

Article

The Role of Human Resource Management (HRM) for the Implementation of Sustainable Product-Service Systems (PSS)—An Analysis of Fashion Retailers

Marcus Adam

Department of Textiles & Design, Reutlingen University, Alteburgstr. 150, 72762 Reutlingen, Germany; marcus.adam@reutlingen-university.de; Tel.: +49-7121-270-1454

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Abstract: Implementation of product-service systems (PSS) requires structural changes in the way that business in manufacturing industries is traditionally conducted. Literature frequently mentions the importance of human resource management (HRM), since people are involved in the entire process of PSS development and employees are the primary link to customers. However, to this day, no study has provided empirical evidence whether and in what way HRM of firms that implement PSS differs from HRM of firms that solely run a traditional manufacturing-based business model. The aim of this study is to contribute to closing this gap by investigating the particular HR components of manufacturing firms that implement PSS and compare it with the HRM of firms that do not. The context of this study is the fashion industry, which is an ideal setting since it is a mature and highly competitive industry that is well-documented for causing significant environmental impact. PSS present a promising opportunity for fashion firms to differentiate and mitigate the industry's ecological footprint. Analysis of variance (ANOVA) was conducted to analyze data of 102 international fashion firms. Findings reveal a significant higher focus on nearly the entire spectrum of HRM components of firms that implement PSS compared with firms that do not. Empirical findings and their interpretation are utilized to propose a general framework of the role of HRM for PSS implementation. This serves as a departure point for both scholars and practitioners for further research, and fosters the understanding of the role of HRM for managing PSS implementation.

Keywords: product-service systems (PSS); human resource management (HRM); fashion industry; sustainable business models; sustainable retail

1. Introduction

The fashion industry is a mature, highly competitive and volatile market [1,2]. The traditional fashion calendar has been expanded with more seasons and the period in which fashion products are salable has become very short. The general rise in consumers' income and the advent of e-commerce has increased consumer demand for affordable and immediately accessible clothes [3,4]. Fastness, cheapness and newness, therefore, play a key role in the survival of fashion firms [2,5,6]. Retailers try to quickly get new fashion lines at low prices into the stores which results in short product life cycles and large amounts of unsold products at the end of selling season [7,8]. Fashion firms have to compete with low predictability, high impulse purchasing and dependence on raw material cost [1,5]. Moreover, their linear production model has caused significant environmental impact. Enormous amounts of fashion items are produced, sold and disposed long before their effective lifetime has ended [9]. Large volumes of waste are generated and high input of energy, water and harmful chemicals are used [10,11]

In recent years, an increasing number of fashion firms have started to address these problems through adopting environmental standards that allow them to produce more sustainable clothes [12].

However, the use of more sustainable material and eco-friendly manufacturing techniques has turned out to be insufficient to solve the environmental problems caused by fashion. Instead, sustainable business models have increasingly gained attention to reduce the permanent need for newly produced items and thus diminish both material input and appertaining waste [13–15].

One potential alternative for companies is to shift from solely selling clothes to providing additional or substitutional service offers. For analytical purposes, such business models can be assigned to the growing research stream of product-service systems (PSS). PSS combines marketable products and services to fulfill final customer needs [16–19]. They are focused on satisfying the consumer's end desire by utilizing schemes that replace personal ownership by alternatives that promote quality and longevity [20]. This decouples customer satisfaction from material consumption since fewer volumes of material are required for value creation [16,21–23]. Besides economic dematerialization, PSS furthermore provides a potential alternative to the current unsustainable consumption patterns and may reduce consumer demand for possessing physical goods [24].

Fashion firms increasingly experiment with different PSS types [15,25,26]. Implemented PSS business models cover a wide range of examples. Some companies provide repair, redesign or make-it-yourself services to prolong the garments' lifetime, while others offer customized clothes, halfway products and kit-based clothes with detachable parts [25,27–31]. Furthermore, fashion firms have more and more started to incorporate full life cycle approaches into their business strategies by extending their responsibility beyond the point of sale and take back sold cloths at the end of their usage [26,32]. Finally, some firms have adopted the idea of the shared economy to the fashion industry through business models that permit consumers temporary access to a broad range of fashion items. Consumers are offered to rent or swap clothes through an online shop or through a permanent physical store [33–35].

Even though a mushrooming of such initiatives can be observed, the general interest of fashion firms in PSS is relatively low [25]. On the one hand, the market has yet to be developed on a larger scale since consumers are hesitant to change their well-established consumption patterns and lack understanding about potential economic benefits of PSS for them [36,37]. On the other hand, companies that consider implementing PSS face a multi-layered problem since managing a PSS business model is more complex and significantly different from producing and selling products [37]. PSS implementation requires capabilities that are new to traditional manufacturing firms and calls for a fundamental shift of corporate strategy, structures, processes and mindsets [16,21,38]. Despite the growing attention of researchers in PSS, there is still a lack in understanding of how companies can successfully manage this transformation [39].

PSS literature frequently emphasizes the importance of human resource management (HRM) since people are involved in the entire process of PSS development and the structural changes need to be borne by all employees [38,40]. Furthermore, manufacturing firms that implement PSS need to acquire new competencies through HR functions such as recruiting and training programs [41–44].

So far, however, no empirical evidence has been published that validates whether HRM of firms that implement PSS really differs from HRM of firms that solely run a traditional manufacturing-based business model. However, this is important to know in order to provide scholars a profound basis for the ongoing debate that HRM is particularly critical for firms that implement PSS. Furthermore, there is hardly any empirical or theoretical study that elaborates the role of different HRM components in detail which is particularly important for practitioners who seek to implement PSS.

The aim of this study is to contribute to closing this gap by answering two research question: Does HRM of fashion firms that implement PSS differ from HRM of firms that do not? What particular components do fashion firms that implement PSS focus on? Empirical findings are interpreted to propose a general framework of the role of HRM for PSS implementation.

To answer the research questions, HRM of 36 fashion firms that implement PSS is compared with HRM of 66 fashion firms that do not.

By doing so, this paper contributes to the general body of PSS literature since it adds deeper knowledge on the role of HRM for PSS implementation which has so far not been done. It furthermore addresses the need for more quantitative research on PSS in order to gain more rigorous knowledge [36,39,45]. Through investigating fashion PSS, this article also contributes to research on sustainability in the fashion industry. Previous studies have mainly focused on sustainable supply chains [1,11,46–48] or consumer behavior [9,27,49,50] but few have examined the adoption of sustainable business models [51]. Finally, this article provides managers a profound basis for understanding the role of HRM for PSS implementation and indicates which HR components they should focus on when developing PSS within their organization.

