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Sustainable Fashion Supply Chain: Adaption of the SSI-Index for Profiling the Sustainability of Fashion Companies

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Abstract:
Due to the increasing awareness of social and environmental issues of the consumer, sustainability has become significantly important in the fashion businesses. Therefore, developing a sustainable supply chain is crucial for fashion companies to meet consumer´s consciousness. According to Bin Shen (2014), the Fast Fashion Retailer H&M is more likely to select suppliers in countries with a low score on the human wellbeing factor of the Sustainable Society Index (SSI). This paper extends the findings of Bin Shen (2014) and investigates fashion firms of different segments on their scoring at the 8 underlying categories of the SSI. This approach let the researcher assume that fashion firms of different segments which are active in sustainability are selecting their suppliers in countries with a low degree on the 8 categories of the SSI. Consequently, by utilising the SSI as a tool, the findings of this paper will be helpful to profile and compare fashion companies of different segments in their supplier selection in regards to sustainability.

Keywords: Fashion, Sustainability, SSI-Index, Supply Chain Management

1. Introduction

It is evident that fashion consumption causes social and environmental threat and thus have a huge impact on the supply chain of fashion companies (Chen & Burns, 2006). Therefore, sustainability is a very important fact and should be considered by fashion companies (Battaglia, Testa, Bianchi, Iraldo, & Frey, 2014). In the context of being competitive on the fashion market, companies are striving to achieve low production costs, especially in developing countries where lower environmental awareness and regulatory systems are present (Dicken, 2007; Nagurney& Yu, 2012). There are fashion companies which have implemented green practices into their business, such as H&M, Levi`s, The North Face, Puma, Adidas (Battaglia et al., 2014). There are two perspectives to consider when it comes to minimize environmental pollution (Bin Shen, Yulan Wang, Chris K.Y. Lo, &Momoko Shum, 2012): From the fashion firms` perspective it is crucial to manufacture fashion products in a sustainable way by following guidelines, such as the ISO 14000 (Lo, Yeung, & Cheng, 2012). From the fashion consumers` perspective, social and environmental aspects has become important in daily life and in the decision making process (Chan & Wong, 2012). To date, many studies affirm the increasing awareness of the consumer in sustainable affairs and that they are willing to pay a higher price as long as the quality of sustainable produced merchandise is satisfied (Bin Shen et al., 2012; Joan L. Ellis, Vicki A. McCracken, & Nathan Skuza, 2012; Shen, Zheng, Chow, & Chow, 2014). Further findings show, that the famous global retailer H&M source its products from countries with a low human wellbeing. This paper is different from that of Bin Shen (2014). He focused on investigating only one fashion retailer on its ranking on the SSI on a dimensional level to learn lessons from a country perspective. In this paper, the researcher goes deeper and analyses fashion companies of different segments not on a dimensional level, but on the underlying 8 categories of the SSI with the goal to develop a sustainable profile of each company in regards to supplier selection in a specific country.

The organization of the paper is given as follows: In section 2, the related literature of sustainable fashion supply chain, followed by presenting the Sustainable Society Index and the lessons of Bin Shen (2014). Section 3 presents the Hypothesis Development. Section 4 describes the data used in this paper and the Methodology. Section 5 examines the statistical analysis with related results and implications. This article ends with conclusions in Section 6.

2. Literature Review

Following the definition of the World Commission on Environment and Development (WCED, 1987) within the Brundlandt Report, sustainability is the ability to "meet the needs of the present without compromising the ability of future generations to meet their

