Firm's characteristics and sustainability in the TCL industry

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Abstract: The Textile, Clothing and Leather (TCL) sector is one of the world's largest industries, while also one of the most polluting, being a huge consumer of water, electricity and chemicals, and discharging massive quantities of waste to land. During the last decade, stakeholders' pressure on sustainability has challenged TCL companies to transform general environmental sustainability concepts into business practices, from the definition of a sustainability strategy to the implementation of coherent practices and operative actions. TCL companies reacted differently to this challenge, from a passive to a more proactive and committed approach. In such context, the goal of this paper is to analyse which are firm's characteristics that discriminate between different corporate environmental sustainability approaches in terms of: 1) importance of stakeholders involved in the sustainable strategy; 2) implementation level of different sustainable practices; and 3) competitiveness factors achieved through the implementation of a sustainable strategy. Results show that clothing and leather companies have a higher commitment to sustainability in all the corporate environmental management areas, while mixed findings can be drawn from the analysis of firm's size. No significant differences have been found in terms of competitive advantage strategies.

Keywords: Environmental sustainability; Textile, Clothing and Leather (TCL); Fashion; ANOVA; Firm's characteristics

1. Introduction

Sustainability is one of the most important and debated topics in most of the industries, with a special focus on the impact that an environmental strategy can have on the relationship between the company and its customers. Among all the industries, the Textile, Clothing and Leather (TCL) sector is recognized to be one of the most polluting, whilst at the same time one of the most important economies in the European Industry. According to (Euratex, 2015), in 2015 the industry represented the 6% of employment in the EU manufacturing sector with a 3.1% of total merchandises' exports. The turnover of the TLC industry in the EU-28 was 169 billion € and investments were around 4 billion €. Last, most of the customers of TLC companies are firms working in the fashion and luxury industry, where the pressure over sustainability is constantly growing, having some luxury consumers adopted sustainability as part of their lifestyle (Hennigs, 2014). This way, TLC companies are required to prioritize their corporate goals and to integrate sustainability practices within their "business as usual". The goal of this paper is to analyze which are firm's characteristics that discriminate between different corporate environmental sustainability approaches in terms of: 1) importance of stakeholders involved in the sustainable strategy; 2) implementation level of different sustainable practices; and 3) competitiveness factors that companies achieved through the implementation of a sustainable strategy. In particular, a one-way analysis of variance (ANOVA) of a set of data collected with an online research during the year 2014-2015 was conducted.

2. Sustainability and environmental practices

Sustainability strategies and approaches

The definition of a sustainability strategy is becoming not only a requirement driven by environmental regulation (Fiorino, 2006), but also a marketing driven requirement, due to the increasing demand of green products by customers (Carroll and Buchholtz, 2014; Chen and Chai, 2010; Young et al., 2010; Preuss, 2009). As a consequence, most of the companies need to define a sustainable strategy according to their stakeholders (Bevilacqua et al. 2014). Depending on the company Critical Success Factors (CSFs), every stakeholder is not significant at the same level and therefore an important step in this process is the identification of the significant stakeholders (Maas and Reniers, 2014) and their impact on the company. In the literature there are few empirical studies analyzing the

relation between environmental strategies and stakeholders' importance (Buysse and Verbeke, 2003), and none of them specifically refer to the fashion system. The impacts of selected stakeholder groups on the definition and execution of an environmental sustainability strategy are relatively unexplored (Betts et al., 2015). Another important aspect in the definition of the environmental strategy is the relationship between the corporate strategy and the company strategy, as well as their integration. This aspect become relevant in the fashion industry because most of the TCL firms produce, and thus have continuous relationship, for different fashion brands, with different corporate sustainability strategies. Therefore, a "fragmented" and "disconnected from business and strategy" vision can occurs and to increase company's alignment with the expectation of its stakeholders become an important step of the environmental strategy definition. Therefore, different types of environmental strategy could be implemented by a company, based on different requirements gathered from their clients (e.g. fashion brands). Last, other aspects that have to be taken into account in the definition of the environmental strategy are the proactivity level (e.g. environmental reactivity, environmental proactivity) and the competitive advantage that could be achieved implementing the strategy (e.g. lower costs vs. differentiation).