As an analytical framework, a resource-based view (RBV) on HRM is adopted. The RBV assumes that a firm's internal set of resources serves as source of competitive advantage and innovation [52–55]. Since many organizational key resources reside in humans, such as skills, employee behavior or learning mechanism, the role of HRM for organizational innovation has frequently been regarded in the context the RBV [56–58]. From this perspective, the contribution of HRM to a firm's success stems from a combined set of different HRM elements [58]. It encourages a more holistic understanding of HRM and, therefore, serves as a departure point for investigating the impact of HRM for PSS implementation in greater detail.

The paper is structured as follows. First, the concept of PSS is explained in detail and linked to the fashion industry. Next, the analytical framework of this study—HRM through the lens of the RBV—is presented to establish a basis for the subsequent methodology chapter and the analysis of the results. Thereafter, the findings of this study are discussed and interpreted. Finally, the article terminates with a conclusion and avenues of future research.

2. Product-Service Systems (PSS) and the Fashion Industry

PSS combines a mix of tangible products and intangible services to create value and fulfill final, so far unmet or even unknown customer needs [17]. The concept presents utilization alternatives that create value for the customer beyond personal ownership which means that product ownership is not necessarily transferred to the customer [19,24,59]. Instead, PSS embrace characteristics like durability, flexibility and ease of use [18,19,60,61].

The PSS provider may remain responsible for the product after the point of sale and the product only serves as a vehicle to deliver the offer to the customer [16,41,62,63]. Value is not created at the provider but within a value co-creation process among PSS provider, customers and other network partners in the upstream and downstream supply chain [64–66]. Customer integration is at the heart of this process. Close and permanent interaction between provider and customer is essential to determine their needs, develop an appropriate value proposition, and deliver it in an efficient way. Since PSS are new to the market, transparency and reciprocal lines of communication are highly critical to create trust and reduce consumers' uncertainties [67]. Value co-creation furthermore embraces long-term relationships with partners in the upstream supply chain since most traditional manufacturing firms have no prior service experience and are therefore reliant on partnerships that allow them to acquire the relevant capabilities [66]. Companies have different alternatives to combine products and services within the spectrum of pure service offers and the sale of sole products [68]. The most common classification of PSS has been presented by Tukker [20] and divides PSS into three different types: *product-oriented*, *use-oriented* and *result-oriented PSS*.

Product-oriented PSS refer to offers that are still based on the sale of a product in a traditional manner. However, the product is supplemented by additional services that allow optimized application and/or long-term functionality of the product [19,20,41,59]. For example, Levi's or Patagonia were among the first to provide customers the opportunity to repair their clothes and thus prolong the garments' lifetimes. Another implemented example is the take-back of used clothes. Among others, large fashion retailers like H&M or C&A provide customers the opportunity to bring their used garments and receive a voucher per donated bag. Returned garments are recycled and do not end up in

landfill. Make-it-yourself concepts are another example. Most prominently, sportswear manufacturers like Nike or Adidas offer customers to personalize and customize their shoes. *Use-oriented PSS* embraces concepts that only sell the use or functionality of a product e.g., through offers to lease, rent or share a particular product. Product ownership is thus not transferred to the customer but remains at the provider [20,69]. Since the provider bears the costs for maintenance and replacement, it prefers to develop products that remain in good conditions for a longer period of time [41]. Examples of use-oriented PSS in the fashion industry are offers to rent clothes or to provide a platform that allows customers to swap clothes. This can occur online or in-store. Most prominent examples are fashion libraries that can increasingly be found in city centers and online platforms where consumers rent particular fashion items for a special occasion [33,70]. With *result-oriented PSS*, companies sell a capability or a result that underlies the product. The result is delivered through a product which remains property of the provider and customers only pay for the output of the product, often on a pay per unit base [20]. Examples of result-oriented PSS in the fashion industry are so far rather of theoretical nature and are therefore excluded in this study.

PSS contribute to sustainable development since material input and appertaining waste are reduced to satisfy customer needs [18,19,39].

Besides environmental sustainability, PSS imply economic benefits for companies. Particularly in highly competitive markets, PSS allow companies to differentiate and better compete with cost pressure since smaller volumes of material is needed for value creation [21,23]. Furthermore, service is more difficult to replicate, which mitigates the risk of being imitated by rivals [38,60,71].

The fashion industry is an ideal setting since it is a mature and highly competitive industry that is well-documented for causing significant environmental impact [1,72]. PSS provide a promising opportunity for fashion firms to improve their competitiveness and mitigate the industry's ecological footprint. However, the market for fashion PSS has yet to be developed since consumers who have become habitual with overconsumption and short-term use of clothes encounter PSS with skepticism [27,67]. Besides external factors, internal barriers impede companies from implementation. Service offers significantly differ from the traditional fashion business model of producing and selling clothes. PSS implementation, therefore, requires firms of traditional manufacturing industries to fundamentally convert their existing structures, processes and corporate mindsets [21,38,65,70]. They need to overcome resistance to change, develop new partnerships, revenue streams and procedures to interact with customers [16,38,41]. There is still a lack of understanding on what elements drive and facilitate PSS implementation [39].

Literature frequently mentions HRM as one critical factor [40–44]. However, the relationship between HRM and PSS implementation has so far neither been empirically confirmed nor examined in greater detail. This study aims towards making a first step to closing this gap. For analytical purposes, a RBV on HRM is adopted and presented next.

3. Analytical Framework: Human Resource Management (a Resource-Based View)

PSS are new to both consumers and firms in traditional manufacturing-based industries. In an organizational context, innovation can be defined as “the adoption of an idea or behavior new to the organization” [73]. The successful development, therefore, requires new organizational conditions. Literature considers human resource management (HRM) as a key element of successful business model innovation since human factors are involved in the entire process of organizational innovation development [74,75]. HRM activities shape the skills and behavior of individuals within an organization to achieve the organization's goals [76–78]. The link between HRM and organizational innovation can be understood in the context of the RBV of the firm [56,58]. In contrast to the industrial organization view that argues that competitive advantage stems from external factors such as industry structure and positioning [79], the RBV explicitly focuses on the resources that reside within an organization as a source of competitive advantage [52,53,55,80]. According to this perspective, tangible and intangible organizational resources serve as input for generating organizational innovation [54].

This results in a competitive advantage, if the organization not only acquires but also expediently develops, combines and deploys its resources [52,54,55,80]. Human resources embrace all kinds of assets, knowledge, capabilities and organizational processes that enable the firm to implement strategies that enhance its effectiveness and efficiency [52]. Many organizational key resources rest in human resources, such as skills, employee behavior or learning mechanism [57]. Since technological and physical resources have become easier to copy by rivals, firms' human resources could become a more decisive factor of achieving competitive advantage [81,82]. Thus, the RBV has underpinned the legitimacy of HRM for strategy research and has become the prevalent approach to investigate the impact on human factors on organizational output [58]. It has encouraged a more holistic view on HRM that argues that competitive advantage does not originate isolated in HR practices but needs to be considered as a combination of human capital elements, employee behavior and supporting people managing systems [58,83].