needs". The so called Tripe Bottom Line is a new concept of sustainability which considers social, environmental and economic aspects (Bin Shen, 2014; Lampikoski, Westerlund, Rajala, &Möller, 2014). Thus, sustainable companies are focusing on the design of innovative products, services, and processes that contribute to sustainable development (Lampikoski et al., 2014). The three aspects of the Triple Bottom Line have been well-defined by The Sustainable Society Foundation (Sustainable Society Foundation, 2014) and they created the Sustainable Society Index (SSI) (Sustainable Society Index, 2014) where three underlying dimensional factors including human wellbeing, environmental wellbeing and economic wellbeing are relevant. Human wellbeing refers to social performance, which includes basic needs, personal development, well-balanced society; environmental wellbeing includes healthy environment, climate and energy, and natural resources and economic wellbeing is related with preparation for future and economy (Bin Shen, 2014; "Sustainable Society Foundation," 2014). Due to the fact that a fashion supply chain is labour-intensive and sensitive to environment and society (Dicken, 2007), it is essential for fashion companies to cover all three aspects of the Triple Bottom Line within a sustainable supply chain (Li, Zhao, Shi, & Li, 2014).

In fact, the fashion industry has many negative impacts on the environment caused by its supply chain (Bin Shen, 2014; de Brito, Carbone, &Blanquart, 2008). Due to the enormous consumption of energy, chemicals and water during all stages of the supply chain and the life cycle stages of apparel the environment is being harmed critically (Bin Shen, 2014; Jung & Jin, 2014). For instance by the use of pesticides for cotton production, where toxic substances have adverse effects on the environment, critical impacts to farmers and puts strain on natural resources (Gam, Cao, Farr, & Kang, 2010). Another demanding aspect on natural resources is the tremendous use of water and chemicals to dye textile products within the manufacturing process (de Brito et al., 2008; Jung & Jin, 2014; Kim Y. Hiller Connell & Joy M. Kozar, 2012). Furthermore, a vastly amount of gasoline, what incurs carbon emission, is used for transports of finished and unfinished goods from one factory to another or finally to end consumers. Reaching the end of the lifecycle, clothes often are thrown away to landfill and contributes to an increasing waste load (Jung & Jin, 2014).

Due to the massive exhaustion of natural resources, the earth is not able to provide the current level of resources for production (Claudio, 2007; Freise, 2013). On the one hand it is evident that textiles have a huge impact on landfills as synthetic products do not decompose. On the other hand, woollen garments may have decomposable characteristics but produce methane, which contributes to global warming (G. Birtwistle& C.M. Moore, 2007)

As a consequence, from an industrial point of view, there are many advantages for fashion companies in acting sustainable (Bin Shen, 2014). With a sustainable approach fashion companies can attract remarkable attention of academics and industrialists in the field of textile and supply chain management (Jayaraman, Singh, &Anandnarayan, 2012; Morana&Seuring, 2011; Turker&Altuntas, 2014). Additionally, an effective sustainable fashion supply chain helps to increase brand awareness and addresses a wider range of ethical consumers (MohdNishat Faisal, 2010). To sum up, conducting a sustainable fashion supply chain shows social and environmental responsibility and is a very useful tool to achieve competitive advantages in the market (Bin Shen, 2014; Yang, Lin, Chan, &Sheu, 2010).

As a result, a sustainable fashion product should be manufactured with an environmental and social friendly method, which includes raw material production, manufacturing, distribution, and retailing (Bin Shen, 2014).

In this regard the use of eco-materials for production is crucial in sustainable fashion supply chain. Sustainable fashion products are often made by organic fabrics, which are produced by less water and harmless chemicals (de Brito et al., 2008). In addition, reuse and recycling of materials, such as old clothes or even plastic bottles also can be the material of sustainable fashion ("Ethical Fashion Forum," 2014). Recycling is very popular in the fashion industry (G. Birtwistle& C.M. Moore, 2007). For instance, the well-known fashion company Levi's launched a special Jeans line called Waste-Less, which is made of recycled plastic bottles (Levi's, 2014). Furthermore, many fashion brands such as Nike, Marks & Spencer, Timberland and Walmart are active with biological textile production and sell organic cotton (de Brito et al., 2008).