2.1 Environmental practices

An environmental strategy must be reflected into the company with actions that have a direct impact on processes and actions. Environmental Management Practices (EMPs) refer to all the measures and activities aimed at executing an environmental strategy (Sroufe et al., 2002). These activities can be classified according different categories and practices. In literature, a few contributions have offered a comprehensive and structured analysis of the different practices employed to reduce their negative impacts. This paper classify these practices according five categories as proposed by (Resta et al., 2014): *product*, *supply chain management*, *process*, *governance and culture*.

The first category includes all the practices related to the design of sustainable products, as well as the required raw materials (e.g. LCA, Carbon Footprint, Water Footprint) related to the final product, the utilization of methodologies to improve the product design and development process, etc..). The second category deals with practices related to the establishment, management and control of a green supply chain. The third dimension is related to production processes (e.g. ISO 14000, EMAS). The fourth dimension refers to initiatives aiming at managing green activities and the relationship with all the stakeholders (e.g. Sustainability reports, Sustainability Advisory Board, dedicated corporate function or business unit, website dedicated to green activities are practices considered in this dimension). Finally, the culture dimension deals with the introduction of training programs involving both internal than external stakeholders, with the goal of spreading a green culture.

3. Methodology

In order to analyse which are firm's characteristics that discriminate between different corporate environmental sustainability approaches in the TCL sector, an explanatory survey research has been conducted (Malhotra and Grover, 1998). The primary data for this study was collected through a web survey in carried out in the years 2014 and 2015. The research was initiated with the design of the research model and the related questionnaire, which was the main source for data collection. A pilot-test questionnaire with a set of selected companies was administered to prove viability and to detect difficulties in the interpretation of questions. The inputs received from the pre-test were analysed and weighted in the final version of the questionnaire. It comprised 27 questions and was intended to elicit information on environmental strategy, management practices and competitiveness. The questionnaire was administered to a subset of companies operating in the TCL Italian sector included in the AIDA database (NACE code: 13, 14, 15). From the total population of companies having 13, 14 and 15 NACE code, the present study investigates the firms that have explicitly declared on their website the adoption of almost one sustainability practice, totalling 514. Each company was contacted by email, addressed to potential respondent managers knowledgeable about the phenomenon to be measured, and reporting the link to the web-questionnaire. Follow-up telephone calls after two weeks resulted in 343 total usable responses returned to the authors, corresponding to a response rate of 67%.

The collected data were then analysed as described in the following paragraph.

4. Results and discussion

The one-way analysis of variance (ANOVA) has been used to determine whether there are any significant differences between the means of two or more independent (unrelated) groups.

ANOVA is one of the most used technique in the field of statistical inference. ANOVA is a statistical tool used in several ways to develop and confirm an explanation for the observed data. Moreover, in our study ANOVA technique fit well with the data collected. In particular, the population from which the sample was obtained is normally distributed, the samples are independent and the variances of the population is be equal.

The first analysis has been conducted to examine whether there are statistically significant differences between the two groups of Company Sector (Textile and Clothing and Leather) in relation to: 1) the importance of stakeholders involved in the sustainable strategy; 2) the implementation level of different sustainable practices; and 3) the competitiveness factors achieved by companies through the implementation of a sustainable strategy. Results showed in table 1 revealed statistically significant differences in almost all dependent variables between the two groups of company sectors. In particular, clothing