3.1. Human Capital

Human capital comprises characteristics such as skills, education and experience possessed by an organization's individuals at a given time [84–87]. It can be aggregated to a unit-level resource that contains the accumulative individual human capital within teams, groups or the entire organization in a way that creates value for the firm [88]. This stock changes over time and needs to be aligned with the strategic orientation of a firm [58]. Compared to physical and financial capital, the uniqueness of human capital resides in the fact that employees cannot be separated from their personal skills, knowledge and capabilities [89].

3.2. Employee Commitment

However, a high level of human capital is not necessarily beneficial for the firm. Simply aggregating the human capital of individuals to a collective level fails to explain how the individual human capital leads to superior organizational human capital [87]. If not all members of the human capital pool engage in behavior that is beneficial for the firm, human resources are not efficiently deployed [58]. Regardless of their personal skills, employees take individual decisions on their behavior and commitment to the firm. This commitment plays a significant role for organizational innovation [90] and can be separated into affective commitment and continuance commitment [91]. Employees with a strong affective commitment have an emotional bond with the organization and stay with it because they want to do so [91,92]. This is reflected in identification with the firm, pride to be part of the firm, and the desire and willingness to exert efforts so that the firm achieves its goals [93]. Employees develop affective commitment to a firm if associating with this particular firm allows them to satisfy their primary needs; provides prestige, responsibilities, challenges; and enables them to achieve their personal career goals [92,94–96]. Affective commitment is specific to the particular firm and is considered to increase its performance [97–100]. It is a driver for motivation and presents the foundation for identification, job satisfaction and shared values among employees in an organization [95,100]. In contrast, continuance commitment refers to an employees propensity to stay with the firm because leaving the firm could entail a potential loss or costs for them [91]. Employees whose primary attachment to the firm is based on the need to stay, have little inducement to work hard and generate value for the firm [92]. Continuous commitment is, therefore, assumed to be negatively or unrelated to job performance [97,101]. Only employees who are emotionally attached to the firm will fully utilize their skills and exploit their potential [56].

3.3. People Management Systems

Employees join and leave the company and employee commitment may change due to individual, intra-organizational or environmental changes [58]. The human capital pool is built and employee commitment is elicited through various HR practices [56,88,102]. HR practices comprise of activities such as staffing, training, rewards, career opportunities, employment security, profit-sharing and

participation [74,83,103,104]. While each practice alone can increase firm performance [105], single practices are easy to be imitated by rivals [52]. Moreover, if single practices are pursued independently, they fail to generate synergetic effects. The impact of interconnected HR practices on organizational value creation is greater than the aggregated effect of the individual practices [74,106].

Therefore, a holistic HRM approach focuses on systems of multiple, integrated and interrelated HR practices [58,107–109]. Such an integrated system of interdependent elements is difficult to copy by rivals since it is firm-specific, path dependent and socially complex [110]. This bundle of practices can be referred to as the “people management system”. It aims at combining human capital elements with employee behavior, but also shapes elements beyond the control of HR functions, such as culture, competencies and attitudes [58]. It builds up the human capital pool and influences employees’ willingness to exploit their personal potential. Thus, it embeds human capital within a broader organizational context to create value for the firm by efficiently combining human capital elements with strategic pertinent employee behavior [58]. From this perspective, HRM can be viewed as a complex and coherent system that consists of three interrelated elements: human capital, employee commitment and people management system (Figure 1).

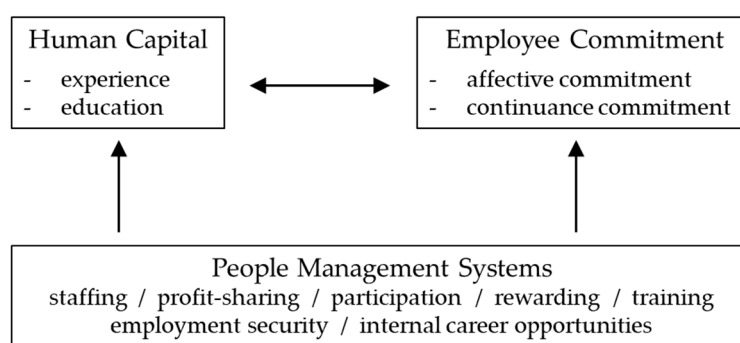


Figure 1. HRM of the firm.

The RBV has faced a lot of criticism i.e., for being too static, not directly allowing managerial implications and not taking external factors like the demand side into consideration [111,112]. However, given the aim of this research, the RBV has been found as a suitable approach because this study only focuses on the internal aspects of fashion firms that implement PSS, which is greatly needed since previous research on fashion PSS is mainly concerned with consumer adoption [27,113–115]. Taking a RBV on HRM has the advantage to provide a clear structure of internal HR components that are critical for a firm’s success and, therefore, serves as an ideal framework to identify, compare and analyze different HRM elements.

This is appropriate since PSS literature recognizes the importance of HRM aspects for PSS implementation that can be clustered into human capital, employee behavior and supporting people management systems. For example, PSS literature indicates that education and training of the existing company personnel needs to be carried out at the initial stage of PSS implementation since firms that implement PSS need competencies, skills and experiences that are different to those required for manufacturing activities [37,40,43,44]. It is furthermore claimed that the shift from transaction-based to relationship-based value creation requires a passionate service culture within the organization [38]. Organizations with a greater service orientation have preambles boundaries between themselves and their customers since employees and customers closely interact [116]. Organizational culture and employee experience is, therefore, directly transmitted to the customer, which makes it essential to avoid internal conflicts and create a common mindset [38,117–119]. However, PSS literature on HRM is so far mainly limited to simply acknowledging the role of HRM for PSS success, but misses to present empirical evidence or deeper theoretical elaboration on this issue. It remains unclear whether firms that implement PSS really have different HRM and how their HRM looks like. The aim of this study is

to close this gap by answering two research question: Does HRM of fashion firms that implement PSS differ from HRM of firms that do not? What particular components do fashion firms that implement PSS focus on?

For analytical purpose, the framework depicted in Figure 1 is adopted to compare firms that implement PSS with firms that do not in terms of human capital, employee commitment and people management system. By doing so, this article contributes to the general body of literature on PSS. It adds knowledge on the crucial question of how manufacturing companies manage to successfully develop PSS [39]. Previous research on PSS has mainly focused on case studies or conceptual articles [36]. This paper addresses the need for more quantitative research on PSS in order to gain more rigorous knowledge [36,39,45]. Furthermore, this article contributes to research on sustainability in the fashion industry which is mainly focused on sustainable supply chains [1,11,46–48] and consumer behavior [9,27,49,50]. Little attention has so far been paid to investigating sustainable fashion business models [51] with most articles limited to case studies [14,15,26,120–122]. Finally, this paper has managerial implications by providing a framework of HR components that are critical for PSS implementation. This serves as a profound base for practitioners to discuss, manage and understand the role of HRM for PSS implementation.