From the consumer`s point of view, purchasing sustainable fashion is a way to express attitudes of equity and sustainability (Paulins&Hillery, 2009; Rinaldi&Testa, 2015; Summers & Smith, 2014). Additionally, green consumerism and lifestyles has become fashionable (Paavola, 2001). As Bin Shen (2014) states in his paper, a sustainable supply chain can also be associated with human right and environmental protection (Bin Shen, 2014). This proposition has been also described by Dickson (1999), who found that consumers are increasingly conscious about the social consequences of their purchases and in fact, they consider that human rights and the environment are not harmed during apparel production (Dickson, 1999; Dong Shen, Richards, &Feng Liu, 2013).

It has been shown that consumers are willing to purchase eco-fashion products as long as green marketing is successful (Bin Shen et al., 2012; Chan & Wong, 2012; G. Birtwistle& C.M. Moore, 2007; Sharma, Iyer, Mehrotra, & Krishnan, 2010). Birtwistle and Moore (2007) found in their exploratory research that there is a general lack of information or knowledge towards sustainability and the related sustainable manufacturing processes among consumers (G. Birtwistle& C.M. Moore, 2007). Participants stated that they might modify their clothing consumption and disposal behaviour if they were more aware of the social and environmental consequences (G. Birtwistle& C.M. Moore, 2007).

Hence, it has been suggested that companies should share and release information about their sustainable practices and act more transparent to promote sustainability in the supply chain among consumers and thus, counteract towards the lack of knowledge and information about eco-products (Beard, 2008; Fraj& Martinez, 2006; G. Birtwistle& C.M. Moore, 2007; Joergens, 2006). For instance, companies can show their transparency on the corporate website and inform consumers that their sustainable practices are made under specific standards, such as the ISO 14000, which implies that firms have implemented environmental activities in their manufacturing processes (Lai, Cheng, & Tang, 2010; Marimon, Heras, &Casadesus, 2009). Another approach to show transparency is to reveal certificates and a related description, such as the Global Organic Textile Standard (Freise, 2013), which is recognised as one

of the leading processing standard for textiles made of organic fibres and considers environmental and social aspects along the organic textiles supply chain ("Global Organic Textile Standard," 2014). Furthermore the ability to enhance fashion consumer awareness of sustainability can be managed by offering recycling service and recyclable products in own stores (Chan & Wong, 2012).

As a result, the concept of sustainability is crucial in marketing and branding strategies to strengthen customer interest and loyalty (Bin Shen, 2014; Esty& Winston, 2009; Mishra & Sharma, 2012).

2.1. Sustainable Society Index 2012

The Sustainable Society Foundation (SSF) is a globally operating organization, established in 2006 with the aim of stimulating and assisting societies in their development towards sustainability("Sustainable Society Foundation," 2014). SSF has developed the Sustainable Society Index, the so called SSI, which shows at a glance the level of sustainability of 151 countries ("Sustainable Society Foundation," 2014). The SSI, which is updated every second year, however, at the time of the analysis in this work the SSI of 2012 was the most updated one, consists of three levels including 21 indicators, 8 categories and 3 wellbeing dimensions ("Sustainable Society Index," 2014).

The investigation of relevant indexes and sets of existing indicators concerning sustainability, the purpose to follow the well-known definition of the Brundland Report (WCED, 1987), and the consideration of specific criteria defined the 21 indicators of the SSI (Van de Kerk& Manuel, 2008), which are clustered in 8 categories, namely: Basic Needs, Health, Personal and Social Development, Nature and Environment, Natural Resources, Climate and Energy, Transition, Economy ("Sustainable Society Foundation," 2014). These 8 categories are the clustered underlying factors of the three dimensions, which are: Human Wellbeing, Environmental Wellbeing and Economic Wellbeing. The first three categories such as Basic Needs, Health and Personal and Social Development are contributors of the first dimension, the Human Wellbeing factor. Whereas Nature and Environment, Natural Resources and Climate and Energy have a direct impact on the second dimension, Environmental Wellbeing. Lastly, Transition and Economy are affecting categories on the third dimension, the Economic Wellbeing. The SSI ranking then integrates the three dimensions. According to the definition of the Sustainable Society Foundation website Human Wellbeing without Environmental Wellbeing is a dead end, whereas Environmental Wellbeing without Human Wellbeing makes no sense, at least not for human beings. **Economic Wellbeing** is not a goal in itself. It is integrated as a condition to achieve Human and Environmental Wellbeing. It can be considered as a safeguard to wellbeing ("Sustainable Society Foundation," 2014).