and leather companies represent the part of the Italian fashion system most committed to environmental sustainability at each level of corporate environmental management, demonstrating a coherence between strategic level, operational level and corporate advantages. First of all, except for external secondary stakeholders (i.e., customers and suppliers), higher importance is attributed to all stakeholders in the definition of sustainability strategies. Regarding external secondary stakeholders, characterised by the highest level of importance among the different stakeholders' groups, no statistical difference between textile and clothing and leather companies was detected. Secondly, a higher involvement of stakeholders by clothing and leather firms was translated at an operational level (practice dimension) into a higher implementation of all environmental sustainability practices (but air mission management), with the highest differences in Governance, Materials, Culture and Energy Management areas (difference of the means > 0,3). It highlights the vital importance of establishing an appropriate governance system for the management and control of a corporate environmental approach, as well as the spread and the development of a culture for sustainability, both within and outside a company, towards its main stakeholders. Coherently, clothing and leather firms recognise much higher benefits associated to an environmental sustainability strategy in all the competitiveness areas (revenue growth, cost savings and compliance and risk).

Table 1. Analysis of variance ANOVA test - Sector

Dependent variables		**Company Sector**		**Sig.** [1]
		Textile	Clothing, Leather	
Importance of stakeholders	Internal Primary Stakeholders	,2035	,5917	,000***
	External primary stakeholders	,7129	,7250	,814
	Secondary stakeholders	,0605	,5583	,000***
	Regulatory stakeholders	,1056	,5250	,000***
Practices	Product	,2937	,5500	,000***
	Raw_material	,4004	,5667	,000***
	Packaging	,3531	,5833	,000***
	Supply_chain	,3212	,6000	,000***
	Transportation	,3713	,5875	,000***
	EMS	,3366	,5750	,003***
	Energy_management	,3713	,6750	,000***
	Water_management	,2695	,5333	,000***
	Waste_management	,4961	,6750	,000***
	Air_emission_management	,2327	,3125	,146
	Materials	,4158	,7833	,000***
	Culture	,2662	,5917	,000***
	Governance	,1353	,5500	,000***
Competitiveness	Revenue_growth	,2558	,6000	,000***
	Cost_savings	,2748	,5500	,000***
	Compliance_and_risk	,0451	,5000	,000***

[1] * The difference of the means is significant at level <0.1. ** The difference of the means is significant at level <0.05.

*** The difference of the means is significant at level <0.01.

The second analysis aimed at examining whether there are statistically significant differences in terms of turnover (Less than 2 million; Between 2 and 10 million; Between 10 and 50 million; Greater than 50 million). Results showed in table 2 revealed significant differences in the dependent variables among the four groups of company turnover. In particular, regarding importance of stakeholders, internal primary stakeholders (i.e. employees and shareholders) are mostly involved in the definition of a sustainability strategy by medium-sized companies (10 million € < turnover < 50 million €), while secondary (i.e. rivals, mass media, NGOs, etc.) and regulatory stakeholders are engaged by big companies (turnover > 50 million €). The importance of external primary stakeholders is not significantly different among the four groups. Regarding the operational level, in most of the cases, larger companies (in terms of turnover) show a higher implementation level of environmental management practices, entailing that the introduction of a complete set of practices is still considered as resource-intensive. It does not apply for packaging and EMS, where medium-sized companies are characterised by a higher implementation level. Transportation practices do not show an implementation level significantly different among the four groups. Finally, revenue growth and compliance and risk are differently recognised by the four group. Interestingly, medium-sized companies, and not large companies, are characterised by the highest perceived competitiveness benefits.