4. Methods

4.1. Sampling and Data Collection

The aim of this article is to determine whether HRM of fashion firms that implement PSS differ from HRM of firms that do not, and what particular HRM components fashion firms that implement PSS focus on. Furthermore, this study wants to shed light on the particular HRM components that fashion firms that implement PSS focus on. For this purpose, Analysis of variance (ANOVA) will be conducted to compare HRM of fashion firms that implement PSS with fashion firms that do not. Data were collected through an online questionnaire as part of another research project [25]. The sampling frame includes all fashion firms in the business-to-consumer market, regardless of size, scope of business and country of origin. The survey addressed executive level personnel since answering the questions requires profound knowledge of the sample firm and its employees. Non-probability snowball sampling technique was applied. It is considered to allow higher response rates when data is needed from a population that is difficult to get access to [123]. First, a list of executive level personnel that is personally known by affiliated researchers and practitioners was compiled. These contacts served as initial “seeds” and helped to get access to other respondents [124]. The link to the online questionnaire was sent to their personalized email address. They were asked to participate and forward the link to other executives who they personally know. As it is difficult to receive completed surveys by employees of many different firms at a large and relatively comparable number, the aim was to get response from one representative from as many fashion firms as possible, to obtain a consistent and comparable set of data since measures on HRM are perceptual (Section 4.2.2.). The period of time for collecting response was from May to July 2016. After data collection, the sample was divided into firms that implement PSS and firms that do not (Section 4.2.3. Measures: PSS implementation).

Data collection was anonymous and the researcher did not know the name of each person that was contacted. For this reason, it could happen that firms (especially larger firms) were represented more than once because the link had been sent to more than one person of the same company. If descriptive data were similar to each other, one data set was eliminated to ensure that only one data set per firm included. In total, 109 replies were received. Seven had to be excluded since they were incomplete or represented twice. Thus, the final sample comprises 102 replies of representatives from 102 fashion companies.

4.2. Questionnaire

4.2.1. Descriptive Data

All questions were formulated in English. The questionnaire was anonymous and it was possible to skip questions on descriptive company information. This opportunity was provided to allow companies that were unwilling to state sensitive data to participate in the study. In a drop-down list, respondents were asked to assign their company's major scope of business to one of seven predefined segments; choose their position in the company according to the classification of the EEO-1 job classification guide [125]; and state the home country of their company's headquarters, its turnover and number of employees. Small and medium-sized enterprises (SMEs) cannot be managed along the same management principles as large firms [126,127]. Due to resource poverty, effective HRM of SMEs differs in scale, practice and strategic approach from the HRM of their larger counterparts [126,128,129]. However, there is no consensus on that. Some studies report mixed results [130] or indicate that the same HRM practices are equally important for both large and small firms [131]. Others find that HRM practices are generally equal but in smaller firms they are less formal [132]. Given this discordance, the sample was divided into two groups in order to avoid a potential bias when comparing HRM of firms that implement PSS and firms that do not: SMEs and large firms. There is no globally unified definition of SMEs and the distinction between SMEs and larger firms can be based on various criteria [133]. In Europe, the characteristics of SMEs are defined in the EU recommendation 2003/361 and re classified by number of employees, turnover or balance sheet total [134]. According to this definition, SMEs have less than 250 employees and a turnover of less than 50 million per year. This classification was adopted in this study when separating SMEs and large firms of the sample resulting in 65 SMEs and 37 large participating firms. The descriptive data of the sample firms are presented in Table 1.

Table 1. Descriptive data of sample firms.

SMEs (n = 65)			
Home Country in %		Respondent's Characteristics in %	
Germany	44.6	Executive/Senior Level Official	83.1
USA	10.8	First/Mid Level Official/Manager	9.2
Denmark, UK	each 9.2	Professional, Technician	each 3.1
Italy	7.7	Sales Worker	1.5
Sweden, Switzerland, Finland, Netherlands, Brazil, Bulgaria	each < 5		
Major Scope of Business in %			
Others	23.1	Fast Fashion	10.8
Premium	21.5	Luxury	7.7
Sport	20.0	Outdoor	3.1
Shoes and/or accessories	13.8		
Large Firms (n = 37)			
Home Country in %		Respondent's Characteristics in %	
Germany	35.1	Executive/Senior Level Official	64.9
Sweden	16.2	First/Mid Level Official/Manager	27.0
Brazil, Switzerland, USA	each 10.8	Administrative Support Worker	8.1
France	8.1		
UK	5.4		
Italy	2.7		
Major Scope of Business in %			
Premium	32.4	Fast Fashion	13.5
Outdoor	18.9	Shoes and/or accessories	8.1
Others	16.2	Sport, Luxury	each 5.4

4.2.2. Measures: HRM

To measure the HRM performance of the sample firms, HRM was divided into three constructs: human capital, employee commitment and people management systems. The items of each construct were measured through a self-rating five-point Likert scale with 1 = strongly disagree to 5 = strongly agree. A five-point Likert scale was chosen since it is less time consuming for the respondent and generates data of higher quality than data measured using a seven-point Likert scale [135]. The questions of all constructs are based on existing scales that have been tested in previous studies. The survey was kept as short as possible since executives, the key respondents of this study, are busy people and are not likely to participate in completing an academic survey if it takes too long. Pre-tests of all items pertaining to each scale were conducted through face-to-face discussions with academics and practitioners to ensure that the questions were self-explanatory enough to complete the survey without any personal instruction. Incomprehensible or problematic items were revised or eliminated.

For measuring the people management system, a scale presented by References [83] and [104] was applied. People management systems were divided into seven items: staffing (*"great efforts are taken to select the right person"*), training (*"extensive training programs are provided for individuals"*), profit-sharing (*"employees receive bonuses based on the profit of the firm"*), rewards (*"employees receive bonuses based on their performance"*), participation (*"employees are allowed to make many decisions"*), job security (*"employees can usually expect to stay in the firm as long as they wish"*) and internal career opportunities (*"employees have different positions they could be promoted to in the future"*). Human capital was measured by two dimensions: level of education and industry-related experience [85,86,136,137]. Three questions were posed: *"Our employees have long experience in the fashion industry"*, *"our employees have long experience outside the fashion industry"* and *"our employees are highly educated"*. For measuring employee commitment, affective commitment and continuance commitment were interrogated [138,139]: *"Our employees appear to be 'emotionally attached' to this firm"* (affective commitment) and *"our employees have many options to consider leaving this organization"* (continuance commitment, reverse).