It has been demonstrated that the SSI is simple instrument for assessing a country's sustainability. The SSI, based on a solid definition, shows at a glance the present level of sustainability of a country and the distance to full sustainability. Since the SSI only has a limited number of indicators, it is easy to understand, to use and to maintain (Van de Kerk& Manuel, 2008).

2.2. Lessons of Sustainability at H&M from the Country Perspective (Bin Shen, 2014)

Although existing literature shows that labour-costs, tariffs, lead time, product quality and exchange rates are a few of the primary factors for outsourcing (Dicken, 2007; Hathcote& Nam, 1999; Sameer Kumar & A. SamadArbi, 2007), Bin Shen (2014) extended present findings from a sustainability point of view and found reasons, why fashion companies may consider their selection of suppliers in specific countries. With the idea to apply the SSI on a Fashion company, Bin Shen (2014) opened new areas for research regarding the utility of the SSI. One investigation point of Bin Shen`s paper "Sustainable Fashion Supply Chain: Lessons from H&M" was to examine the relationship between the number of suppliers in a specific country and its related ranking of the sustainable society index (SSI) with a statistical approach in regard to H&M. Provided by the Sustainable Society Foundation, the above mentioned SSI ranked 151 countries in their sustainability or to be more specific, in their human wellbeing. Bin Shen conducted Regression Analysis and T-Test in his paper to investigate, whether the three dimensional factors including human wellbeing, environmental wellbeing and economic wellbeing have an impact on the supplier selection of H&M. During the analysis he mainly focused on major supplier countries of H&M, in which there were more than 10 suppliers. Bin Shen found out, that the human wellbeing ranking is positively statistical related to the number of suppliers at H&M in a specific country. As a result, H&M is more likely to select its suppliers from countries where low scoring on the human wellbeing factor is evident. He added that the result agrees with the current practices of apparel sourcing in countries with a low degree of human wellbeing such as Bangladesh, India or China (Bin Shen, 2014).

3. Hypothesis Development

Bin Shen (2014) found, that current practices of apparel sourcing in countries with a low degree of human wellbeing such as Bangladesh, India or China agrees with the result of his research. Focusing the SSI of 2012, these are countries with middle to low scorings on the Environmental Wellbeing and Economic Wellbeing dimensions. Furthermore, the work of Bin Shen (2014) investigates only one fashion retailer. Hence, the researcher of this paper assumes that conducting the research method of Bin Shen (2014) on further fashion companies of various segments, but using the 8 Categories instead of the three dimensions, should give a deeper understanding of a companies` sustainable practice or to be more specific, supplier selection in regards to sustainability.

- H1: There is a relation between the 8 categories of the SSI and the number of suppliers in a specific country of fashion companies.

As stated in Chapter 2.2, Bin Shen`s findings signify that H&M is less willing to select suppliers in countries with a high scoring at the human wellbeing factor. Or in other words, H&M is more likely to select its suppliers in countries with a low scoring on human wellbeing.Thus, the directly influencing categories of the Human Wellbeing dimension (Basic Need, Health, Personal and Social

Development) should show the strongest positively statistical relation to the number of suppliers in a specific country of fashion companies.

- H2: The categories Basic Needs, Health, Personal and Social Development show the strongest relation to the number of suppliers in a specific country of fashion companies.