Table 2. Analysis of variance ANOVA – Size (Turnover)

Dependent variables		**Size (Turnover)**				**Sig.**
		Micro	Small	Medium	Large	
Importance of stakeholders	Internal Primary Stakeholders	,2037	,1944	,3760	,2899	,000***
	External primary stakeholders	,6944	,7014	,7733	,6522	,189
	Secondary stakeholders	,0667	,0694	,2248	,2319	,000***

	Regulatory stakeholders	,0556	,1042	,3023	,3043	,000***
Practices	Product	,2407	,2755	,4419	,5072	,000***
	Raw_material	,3778	,3981	,4729	,5217	,009*
	Packaging	,3963	,3194	,4612	,3913	,001**
	Supply_chain	,3000	,2755	,4729	,6087	,000***
	Transportation	,4056	,3576	,4128	,5435	,017
	EMS	,2111	,3681	,4884	,4783	,001**
	Energy_management	,2611	,3681	,5698	,6087	,000***
	Water_management	,1741	,2546	,4109	,6667	,000***
	Waste_management	,4778	,4653	,5930	,7101	,000***
	Air_emission_management	,1222	,2361	,3314	,4130	,000***
	Materials	,3593	,3912	,5969	,7536	,000***
	Culture	,2148	,2616	,4225	,4783	,000***
	Governance	,0889	,1354	,2849	,4783	,000***
Competitiveness	Revenue_growth	,2472	,2535	,4157	,3043	,000***
	Cost_savings	,3000	,2813	,3663	,2717	,121
	Compliance_and_risk	,0556	,0579	,1977	,1449	,000***

A third analysis has been conducted to examine whether there are statistically significant differences between three typologies of competitive advantage strategies adopted by TCL firms (Differentiation, Hybrid and Lower cost). Results, showed in table 3, did not reveal significant differences in the dependent variables among the three groups of competitive advantage strategies. Only companies that adopted a "Lower cost" competitive strategy obtained a benefit in terms of compliance and risks reduction.

Table 3. Analysis of variance ANOVA – Competitive advantage strategies

Dependent variables		**Competitive advantage**			**Sig.**
		Differentiation	Hybrid	Lower cost	
Importance of stakeholders	Internal Primary Stakeholders	,2439	,2518	,2963	,728
	External primary stakeholders	,7165	,7074	,7222	,965
	Secondary stakeholders	,1082	,1348	,1667	,474
	Regulatory stakeholders	,1558	,1383	,2222	,664
Practices	Product	,3276	,3121	,3333	,879
	Raw_material	,4329	,4007	,3519	,281
	Packaging	,3781	,3759	,4259	,762
	Supply_chain	,3535	,3440	,4074	,702
	Transportation	,3745	,4309	,5000	,058
	EMS	,3463	,4043	,3889	,604
	Energy_management	,3918	,4362	,4444	,525
	Water_management	,2886	,3369	,2593	,434
	Waste_management	,5137	,5355	,4630	,462
	Air_emission_management	,2316	,2660	,2500	,688
	Materials	,4560	,4681	,4444	,930
	Culture	,3088	,2837	,3519	,640
	Governance	,1732	,1862	,3056	,213
Competitiveness	Revenue_growth	,2987	,2846	,3194	,883
	Cost_savings	,3063	,3112	,2917	,961
	Compliance_and_risk	,0837	,1064	,2407	,027**

5. Conclusion

Approaches of TCL companies towards environmental sustainability as an answer to stakeholders' and customers' pressure have taken different forms, from a passive to a more proactive and committed reaction.

In this paper, firm's characteristics that discriminate between different corporate environmental sustainability approaches were analysed. In particular, sustainability approaches were measured in terms of: 1) importance of stakeholders involved in the sustainable strategy, 2) implementation level of different sustainable practices and 3) competitiveness benefits achieved through the implementation of a sustainable strategy. Results show that clothing and leather companies have a higher commitment to sustainability in all the corporate environmental management areas, while mixed findings

can be drawn from the analysis of firm's size. No significant differences have been found in terms of competitive advantage strategies.

To conclude, this paper can be considered as a basis for further research. Several future research directions could be identified in order to overcome the limitation of this work. In particular, the analysis could be extended to other sectors and countries, in order to examine the influence of such factors on the implementation of environmental sustainability approaches. Finally, the perspective on sustainable development should be enlarged to include the social pillar.

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