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# DE RERVM MORE:
# A Fashion Brands Analysis
# Using Twitter Social Network Data

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# Summary

# Introduction

The thematic of ethical business has become of paramount importance in the luxury fashion industry. Gucci announced that it will stop using fur, opting for ecological fur, starting from its Spring 2018 collection (Pithers, 2017). When interviewed by Vogue, Gucci CEO Marco Bizzarri stated: “Gucci is so visible, so well-known - we need to use that in a positive way”.

“Sustainability will be at the center of innovation in the fashion industry in 2018” (BoF Team; McKinsey & Co., 2018). “As focus shifts to a circular economy, sustainability will evolve from being a menu of fragmented initiatives to being an integral and defining part of the entire fashion value chain”, they continue.

Many firms and researchers have analyzed the concept of sustainability and ethical business in the luxury industry.

Kapferer and Michaut-Denizeau (2014) explore the extent and causes of the perceived contradiction between luxury consumption and sustainability in the eye of the luxury consumer.

Janssen, Vanhamme, Lindgreen and Lefebvre (2014) explore the influence of two defining characteristics of luxury products, scarcity and ephemerality, on consumers’ perception of the fit between luxury and corporate social responsibility.

To my knowledge, though, there is no empirical study on the relationship between “ethical-friendly” image and “fashionable” image of luxury fashion brands.

The present dissertation, therefore, intends to verify the following hypothesis:

*For a luxury fashion brand, is there a correlation between being considered "eco-friendly" (or "ethical") and being considered "fashionable"? In other words, is there a convergence between the concepts of "eco-friendliness" and "fashion"?*

In order to achieve this objective, I use a methodology developed by Culotta and Cutler (2016), which allows to measure the brand perception along a set dimension starting from followers' data of the brands' Twitter accounts.

This algorithm takes as input a brand name and a query specifying the attribute of interest (e.g., "eco-friendliness"). It then returns a value indicating the strength of association between the brand and the attribute.

I will use this algorithm to measure the consumers' perception of a set of fashion brands along two dimensions: the "fashionable/luxury" one and the "ethical/environmental" one.

The hypothesis will be verified through statistical tools, which will calculate the correlation between these two consumers' perceptions.

This dissertation is organized as follows. Chapter 1 will introduce the topics of Brand, of Luxury and of Ethical Business. Chapter 2 will discuss brand perception, the methodologies used to measure it and the limitations of survey-based studies. In chapter 3 I will discuss the methodology used to obtain the findings, and the theoretical assumptions behind the aforementioned methodology. In chapter 4 I describe the results. In chapter 5 I summarize the implications of this work, note its limitations, and provide recommendations for future research.

# 1 Brand, Luxury and Ethics

## 1.1 What is a brand?

In this chapter, I will define some words that are recurrent in my dissertation. Understanding the meaning of these words is essential to grasp the concepts presented in this thesis. The very first of these words is the concept of “brand”.

At first, I can define "brand" using the tool that par excellence defines things, the dictionary.

The Oxford dictionary provides the following definitions of “brand”:

- A type of product manufactured by a particular company under a particular name (ex. *“a new brand of soap powder”*);
- A particular identity or image regarded as an asset (ex. *“you can still invent your career, be your own brand”*).

The first part of the definition above refers directly to the product. It does not specify, though, what makes the product different in the eyes of consumers, except for its origin. Kotler expands the definition of brand in this direction: “*A brand is a name, term, sign, symbol, or design, or combination of them which is intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competitors*” (Kotler, 1991). The American Marketing Association definition of brand is similar: “*a name, term, design, symbol, or any*