4. Data Description and Methodology

The samples were selected under three very important criteria: (1) the fashion companies are from different segments of the fashion industry. (2) The fashion companies provide their factory or supplier list and (3) promote their sustainable approaches on their corporate webpage. Finally, four retailers satisfied these requirements and were chosen as a sample for this work. The selected are well-known fashion retail brands of different segments:

H&Mis a leading mass fashion company in sustainable practices (Choi, Liu, Tang, & Yu, 2011). The company promotes broadly their sustainability program on the corporate website which is called H&M Conscious. H&M claims that they take responsibility from the use of natural resources to social aspects and reducing electricity consumption. Thus, they state that sustainability is thoroughly integrated into their business. The three major goals of the H&M Conscious program is the effort to run the operations in an economically, socially and environmentally sustainable way. To achieve the goals they conduct seven commitments, such as providing fashion for conscious customers; choose and reward responsible partners; be ethical; be climate smart; reduce, reuse and recycle; use natural resources responsibly; and strengthen communities ("H&M Annual Report," 2013).

Levis, a mass basic retailer (Choi et al., 2011), calls its sustainable program „Made of Progress". Through the program they strive to reduce the impact on the planet by using less water in their manufacturing processes and looking for ways to be more resourceful with existing materials, like recycled bottles. Those processes are covered in their innovative products, called Water-Less and Waste Less. The Water-Less collection comprises products which are manufactured bycombined multiple wet cycle processes, incorporated ozone processing and less water during the stonewashing process. According to Levis (2014) remarkable results have been achieved and 167 million liters of water have been saved through their manufacturing process. Furthermore, they call attention to the limited land to meet the demand for cotton through their web presence. Another collection, namely Waste-Less, has its direct impact on land resources. Thus, a collection of Jeans has been launched, which are made of 20 percent of post-consumer waste or to be more specific, by up to eight plastic bottles per pair. Additionally, they state their collaboration with a supplier in China, who is able to recycle all the water used in the finishing process (Levi's, 2014).

Adidas, a leader in the sporting goods industry (can be categorised as mass and premium basic (Choi et al., 2011)) fulfils the criteria for mass premium, believes that acting as a responsible business in society will contribute to lasting economic success. The way of managing the business in a responsible way is rooted in the companies` values and principles including performance, passion, integrity and diversity. The Adidas Group values cover products that are environmentally harmless and reducing the environmental impacts within all operations and the supply chain of the company. Further, the sustainability statements outlines provide information on their mission in social and environmental affairs, environmental management, human resources management and community affairs. Based on this, a sustainability program has been developed which comprises five areas. One effort is to include environmental sustainability in all products, processes and services to improve the environmental impact across the value chain. They closely work with their suppliers to meet their sustainability aim. The key goals of the environmental sourcing strategy is to have sound managements system which reduce and eliminate environmental hazard, have environmental and resource management embedded in sourcing decisions and the selection and retention of suppliers and reduce the overall environmental footprint of material sourcing and manufacture of products. In order to manage the environmental risks within the supply chain, tools have been implemented to develop targeted trainings as well as standards and policies ("Adidas - Supply Chain Approach," 2014).

The fourth company is a premium fashion corporation, the PVH Corp. which includes Calvin Klein, Tommy Hilfiger and the recent acquisition of the Warnaco Group (Choi et al., 2011). Noticeable on their web presence and Annual Report of 2013, the environmental program of PVH is the major contributor to their sustainable approaches. It covers engagements in chemicals management and action plans to an effectively use of chemicals in the manufacturing process of the products, such as detergents, dyes and other wet processes. In addition it is prominent that the PVH Corp joined a Zero Discharge of Hazardous Chemicals program, an association of brands with the aim of zero discharge of hazardous chemicals by 2020. Moreover a Restricted Substances List has been published by the PVH Corp, which arranges and monitors limits on the amount of specific chemicals ("PVH - Annual Report 2013").