4.2.3. Measures: PSS Implementation

To compare the HRM of firms that implement PSS and firms that do not, the attitude of the sample firms towards PSS was examined. For this purpose, five different fashion PSS scenarios were presented to the participants: repair service, redesign service, take-back of used garment, make-it-yourself, and renting. The different concepts were chosen since they are among the most popular examples of fashion PSS, are easy to understand for the participants and have already been tested previously [35]. The concepts were precisely explained (Table 2) and participants were asked to state whether their firm (a) has already implemented this concept, (b) considers implementing this concept, (c) has discussed but discarded implementing this concept or (d) has not discussed implementing this concept yet. For analytical purpose, companies were post hoc separated into firms with a positive attitude towards PSS implementation (companies that have already implemented at least one concept and companies that consider implementing at least one concept) and firms with a negative/neutral attitude towards PSS implementation (companies that have discarded or not discussed implementing all concepts). In sum, 66 companies had a negative/neutral attitude and 36 a positive attitude towards PSS implementation. These two overarching groups were subdivided by size which resulted in the four groups that are investigated in this study: SMEs with a negative/neutral attitude ($n = 42$), large companies with a negative/neutral attitude ($n = 24$), SMEs with a positive attitude ($n = 23$) and large companies with a positive attitude ($n = 13$). This can be done since there is no equal sample size assumption for ANOVA [140].

Table 2. PSS concepts and explanation presented in the survey. Adopted from Armstrong et al. (2015).

Concept	Explanation	PSS Type
Repair service	Provide repair service of purchased clothing for a fee; and/or offer a warranty/maintenance service for a fee that includes repair and/or tailoring alterations to improve fit for a couple of years.	Product-oriented
Redesign service	Provide re-design service that transforms the original garment into a new fashion item.	Product-oriented
Take-back of used garment	Customers can return (online or in-store) used clothing and receive a discount for new clothes or a cash coupon.	Product-oriented
Make-it-yourself	Customers can create their own designs e.g., by ordering a fashion kit, containing all the necessary material, trim, thread, and tools to assemble the garment the way they desire. Customers can create their own design by combining (online or in-store) individually different materials, colors, designs etc.	Product-oriented
Renting	Customers can rent or lease clothing for a certain time period (e.g., by becoming a member and receive a certain number of clothes per month for a monthly fee or by renting single items and being charged a certain fee per day/week/month).	Use-oriented

5. Results

The aim of this study is to determine whether HRM of fashion firms that implement PSS differs from HRM of firms that do not. Furthermore, this study aims at identifying the particular HRM components that fashion firms that implement PSS focus on. Analysis of variance (ANOVA) was conducted to compare the mean scores of the sample firms' attitude towards PSS (categorical variable) and their human resource practice (continuous variable) at the time of the study [141]. The sample size is sufficient for conducting ANOVA [142]. Cronbach's alpha was found to be 0.790, which is higher than the critical value of 0.7 and thus indicates that the measurement of this study is acceptable in terms of reliability [143]. A Kaiser-Meyer-Olkin (KMO) value of 0.888 and Bartlett's test of sphericity significant at $p < 0.01$ prove sampling adequacy of this study [144]. The one-way ANOVA reveals some general differences of HRM between SMEs and large companies. Large firms significantly score higher in staffing, rewards, profit-sharing and job security than SMEs, while SMEs demonstrate a higher mean value in employee participation and internal career opportunities. In terms of attitude towards PSS, firms that implement PSS demonstrate significantly lower mean values of human capital, employee commitment and people management systems than firms that do not regardless of firm size (Table 3). The greatest differences are determined in employee's experience outside the fashion industry (2310 and 2583 to 3522 and 3539), employees' level of education (3619 and 3125 to 4304 and 4308), employee commitment (3381 and 3333 to 4174 and 4308), the existence of training programs (3310 and 3375 to 4044 and 4692) and employee participation (2857 and 2708 to 3652 and 3231). Only slight differences can be observed in employees' experience inside the fashion industry (4071 and 4250 to 4261 and 4692), staffing (3691 and 4167 to 3783 and 4692), profit sharing (2667 and 3292 to 3174 and 3846), rewards (3000 and 4208 to 3609 and 4462), job security (3357 and 4375 to 3565 and 4539) and internal career opportunities (3571 and 3333 to 3957 and 3770).

Thus, results empirically confirm that firms that implement PSS pursue significantly different HRM than firms that solely focus on producing and selling. Moreover, results indicate that firms that implement PSS stronger emphasize nearly all HRM components than firms that do not. In the following section, these findings are discussed and a potential explanation is provided. Empirical findings and their interpretation are utilized to propose a general framework of the role of HRM for PSS implementation.

Table 3. Results of ANOVA.

	Negative/Neutral Attitude				Positive Attitude				F
	SMEs (n = 42)		Large Companies (n = 24)		SMEs (n = 23)		Large Companies (n = 13)		
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F
Human capital	3.333	0.409	3.319	0.268	4.029	0.437	4.179	0.443	29.118
Experience inside fashion industry	4.071	0.601	4.250	0.608	4.261	0.449	4.692	0.480	4.139
Experience outside fashion industry	2.310	0.680	2.583	0.584	3.522	0.665	3.539	0.660	23.690
Education	3.619	0.622	3.125	0.448	4.304	0.559	4.308	0.480	22.960
Employee commitment	3.381	0.572	3.333	0.408	4.174	0.514	4.308	0.434	22.398
Affective commitment	3.476	0.634	3.291	0.624	4.217	0.518	4.308	0.480	16.335
Continuance commitment (reverse)	3.286	0.673	3.375	0.495	4.130	0.694	4.308	0.480	15.883
People Management System	3.206	0.401	3.637	0.253	3.683	0.292	4.165	0.329	30.315
Staffing	3.691	0.680	4.167	0.482	3.783	0.422	4.615	0.506	10.800
Training	3.310	0.715	3.375	0.576	4.044	0.367	4.692	0.480	23.162
Profit sharing	2.667	0.650	3.292	0.550	3.174	0.650	3.846	0.555	14.091
Rewards	3.000	0.698	4.208	0.588	3.609	0.583	4.462	0.660	27.027
Participation	2.857	0.683	2.708	0.550	3.652	0.647	3.231	0.725	10.303
Job security	3.357	0.618	4.375	0.495	3.565	0.728	4.539	0.519	22.162
Internal career opportunities	3.571	0.703	3.333	0.482	3.957	0.767	3.770	0.439	3.963

Note: significant at $p < 0.01$.