*other feature that identifies one seller's good or service as distinct from those of other sellers*" (American Marketing Association, 2018).
These definitions shift the focus from the product itself (A type of product…) to the visible characteristics of a brand (a name, term, sign, symbol, …). These characteristics are what distinguish a product from its competitors.
The Oxford Dictionary, though, defines the brands also as an identity or image, not only a product or its characteristic. The entirety of the brand concept is more articulated than its graphical representation (Morgan & Rego, 2009) (Keller, 1993) (de Chernatony & McDonald, 2003).
"Business Dictionary" expands the definitions above: "A brand is a unique design, sign, symbol, words, or a combination of these, employed in creating an image that identifies a product and differentiates it from its competitors. Over time, this image has been associated with a level of credibility, quality, and satisfaction in the consumer's mind. Thus, brands help consumers in a crowded and complex marketplace, by standing for certain benefits and value. The legal name for a brand is trademark and, when it identifies or represents a firm, it is called a brand name" (Brand, 2018).
According to the above definition, the birth of a brand starts when a firm delivers a product or service that meet or exceed customer expectations. Over time, the firm's brand (ex. Gucci, Rolls Royce), or the brand the firm uses to deliver the product or service (ex. Twix and M&Ms belong to the Mars company), acquires a reputation. This reputation is tied to the quality of the delivered products or services.
In the definitions above, I can find some common arguments that can be used to identify the concept of brand:

- The brand differentiates the firms' offer from the competitors' one;
- The brand is bound to the concept of "identity" (or "values").

I can further refine the definition of brand through two main paradigms:

- the first is centred on the customers and the relationship between a brand and the people that are exposed to it;
- the second is centred on the financial value of the brand and on how to measure it using monetary values.

Companies use brands to create value for the firm since they can affect their profitability. The brand creates value by increasing awareness, promoting a brand image, and guaranteeing trust and reputation in the eyes and mind of customers.
The “brand monetary value” quantifies the ability of the brand to increase cash flows, thus profits, for the company. These cash flows increase because consumers are more willing to buy the brand's products or services than the competitors’ ones. Thus, the value of the brand can be estimated as the difference between the price that a consumer is willing to spend for a branded product, and the price that the same consumer is willing to spend for the same product without the brand (Cappellari, 2011).
The brand value, though, derives from the brand strength. Brand strength, in turn, derives from the brand assets (Kapferer J.-N. , 2012).
Brand assets are defined as the *source of influence of the brand*, for example, brand awareness and relationship with the customers.
Brand strength is how the brand assets influence the consumers, their loyalty, and willingness to pay more to buy the brand.
In this paragraph, I will focus on the definition of brand from a consumer point of view, given the aim of my research, and the fact that the brand’s financial value is a consequence of the influence of the brand on consumers.
The consumer, when faced with a choice, often does not have the time or necessary knowledge to select the product that will satisfy his need optimally. In this situation of ample choice and opacity of information, the brand acts as a risk and time reducer. In fact, without risk, there is no brand (Laurent, Kapferer, & Roussel, 1995).
The risk may be of a multitude of types, from economic (price), functional (performance) to psychological or social.
As already stated in the previous definitions, one of the brand’s roles is to remind customers about the firm’s product and services (Kotler, Armstrong, Saunders, & Wong, 1996).
This function, though, is not feasible if we consider only what the consumer perceives. The consumer must also be aware of what he must expect, regarding

quality, performance or image, by acquiring the product, and if the product or service consistently satisfy the expectations that the brand promotes. The consumer will consider its experiences when interacting with the brand and will acquire the brand that meets its needs the most (Morgan & Rego, 2009).

In a way, *a brand is a contract* (Kapferer, 2012): the consumer pays a price premium, and the brand will provide the benefits the *brand image* has promised.

As Monica Skipper, Marketing Manager for FedEx Global Brand Management, spoke about in a post about brand promise and brand essence on the AmEx Open Forum, "Once you know your promise to customers, you need to deliver on that promise. That is what branding is all about. Every time you keep the promise, you strengthen your brand identity. When you break the promise, you diminish the brand" (FedEx, 2011).

A component of the brand that cannot be overlooked is its image in the mind of the consumer: this image is the real difference among various products (Kotler, 2015).

A definition that broadens the brand concept in this way is the one from Keller "A brand is a set of mental associations held by the consumer which add to the perceived value of a product or service" (Keller, 1998).

Some authors go beyond the product and focus the whole definition on the perception of the brand, like Brown: "*A brand name is nothing more or less than the sum of all mental connections people have around it*" (Brown, 1992).

In these definitions, the *core* of the brand is no more its visual representation. It is how the consumers perceive all the characteristics (tangible and intangible) of the brand, and how the brand increases the value of offered products or services.