All of the aforementioned companies published their supplier lists and suppliers are listed namely and by location (All supplier lists are the latest ones to date). For this paper it was inevitable to obtain the number of suppliers in a specific country. Thus, the researcher was able to investigate the relationship between the number of suppliers in a specific country of the samples, and its corresponding ranking on the 8 categories of sustainable society index with a statistical approach. As it is stated in Chapter 2.1, the SSF provides the SSI results in 2012, which is to date of the analysis the most updated one. Out of the SSI, the researcher of this paper obtained the scorings at the 8 categories of 151 countries. For statistical usability and to extend the research method of Bin Shen`s work, all countries were ranked on the 8 categories. Contrary to Bin Shen`s work, all suppliers of the supplier lists have been taken in to consideration. A linear regression analysis is conducted, to show whether the 8 categories (independent variables) of the SSI have explanatory power on the supplier selection (No. of Suppliers = dependent variable) of a fashion company. Table 1 shows, how data was arranged by the example of Levi`s. First, the countries and the corresponding No.of suppliers are extracted out of the sample`s supplier list. Relevant to the countries, in which the sample supplies its products, the rankings of the countries based on the 8 categories are listed.

Country	No. of Suppliers	Basic Needs	Health	Personal & Social Development	Nature & Environment	Natural Resources	Climate & Energy	Transition	Economy
Argentina	31	60	19	114	75	85	102	21	30
Bangladesh	11	106	139	71	121	1	58	62	85
China	198	98	122	84	76	43	105	56	28
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

Table 1: Extraction of suppliers at Levi`s and relevant rankings of the 8 categories of the SSI

5. Results and Implications

First of all for multiple regression analysis, the Adjusted R Square is more important rather than the R Square (Schendera, 2014). The Adjusted R Square measures the portion of total variability in the dependent variable (No. of suppliers = dependent variable) that is explained by the independent variables or predictors (8 categories). In the case of H&M the researcher can report that about 54% (0,54) of the total variability in "No. of Suppliers" in a specific country can be explained by the 8 categories (Schendera, 2014).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,841[a]	,707	,540	47,475

a. Predictors: (Constant), Economy, Transition, Nature.and. Environment.Ranking, Climate.and.Energy.Ranking, Personal.and.Social.Development.Ranking, Natural. Resources.Ranking, Health.Ranking, Basic.Needs.Ranking

Table 2 : Model Summary analysis of H&M

Further, by having a look on the ANOVA Table 3 of H&M, the researcher of this paper finds that there is a statistically strong significance by using the model. The p-value of the model is way lower than the predefined alpha = 0,05 (p = 0,009 < 0,05 < 0,01), thus it can be assumed that the independent variables (8 categories of the SSI) do have explanatory power of the dependent variable (No. of suppliers in a specific country) (Schendera, 2014).

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76185,356	8	9523,169	4,225	,009[a]
	Residual	31554,644	14	2253,903		
	Total	107740,000	22			

a. Predictors: (Constant), Economy, Transition, Nature.and.Environment.Ranking, Climate.and.Energy.Ranking, Personal.and.Social.Development.Ranking, Natural. Resources.Ranking, Health.Ranking, Basic.Needs.Ranking
b. Dependent Variable: No.of.Suppliers