6. Discussion

Results reveal a higher focus on nearly the entire spectrum of HRM components of firms that implement PSS compared with firms that do not. The subsequent discussion provides step by step potential explanations of the findings and concludes with a general HRM framework for PSS based on the empirical findings and their interpretation.

6.1. Human Capital

Results indicate that fashion firms that implement PSS put great effort into selecting employees, which results in a high degree of human capital in terms of education and experience. In general, fashion firms are reliant on employee education. They compete in a highly specialized business environment that requires them to immediately react to changing market demands. A skilled and well-educated workforce that allows a continuous, creative output at a low failure rate is, therefore, a decisive success factor [145–147]. Given the rapid knowledge obsolescence, firms need to employ professionals that are current in their field but also bring along the educational background to keep pace with accelerated business developments [148,149]. This embraces the entire spectrum of creative, technical and business functions along the fashion value chain [150]. However, while in the traditional fashion manufacturing business, employees mostly carry out routine tasks within a specialized field of work; PSS implementation requires firms to incorporate more flexible approaches and fundamental different procedures [118,151]. Employees need to manage new value propositions, delivery channels, revenue streams, and ways of customer interaction and cooperation in both the upstream and the downstream value chain [16,36,66,152–154]. A high degree of flexibility is necessary to efficiently handle customer relationships and react to their needs [155,156]. An explanation for the significant higher employee education of fashion firms that implement PSS could, therefore, be that employee education plays an even more decisive role in introducing new business models such as PSS [149]. Employee education and a diverse knowledge base of employees is positively related to employees' knowledge creating capabilities and their cognitive reasoning skills, which is considered to be a source of product or service innovation [157]. Well-educated employees demonstrate a greater potential to acquire new knowledge, reflect on their existing knowledge, anticipate future events, evaluate outcomes, and manage time and resources [157–160]. They are more likely to travel, read widely and are involved in inter-organizational exchange which broadens their awareness of occurrences beyond

their original field of activity [161–163]. They proactively seek out ways to improve their organization and are more receptive to new ideas [158,164].

While results reveal no significant difference in employees' experience inside the fashion industry, firms with a positive attitude possess a greater pool of employees that are experienced outside the fashion industry. Industry-specific experience of employees is generally considered a substantial source for a firm's success, growth and survival [85,165]. Employees that are experienced with different industry-specific occurrences perceive less risk because they usually encounter familiar problems while working [136,166]. They bring in both explicit knowledge and tacit knowledge to solve challenges specific to the particular industry [167]. Personal and practical experience allows them to anticipate, predict and handle different occurrences in their domain [168,169] and, therefore, plays an important role for opportunity recognition [158,170,171].

However, many skills, networks, access to key information, and technological or marketing knowledge that have been acquired in the traditional fashion industry context are likely to be useless when implementing PSS since PSS are new to the fashion industry. Fashion firms usually have no prior experience in service transactions. The skills, knowledge and competencies for managing PSS are considerably different from those required for producing and selling products, which entails a great lack of skilled personnel in PSS development within the industry [40–42]. Prior experience in the fashion industry does not necessarily imply that employees have developed skills and experience in innovating and restructuring business models since the fashion industry is characterized by a relatively low, sustained innovation pace [172,173]. This makes PSS implementation difficult for companies that possess a stock of employees that are only experienced in the fashion industry since they are not experienced with radical changes but are used to carrying out routine tasks.

Employees may unintentionally stick to working practices that are commonly accepted and useful within the industry but that are less helpful for implementing a completely new business model [158,164,174]. In contrast, employees with experience outside the fashion industry, particularly from service-oriented areas of work, bring knowledge, skills and mindsets into the organization that can be conducive to PSS development.

6.2. People Management System

Firms that implement PSS score high on people management systems to generate employees' readiness to involve themselves into the organization with enthusiasm and conviction. One explanation for the results is that measures such as training, profit-sharing, participation, employment security and career opportunities contribute to nurture employees' motivation, which has frequently been recognized as crucial for PSS implementation [175–178]. Motivation refers to the factors that influence the discretionary behavior of employees, the intensity of effort they put into work and the reasons why they do something [179]. It can be differentiated into intrinsic and extrinsic motivation. Extrinsic motivation occurs if an employee's desire to perform is driven by external outcomes that he would not attain from intrinsic motivation and is usually associated with any monetary rewards such as regular or bonus pay [180–182]. In contrast, intrinsic motivation refers to employees' motivation to engage in a behavior that arises from the self-desire to do something because it naturally provides a prospect of an emotional effect such as satisfaction or joy [182–184]. Employees that are intrinsically motivated appreciate the work and their work environment itself [179]. The intrinsic motivation of employees has been recognized as a critical determinant for PSS implementation [118] since employee behavior directly influences customers satisfaction due to the permeable boundaries of service-focused organizations [116,185,186].

To understand how intrinsic motivation is created, self-determination theory serves as a suitable approach since it conceptualizes the social-contextual conditions that facilitate the processes of self-motivation inherent to individuals [182,187,188]. Central to self-determination theory is the differentiation between autonomous motivation, under which people feel that they behave volitionally to satisfy their own needs, and controlled motivation, under which people feel pressured to satisfy

external demands [182]. Intrinsic motivation can be regarded as autonomous motivation since people engage in an activity to fulfill personal interests [189].

Self-determination theory proposes three universal and innate needs of individuals that are essential for psychological health and personal well-being: the need for autonomy, competence, and relatedness [182,189]. They are nutrients for intrinsic motivation and people will actualize their intrinsic motivation if those needs are satisfied [190,191]. The need for autonomy is met if individuals perceive their behavior as freely chosen and volitional [189,191,192]. People will experience competence if they feel skillful, effective and confident in the activities they perform [192]. The need for relatedness is satisfied if individuals feel accepted, understood and socially attached to a wider system [189,193]. To optimally nurture and elicit the intrinsic motivation of employees, firms should create a work environment that allows employees to satisfy those needs [194,195]. Firms that implement PSS have adopted various HR practices for that purpose. They score high on employee participation, job security and profit-sharing, which are all mechanisms that reinforce employees' satisfaction of the need for relatedness.

