcomes

Main theme	Sub-theme	Concept
Co evolutionary outcomes	Knowledge exchange	• The process of exchanging knowledge of sewing companies and partner company (fashion brand) has a positive effect on mutual development
	Optimization of experience	• Increased efficiency in work process by accumulating understanding of partner’s companies → Have a positive effect on competitiveness in their field
	Off-season supporting	• Recognizing that the threat of sewing company (or partner company) survival negatively affects the survival of its own company, and to overcome difficulties together
	Investment in the business partner	The investment of the sewing company ultimately affects the development of its own company

In this study, knowledge exchange, optimization of experience, supply of products during off-season, and investment in the business partner were found to be the outcomes of co-evolution (Table 8).

*Knowledge exchange* It is common to think that there is no such knowledge to exchange between the companies because sewing contractor companies are in charge of the production and a fashion brand company is in charge of product development. However, the interview results revealed that fashion brands received knowledge from sewing contractor companies, and sewing contractor companies received knowledge from fashion brands, vice versa. There is shared knowledge between them, because fashion products are made by the integrated result of the knowledge related to design development and the knowledge of sewing. Based on the knowledge provided by sewing contractor companies, fashion brands can produce better products. As a chain reaction, the knowledge from sewing contractor companies is passed on to the members of the fashion brand company as well. Such cycle enriches the knowledge and skills that are required in the apparel development.

*“The owners of sewing contractor companies change the sewing method to enable production, or modify the pattern to enable production of the problem that our brand’s technology team could not solve. In some cases, they help make the silhouette look better.” (Sc/f, similar remark interviewer: Sc/a,e,f)*

Meanwhile, Craftmen in the Korean sewing industry are aging. According to the data analysis, it was acknowledged that old Craftmen working at Korean sewing contractor companies tend to have a high level-knowledge in apparel production. On the other hand, they lack in keeping up with the current trend in fashion industry and popular apparel products. In contrast, fashion brands are keen on catching up with the consumers’ up-to-date styles, which are constantly changing in the apparel industry until now. In a continuing business relationship, fashion brands were introducing new sewing techniques and new fashion trends based on their knowledge to the sewing contractor companies. Based on the information provided by the fashion brand, sewing contractor companies were able to acquire suitable sewing techniques and become more successful in the Korean fashion market. Ultimately, knowledge sharing between the sewing contractor companies and the fashion brand gave a positive effect on both sides, and helped them grow to become a better partners. Therefore, knowledge sharing can be seen as one of the successful outcomes of co-evolution between the sewing contractor companies and fashion brands.

*“During our communications with fashion brands, we pick up on the latest trends. For instance, I recently heard from Brand A that hand-made coats are expected to become trendy. They recommended that we proactively learn the relevant techniques in advance. That insight has been incredibly beneficial for us” (Sc/b, similar remark interviewer: Sc/c,d,e)*

*“I suggested to the owner of the sewing contractor company that it would be better to acquire handmade and ventricular sewing skills. In the future, consumer demand for fashion products using these technologies is expected to increase....” (Fb/c, similar*

*remark interviewer: Fb/b,g,h)*

*Optimization of experience* It was found that the sewing contractor companies and a fashion brand depend their understanding of the partnering company as their trade continued. In this process, the companies optimized their experience to fit into their partner company's framework. Based on the experience with their business partners, it is possible to improve the efficiency and product quality by proactively recognizing the business partner's work process and their unique style of preferred products. Each fashion brand has its own preferred style, such as particular materials, sewing method that suits the materials, and their preferred sewing method. This has a positive effect on the company's productivity and their production quality.

*"When you've been dealing with a brand for a long time, you start to get a feel for what the design team or the brand itself is looking for. Like, you begin to sense which aspects need to be emphasized in a particular brand's style. You develop an understanding of each brand's unique style. Each brand we work with has its own characteristics, you know? Some might use a lot of lace, or another might prefer special finishes. Being aware of these things in advance makes working together so much smoother." (Sc/d, similar remark interviewer: Sc/a,b,c,d,f, Fb/a,b,d,e,d,h)*

*Supply of products during off-season* The Korean sewing industry distinctively has a peak season and an off-season. In the early days, the sewing industry played a key role in export. However, during the process of shifting from a global industry to a domestic industry, a production gap emerged based on the demand in the domestic market. In other words, an off-season was created. Owing to such production cycle, sewing contractor companies experienced difficulties that cover the fixed expenses that are necessary for operating the factory during the off-season. During the interview, most of the sewing contractor companies answered that they experienced off-season problems.

The fashion brands were aware of such fact that sewing contractor companies were going through many difficulties during the off-season. To alleviate their pain, fashion brands tried to develop a co-evolutionary relationship with the sewing contractor companies. As one of the solutions, big fashion brand companies commissioned the production of fashion products for outlets during the off-season. During the off-season, designer brands ordered classic products that were not easily affected by trends, such as white T-shirts. Sewing contractor companies who participated in the interview answered that this was very helpful for them to survive in the fashion industry. This can be seen as a positive result of co-evolution that allows sewing contractor companies to remain successful in the industry.