Table 3 : ANOVA analysis of H&M

Hence, this enables to have a closer look on the following Coefficients Table 4. It is salient that three independent variables are significant in explaining the dependent variable (No. of Suppliers). These are Personal and Social Development (p = 0,012 < 0,05), Natural Resources (0,005 < 0,05 < 0,01) and Transition (p = 0,017 < 0,05). By interpreting the standardised coefficients, the strength and weaknesses of an independent variable can be read out. The independent variable Personal and Social Development shows a relatively strong impact in a positive direction (0,709)(Schendera, 2014). That means that H&M selects it suppliers in countries with a low Personal and Social Development by considering the ranking system as explained in Chapter 4. Having a look on Natural Resources and Transition it is salient, that the standardised coefficients (-0,823 and -0,634) of the two categories are having a strong impact, but in a negative direction. That implies additionally, that H&M is selecting its suppliers in countries with a high scoring at Natural Resources and Transition.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	57,305	81,257		,705	,492
	Basic.Needs.Ranking	-,875	,689	-,467	-1,271	,225
	Health.Ranking	,801	,415	,516	1,930	,074
	Personal.and.Social. Development.Ranking	1,771	,613	,709	2,889	,012
	Nature.and.Environment. Ranking	-,065	,280	-,038	-,231	,821
	Natural.Resources. Ranking	-1,411	,428	-,823	-3,296	,005
	Climate.and.Energy. Ranking	1,164	,507	,511	2,294	,038
	Transition	-1,823	,673	-,634	-2,708	,017
	Economy	-,024	,289	-,013	-,084	,934

a. Dependent Variable: No.of.Suppliers

Table 4 : Statistical relationship between the no. of suppliers in a specific country, with H&M and its 8 categories of the SSI

The next samples, including Levi`s, the PVH Corp. and Adidas indicate no explanatory power of the model. By investigating the model summary of the analysis, it is salient that all three samples show a very low Adjusted R Square. Beginning with the first sample of Levi`s (Table 5), the Adjusted R Square of the Model Summary shows about 17% (0,168). This implies that the total variability in "No. of Suppliers" in a specific country can only be explained of about 17% by the model (Schendera, 2014).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,590[a]	,348	,168	29,476

a. Predictors: (Constant), Economy, Nature.and.Environment. Ranking, Transition, Natural.Resources.Ranking, Personal. and.Social.Development.Ranking, Climate.and.Energy. Ranking, Health.Ranking, Basic.Needs.Ranking

Table 5 : Model Summary analysis of Levi`s

As a consequence it can be assumed, that the ANOVA of Levi`s indicates no significance, as the Table 6 shows a p – value of 0,093 (p = 0,093 > 0,05). This implies that the utilisation of the research model failed in the case of Levi`s and there is no necessity to have a look on the coefficients output, to analyse which independent variable has an impact on the selection of suppliers in a specific country.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13423,279	8	1677,910	1,931	,093[a]
	Residual	25196,221	29	868,835		
	Total	38619,500	37			

a. Predictors: (Constant), Economy, Nature.and.Environment.Ranking, Transition, Natural.Resources.Ranking, Personal.and.Social.Development.Ranking, Climate.and. Energy.Ranking, Health.Ranking, Basic.Needs.Ranking
b. Dependent Variable: No.of.Suppliers

Table 6: ANOVA analysis of Levi`s

Furthermore the sample of the PVH Corp. shows impractical results when conducting the regression analysis with SPSS. By considering the following Table 7, it is prominent that in the case of the PVH Corp. the Adjusted R Square is at a negative level, -0,014. This implies that the total variability in "No. of Suppliers" in a specific country cannot be explained by the model.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,372[a]	,139	-,014	125,451

a. Predictors: (Constant), Economy, Natural.Resources. Ranking, Nature.and.Environment.Ranking, Transition, Personal.and.Social.Development.Ranking, Climate.and. Energy.Ranking, Health.Ranking, Basic.Needs.Ranking

Table 7 : Model Summary analysis of the PVH Corp

As a result, the ANOVA Table 8 of the PVH Corp. indicates a non-significant result with a p-value of 0,520 (p = 0,520 > 0,05). Hence the research model is useless and there is no necessity to have a look on the coefficients output, to analyse the impact of the 8 categories of the SSI on the selection of suppliers in a specific country.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114067,195	8	14258,399	,906	,520[a]
	Residual	708206,453	45	15737,921		
	Total	822273,648	53			

a. Predictors: (Constant), Economy, Natural.Resources.Ranking, Nature.and. Environment.Ranking, Transition, Personal.and.Social.Development.Ranking, Climate. and.Energy.Ranking, Health.Ranking, Basic.Needs.Ranking
b. Dependent Variable: No.of.Suppliers

Table 8 :ANOVA analysis of the PVH Corp.