First of all, employees that are empowered to participate have a voice in the affairs of the firm [179]. To be involved in the decision making of the organization provides them with the ability to influence their working conditions and directly contribute to their firm's success. It furthermore indicates being significant to others and implies an experience of trust and recognition for the work performed [118,179,196]. This makes employees develop a feeling of connectedness and solidarity with their employer. Likewise, job security is conducive to the satisfaction of the need for relatedness. Employees can develop a mutual history with their organization, take on responsibility and suggest improvements without the fear of job loss [197,198]. Furthermore, profit-sharing is considered to increase the organizational relatedness and identification [199]. It makes employees more aware of the firm's interests and promotes the perception of shared values which strengthens the bond between employees and organization [200]. While firms that implement PSS score high on profit-sharing, they interestingly also score high on financial rewards that are based on individual performance. This is surprising since rewards can impede employees' satisfaction of the need for autonomy [201]. Employees that undertake interesting tasks are already autonomously motivated which makes both monetary or nonmonetary incentives redundant to foster their motivation [202,203]. Rewards can even have an adverse effect and reduce employees' intrinsic motivation because they can be perceived as a signal that the task or function is unappealing since otherwise no incentive would be needed [201,204,205]. One explanation for the results of this study could be that most PSS providers have a traditional manufacturing background and still run a production-focused business model as their core business but have founded a separate unit for PSS [60,206]. In manufacturing industries, rewarding of employees is commonly based on objectively measurable output [184]. Given the complexity of service processes and service business ecosystems, the quality of service output and the contribution of the individual employee is more difficult to measure [118,207,208]). However, firms may still continue their established system and have not yet fully integrated their organizational manufacturing with their service-focused processes [118].

Secondly, firms that implement PSS provide extensive training which positively affects employees' satisfaction of the need for competence [209]. The ability to further improve their personal competence makes employees perceive a higher level of job security and feel more secure in terms of employability and their future career [210]. This increases their autonomy and confidence which has a positive impact on the motivation to apply their skills and proactively engage in new challenges [211,212]. Particularly in service-oriented organization, employees feel proud of their competences when they have the ability to use their skills to solve customer problems and directly receive customer feedback [118].

Training furthermore strengthens the relatedness since employees that are provided with the opportunity to personally grow feel important and taken care of by their organization [212–214].

Thirdly, the need for autonomy is satisfied if employees experience their work as fulfilling and perceive the tasks they perform as meaningful, exciting and personally interesting [118,182,183,215]. This is based on the feeling of not being controlled or pressured and having a high degree of freedom of choice [182,216]. The extensive training opportunities and high level of participation foster autonomy since employees become capable and empowered to independently make decisions and assume responsibility [216]. Just like training and participation, internal career opportunities are positively related to employees' perception of autonomy, on the condition that specific interests of individual employees are taken into consideration when job vacancies need to be filled [217]. The good internal career opportunities that firms that implement PSS offer, signal appreciation and career security to employees [218]. This allows them to freely decide on their future career path, increases their perception of autonomy and enables them to put their effort into quality initiatives rather than concerns about their career [219]. Interestingly, small firms score higher than large firms. One explanation could be that in small firms each employee mostly has more individual responsibility and holds various functions that require more general skills while their counterparts at large firms need more firm-specific and specialized knowledge [220,221]. This opens greater opportunities for individual choices and more flexible career paths for employees in small firms [221]. Given the very slight difference between firms that implement PSS and firms that do not, results indicate that good internal career opportunities are not distinctive to fashion firms that implement PSS. This observation could be particular to the fashion industry, which is documented for being highly competitive [1]. For sustained success it is, therefore, decisive to retain skilled employees through providing employees individual career development [150]. However, it is striking that, in sum, firms that implement PSS score higher on different HR practices that nurture employees' satisfaction of the need for autonomy, competence and relatedness which, in turn, buttresses employees' intrinsic motivation that is fundamental to PSS success.

6.3. Employee Commitment

Need satisfaction also positively affects employees' commitment which could explain why employees of firms that implement PSS demonstrate high commitment to their organization [190,222]. They seem to be emotionally attached to their organization and do not tend to leave the firm even if they have other opportunities. The fashion industry faces one of the highest employee turnover rates of all industries and many employees consider their current employment as temporary and do not feel bonded to their employer and their customers [223]. However, satisfied employees and long-term employment are extremely important for PSS implementation which could explain why firms that implement PSS emphasize ways to retain their personnel.

First of all, low employee turnover and employee satisfaction play a significant role for customer satisfaction since satisfied employees are more motivated to provide excellent service to customers [224,225]. Customer satisfaction and customer loyalty are the most significant determinants for PSS success since retaining existing customers is less costly than acquiring new ones [118,226]. Given the complexity of the PSS value proposition, satisfied and loyal customers are also critical to further promote consumer acceptance through word-of-mouth behavior [226–228]. Customer satisfaction occurs through a process of value co-creation between customers and employees of the PSS provider. Mutual long-term relationships, integration and participation of customers rather than sole transactions are at the heart of this process [60,64,229,230]. PSS provider should continually seek and absorb customer feedback to reshape their value proposition and match the actual customer needs [231,232]. Employees are the primary link to customers in this value chain since they directly interact with the customer [233,234]. The value of the customer feedback that is gained depends on their ability to make customers feel comfortable and openly discuss their wishes and suggestions for further improvements. This is especially important since consumers generally lack knowledge on PSS [67,235,236]. The solution-based idea behind PSS contradicts the well-established societal norm of possessing physical goods, which is often perceived as a determinant for one's individual success within a society [36,237,238]. Particularly in fashion, individuals use clothes to express their personality,

highlight their affiliation to a certain peer group or seek uniqueness [239]. Fashion consumers are, therefore, hardly receptive to fashion PSS models. They mistrust the motivation of the provider, are afraid of hidden financial costs and demonstrate concerns about cleanliness and hygiene since clothes are worn next to the skin [35,238,240–243]. This makes a clear communication of the value proposition to one of the most critical determinants for PSS adoption of the consumer [67,244,245]. This requires employees to understand their clients' uncertainties and mitigate their skepticism by credibly outlining the motives, background and liabilities of the provider [67]. Reciprocal lines of communication, long-term relationships and personal bonds are important to encourage customers to provide feedback on the offer and share information on their needs or discomforts [67,246,247]. A higher degree of commitment, identification with the organization and length of employment allows employees a more credible and authentic communication with customers.

Secondly, the process of value co-creation does not only apply to the dyadic customer-employee interaction but embraces all economic and social actors that interact within PSS networks [248]. The venue of value creation is the value configuration in the social setting among all entities in both the upstream and downstream supply chain [66,245,248]. Firms need to efficiently share information, combine resources and build up strong networks based on long-term relationships [245,249]. These collaborative partnerships are often rather informal and amicable relationships with little bureaucratic administration and implicit contracts [70]. They are based on affective trust which evolves from an individual's feelings of emotional and personal involvement in a social relationship and is developed over the long term [250–252]. Business partners will more easily build up trust and are more amenable to share knowledge when they are emotionally involved in relationships with individuals they personally know for a long time. These informal contacts between employees are the centerpiece of knowledge exchange between firms [253]. Long-term commitment of employees to the organization is, therefore, highly critical for realizing the value creation of PSS.