*"Our fashion brand intends to provide off-season production volume to solve the off-season problems of sewing contractor companies. Our company has an outlet distribution network. That's why we entrust the production of outlet products at a lower price during the offseason. If a sewing contractor company that deals with us goes bankrupt, there is a risk that we have to take... It bothers us." (Fb/i, similar remark interviewer: Fb/f,g,h,)*

*Investment in the business partner* It was found that fashion brands were voluntarily investing their resources in sewing contractor companies that they were in a business relationship with for a long time. The reason why it was possible for them to build such relationship with the sewing contractor companies is because fashion brands consider them as an entity of corporate growth that goes beyond just a mere business partnership. Keeping this in mind, fashion brands helped sewing contractor companies purchase new sewing machines as a way of investing their resources to their partnership with the sewing contractor companies. This phenomenon was observed because fashion brands learned through their past experience that when the sewing contractor company develop their sewing technology, their product quality would naturally improve. Therefore, the growth of sewing contractor companies eventually has a positive effect on the fashion brand's own growth in return. Thus, a fashion brand's investment in sewing contractor companies can be seen as a result of co-evolution that make both sides become successful agents in the Korean sewing industry.

*"Our fashion brand also makes investments in sewing contractor companies. Special sewing machines are also required to produce clothes for specific designs. Then, we first propose to the owners of sewing contractor companies. I think these designs will be popular in the future, and if you're willing to buy new equipment, we'll support you halfway." (Fb/c, similar remark interviewer: Fb/i,)*

*"We've been trading since the early days of brand C. As far as I know, Brand C is doing very well in the market right now, and I think our sewing contractor company has definitely helped growing that brand." (Sc/c, similar remark interviewer: Sc/b,e,)*

## Conclusions

The results of the in-depth interviews showed that sewing industry was evolving in two extreme patterns: a pattern of mass-production system and another pattern of micro-production system at sewing industry. Sewing contractor companies with micro-production were evolving by shifting their physical resources into their domestic resources, and mass producing sewing contractor companies were evolving by shifting their physical resources into their overseas resources. The fundamental cause of such evolution appears to be the cost of labor. The sewing industry is labor-intensive. Labor accounts for a large percentage of the company's operational budget. For this reason, it is difficult for the sewing contractor company to match the unit price of production that the fashion brand company asks for. Therefore, maintaining the mass production system in countries where the cost of labor is relatively high could be unrealistic. Such phenomenon can be observed even in countries where their labor cost is rising.

This study verified the possibility of co-evolution with a fashion brand in the evolution process of sewing contractor companies. There were a few co-evolution entry conditions for sewing contractor companies and a fashion brand to form a co-evolutionary relationship. In particular, it is notable that the order quantity is one factor for business compatibility, while communication is also another factor for relational resources. By nature, job manuals have limitations in expressing the artistry of fashion products in the sewing process; thus, staff members working at a fashion brand must improve their

product quality through seamless communication. Nonetheless, all the fashion brands that participated in this study were experiencing difficulty in communicating with sewing contractor companies. One of the reasons may be the phenomenon of aging employees in the Korean sewing industry. Currently, the sewing industry workers over the age of 50 take up over 70% of all workers (Statics Korea, 2017). From a different perspective, this can be advantageous since this indicates a great number of highly skilled craftsmen; however, their sense of pride in sewing skills lead to failed communication with the company. Moreover, all fashion brand staff experienced difficulties with the manner of communication, as there was a generational gap between the fashion brand and sewing contractor company. Such communication issues are likely to be common in countries that are experiencing the aging process of employees in the sewing industry. Several previous studies also show that communication skills are important factors to improve the capabilities of human resources (Ahmed et al., 2013; Raj Adhikari, 2010). Therefore, sewing contractor companies need to internally emphasize communication problem and train their members to allow fashion brands and sewing contractor companies to co-evolve.

Aside from this, in order to form a co-evolutionary business relationship, it was found that the production system of sewing contractor companies should meet the production quantity that a fashion brand asks for. This can be seen as a proof that sewing contractor companies with a mass production system and sewing contractor companies with a micro production system each have a separate evolutionary pattern. In other words, this proves that sewing contractor companies with a small production system are evolving based on their distinctive traits as separate entities and do not evolve into companies with a mass production system as their business grows. Such phenomenon implies that a similar trade pattern may manifest in countries where there are fashion brands that produce various apparel types (men's formal wear and women's dress, for example) in small quantities as well as fashion brands that plan a small variety of products in mass quantity.