Lastly, the results of Adidas are similar, as the Adjusted R Square in Table 9 predicts 0,068. The researcher of this paper also finds in this case, that the total variability in "No. of Suppliers" in a specific country cannot be explained by the model.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,432[a]	,187	,068	42,248

a. Predictors: (Constant), Economy, Personal.and.Social. Development.Ranking, Nature.and.Environment.Ranking, Natural.Resources.Ranking, Transition, Climate.and.Energy. Ranking, Health.Ranking, Basic.Needs.Ranking

Table 9 : Model Summary analysis of Adidas

Consequently, the significance of the ANOVA Table 10 in the Adidas case is with a p-value of 0,153 above the predefined alpha (0,05) and refers to the fact that the model is not of use in this case as well.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22521,065	8	2815,133	1,577	,153[a]
	Residual	98168,373	55	1784,880		
	Total	120689,438	63			

a. Predictors: (Constant), Economy, Personal.and.Social.Development.Ranking, Nature.and.Environment.Ranking, Natural.Resources.Ranking, Transition, Climate. and.Energy.Ranking, Health.Ranking, Basic.Needs.Ranking
b. Dependent Variable: No.of.Suppliers

Table 10 : ANOVA analysis of Adidas

To sum up, the statistical analysis shows that the tested fashion companies, except of H&M, falsify Hypothesis 1 and 2. Therefore, based on the data, there is no statistical relation between the 8 categories and the number of suppliers in a specific country of Levi´s, the PVH Corp. and Adidas. Hence, Hypothesis 2 is falsified as well.

Only by having a closer look on H&M, there is a statistical relation between the 8 categories of the SSI and the number of suppliers in a specific country (Hypothesis 1). Considering Hypothesis 2, the categories Basic Needs, Health, Personal and Social Development do not have the most significant positive statistical relation to the number of suppliers in a specific country of H&M, as to the contrary Bin Shen (2014) found that the human wellbeing dimension is positively statistical, related to the number of suppliers at H&M in a specific country. Thus, the developed Hypothesis cannot be generalized to every company case, as it points out that fashion companies have different strategies in their selection of suppliers.

6. Conclusion

It seems to be advantageous to use the SSI as a tool to evaluate fashion companies in their sustainable practices in regards to supplier selection. As Bin Shen (2014) worked out in his paper that the model can be useful to determine whether a company is sourcing their products in sustainable countries or not, the authors found that there are difficulties in conducting the SSI to analyse fashion companies in their sourcing approaches.

As the analysis Chapter 5 indicates, the independent variables do not have explanatory power of the dependent variable. That means that the 8 categories cannot explain why companies prefer specific countries in sourcing activities. As a result, the model used by Bin Shen (2014) is not applicable in every case, thus not a useful predictor to determine whether a company is sourcing in sustainable countries or not. One possible approach can be the fact, that every fashion company has its own strategy in sourcing affairs. As the literature in Chapter 2 reveals, it can be assumed that in outsourcing decisions fashion companies are considering factors like labour-costs, tariffs, lead time, product quality and exchange rates in order to reduce production costs. That means that more attention should paid to sourcing strategies of a specific fashion company by considering their corporate values. As a result, the SSI is not an applicable tool to profile fashion companies.

Although the paper of Bin Shen(2014) provides a very important starting point on lessons of sustainable supplier selection, more surveys with various samples are required in order to enhance reliability and validity of the utilization of the SSI to give a deeper understanding of supplier selection at fashion companies. Future research can aim the 21 indicators and evaluate, whether there is a significance when investigating the supplier selection of a fashion company. In fact, the sample size of this work is not large enough to represent the entire fashion industry, but the SSI can be a milestone in evaluating fashion firms.

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