Thirdly, the concept of PSS generally underlies a long-term orientation regarding investments and revenue streams [153]. Short-term employment contradicts the general PSS perspective of long range planning. PSS establishment is costly for traditional fashion firms since it requires them to invest in building up a suitable infrastructure in terms of reverse logistic or distribution channels while facing uncertainties about cash flows and a longer time to market [27,153,254,255]. Firms need to implement new performance measures, significantly invest in training and restructure their organizational culture [236,256]. Furthermore, a common internal language and alignment of employees' mindsets towards a service-oriented culture is critical [38]. Organizational culture is rather developed through interpersonal exchange of employees and group experiences than through formal guidelines and rules [257]. The loss of employees poses a threat since the recruitment of new employees is not only difficult, costly and time consuming but also accompanies great efforts to assimilate the new employee into this particular PSS culture. The interplay of the people management system, human capital, employee commitment, need satisfaction and intrinsic motivation for co-creating value in PSS is depicted in Figure 2.

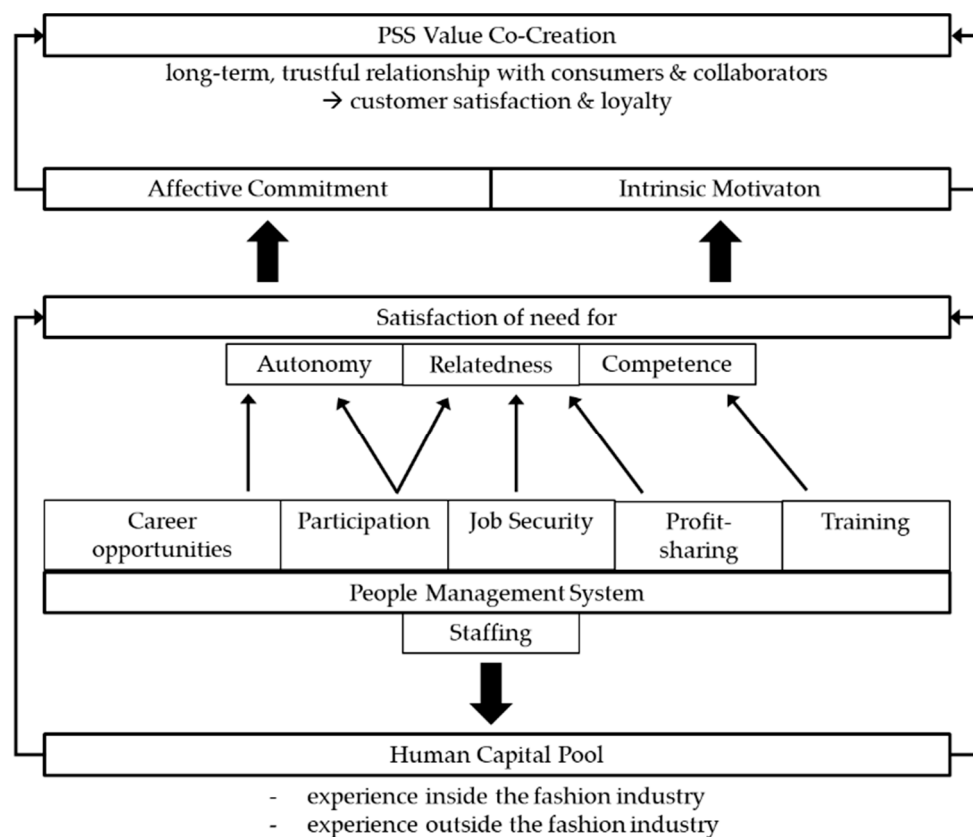


Figure 2. The role of HRM for value co-creation in PSS.

7. Conclusions, Limitations and Further Research

The aim of this study is to examine whether and in what way HRM of fashion firms that implement PSS differs from HRM of firms that continue producing and selling. Results reveal a significantly higher focus on nearly the entire spectrum of HRM components of firms that implement PSS compared with firms that do not. Empirical findings were discussed to propose a general framework of HRM for PSS implementation. It emphasizes the role of a well-educated human capital pool that constitutes employees with both experience inside and outside of the fashion industry. Particularly, experience outside of the fashion industry has turned out to be important since fashion firms usually have no prior experience in service transactions. Furthermore, people management systems have been determined critical to shape and exploit the human capital pool. Particularly measures of participation, profit-sharing, training, a high level of job security and internal career opportunities have been found to be important since they nurture employees' satisfactions of need for autonomy, competence and relatedness. This is conducive to employees' intrinsic motivation which is considered a fundamental factor of PSS success [118]. Findings also indicate that employees of firms that implement PSS demonstrate a higher level of affective commitment which is important for the process of value co-creation and to build and maintain trustful relationships with both collaborators and customers.

This study contributes to PSS literature by adding knowledge on the previously underexplored role of HRM for PSS implementation. It provides empirical affirmation that HRM of firms that implement PSS differs from HRM of firms that do not. This is also important for research on sustainability in the fashion industry since little attention has been paid on sustainable business models from a company perspective. For practitioners, findings provide a framework of HR components that are fundamental for PSS implementation. This facilitates managing and understanding the role of HRM in PSS when seeking to leverage a service-oriented fashion business model.

This study is subject to a number of limitations and provides avenues for further research. First of all, self-reported data of executive personnel were used. A potential survey bias could not be excluded since respondents' perception and answers are not necessarily objective. Future research should use a similar survey that is completed by employees to verify that the executives' perception concurs with employees' perception. There is also no guarantee that the executive personnel personally completed the survey. Future research could use an on-site survey method with one researcher assisting the respondent when filling out the questionnaire. Furthermore, the snowball sampling method applied in this study entails a potential selection bias since the sample composition is always affected by the initial seed and tends to be biased towards more cooperative or better connected participants [123]. To guarantee representativeness and generalizability of the result, future research could apply a random sampling method.

Secondly, this study is based on data of fashion firms. Given the relatively low dissemination of PSS and the particular characteristics of the fashion industry, future research could expand on other industries—particularly those with a higher degree of PSS dissemination—and examine differences across firms from different industries. This is important since firms from traditional manufacturing industries that already have higher degree of servitization do not necessarily have to draw upon employees' experience outside of their industry or might put less effort in training measures but emphasize other activities.

Thirdly, this study did not measure whether firms that have already implemented PSS are successful. To enrich the practical implications of this study, future research should find out whether and what particular HR components investigated have the greatest impact on PSS success.

Finally, qualitative research on the particular HR components is greatly needed to generate a deeper understanding of how firms that implement PSS manage them: How do firms encourage employees to participate in decision-making? What kind of training is provided to employees? How do profit-sharing programs look like in detail? etc. Future research could conduct interviews with executives and employees or make on-site visits to elaborate these activities in greater detail.

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