Finally, it was found that fashion brands and sewing contractor companies can become highly competitive in the industry through co-evolution. In particular, through knowledge exchange, new values can be created in each field when an expert's knowledge in one field is integrated with another experts' knowledge in another field. It can play a positive role for each company to evolve together to become more competitive companies. Such findings align with the result of the previous study that sharing knowledge increases the performance of supply chain (Attia & Salama, 2018; Pal et al., 2019). Moreover, it was found that companies in a co-evolutionary relationship manifest altruistic actions such as investing in their business partner and offering production quantity during the off-season. Through this, sewing contractor companies in a co-evolutionary relationship can remain highly competitive within the industry. Currently, the fashion industry is using a strategy to quickly reproduce products that respond well to consumers in order to increase profitability (Cachon & Swinney, 2011; Cook & Yurchisin, 2017). In other words, it can be seen that a company with a system capable of producing products quickly can secure excellent competitiveness in the sewing industry. In this context,



experience optimization, which is one of the achievements of co-evolution, increases the efficiency of work. This makes products can be produced quickly. Therefore, it is considered an important result because it can have excellent competitiveness in line with the current sewing industry trend.

This implies that companies that have formed a co-evolutionary relationship, as opposed to companies that pursue a short-term relationship, have a higher chance of survival through collaborative synergy in the fashion industry. Likewise, Jahed et. al. (2022) also found that strategic partnerships, where fashion brands seek long-term deals with SCM, provide competitive advantages in areas such as flexibility, high product quality, and rapid product development and Mukhsin and Suryanto (2023) also found that long-term transactions with partner companies have a positive effect on their core business.

In this study, the theory of co-evolution, which has not been applied to apparel studies, was applied to the sewing industry. By taking environmental factors into account, we successfully derived the evolution process of sewing contractor companies and collaborative outcomes co-evolution with a fashion brand. This study has a significant value for several reasons First, it is anticipated to make a significant contribution to the field of business evolution theory. This study approaches the process of firm evolution from a new perspective, moving from the traditional research perspective of independent growth and development through internal resource enhancement (Gerhart & Feng, 2021; Varadarajan, 2020) or exploration of new resources to co-evolution with partner firms. This is important in explaining how interactions between companies evolve and develop beyond simple transactions. Notably, the survival and evolution of a company are influenced not only by internal factors, but also by collaborative partners and the surrounding environment. Thus, it proposes a framework applicable to supply chain management and industries that are sensitive to environmental changes. Therefore, it is a valuable tool for researchers studying industries affected by interdependencies and rapid environmental shifts. In addition, we have proposed a new theoretical framework for partnerships Previous studies of partnerships have either addressed how cooperative relationships in the business environment affect firm performance or have focused on the terms of trade involved in partnership entry (Gu et al., 2021; Shin et al., 2019). The significance of this study, however, is that it provides a new theoretical framework that suggests that synergies are not simply a result of matching terms of trade, but rather a result of co-evolution that accumulates and evolves in a cooperative evolutionary process between firms.

Lastly, this study divided the changes in the sewing industry into two types: mass production sewing contractor companies and small production sewing contractor companies. Through this, the evolution process was identified the ideal form for the production system. This analysis is meaningful, for it expanded the understanding of the sewing industry by identifying and conceptualizing the main factors that influenced the evolution process.

This research thoroughly describes how sewing companies evolve through cooperation with partner firms on a macro scale, yet it falls short in detailing the internal variation occurring within these companies. To bridge this gap, it's essential to integrate and scrutinize a range of internal resources, such as financial and intellectual assets, as well

as the organizational culture within these sewing contractor companies. The organizational culture, in particular, is crucial as it significantly impacts a company's capacity for adaptation and innovation in the face of external shifts. Financial resources are equally critical, enabling companies to proactively adapt to market changes through investments in new technology and employee training. Future studies should include these elements to develop a more comprehensive theoretical framework. In addition, while the interaction between environmental factors and partner firms is recognized as influential in a company's evolution, the study doesn't adequately distinguish the impacts of institutional elements from those of partner firms. Future research should examine environmental influences on firm evolution, with a specific focus on the role of institutional factors in the realm of global supply chain management. Consideration of elements such as minimum wages, trade tariffs, and international political dynamics is necessary to understand their effects on the evolution of global distribution networks.

Finally, the research mainly focuses on sewing contractor companies associated with major fashion and designer brands. However, those collaborating with smaller entities, like personal online stores or brands gaining popularity through social media, may display distinct evolutionary trajectories. Given the rising prevalence of small fashion brands propelled by internet technology and the influence of renowned influencers, studying the evolutionary processes of sewing companies allied with these emerging brands holds significant potential for future research.

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#### **Authors' contributions**

The author has read and approve the paper.

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#### **Availability of data and materials**

This study is a qualitative study of companies, which makes it difficult to disclose data. The content of the interviews contains sensitive information of companies. Since the interviews were conducted with partner companies that have actual business relationships, there is a lot of information that is difficult to disclose.

#### **Declarations**

##### **Ethics approval and consent to participate**

This research was conducted under the approval and supervision of Seoul National University Institutional (Republic of Korea) Review Board (IRB Approval No: 2002/001-005) regarding ethical issues including consent to participate.

##### **Competing interests**

The authors declare that they have no competing interests.

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**Ki Yong Kwon** is a doctoral researcher at Seoul national university in Seoul, South Korea He earned his Ph.D. in fashion marketing at the Department of Textiles, Merchandising and Fashion Design of Seoul National University. Dr. Kwon published multiple research papers, including projects that analyze the relationship between macro variables and fashion industry that affect the Korean fashion industry.