These definitions broaden the scope of the brand, yet it is not yet sufficient, because brands are not only composed of visual identification and mental associations, but also have a strong emotional component.

Kapferer introduces a definition of a brand that completely separates the brand and its tangible characteristics: "A brand is not the name of a product. It is the vision that drives the creation of products and services under that name. That vision, the key belief of the brands and its core values is called identity" (Kapferer J.-N. , 2012).

This definition is the complete opposite of the Oxford dictionary's one: "the brand is not the name of a product".

Brand identity and brand *image* are separated entities. Brand image is how a consumer perceives a brand. It is how they decode all signals originated from the brand's products, services and communication. Identity is about the brand's meaning, its aim. It precedes brand image.

Brand identity is also a different concept than brand *positioning*. Positioning emphasises the peculiar characteristics of a brand that distinguish it from the others and that makes it more appealing to the public. Identity, instead, exists by itself; other entities do not define it.

Kapferer theorises that a brand identity is composed of six 'facets' interconnected in a hexagonal prism:

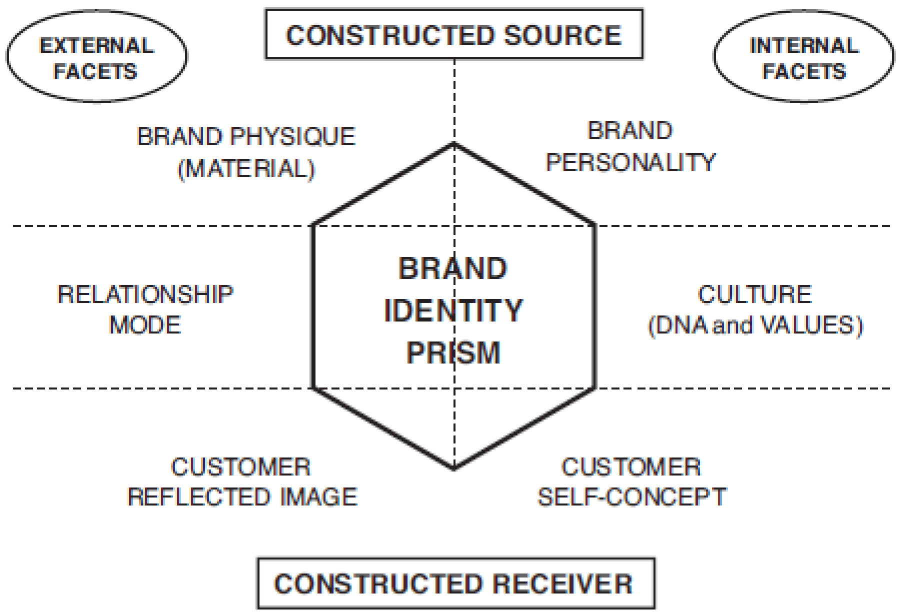



*Figure 1: Luxury brand identity prism. Source: J.N. Kapferer, V.Bastien: The Luxury Strategy.*

The six facets are:

- *Brand Physique*: all the objective features of the products sold under the brand;
- *Brand Personality*: "The set of human characteristics associated with a brand" (Aaker, 1997);

- *Culture*: The set of values from which the brand defines its products and its communication;
- *Relationship Mode*: This facet identifies the type of relationship the brand has with its clients, its mode of conduct;
- *Customer Reflected Image*: The image of the ideal customer of the brand (not to confuse with the target); how a consumer wants to be seen by using the brand;
- *Customer Self-Concept*: How the consumers develop its self-image through the relationship with the brand.

The goal of defining the brand identity in such a way is to analyse it as any other way of communication, where there is a sender (real or constructed) and a receiver (the consumers).

The facets distinguishes between *external* facets (physique, relationship and reflection), which convey the brand outward expression, and *internal* facets (personality, culture and self-image), which defines the brand itself.

There is also another classification of the facets: brand physique and personality define what the consumers imagine being the sender of the brand's communication, whereas reflection and self-image define the ideal receiver of the message.

The two central facets of the brand identity define the mediation in the communication between sender and receiver. The facets are the relationship mode between the sender and receiver communicated by the brand, and the culture of the brand, which defines what the brand communication must focus on.

As suggested by the definition of brand identity, communication is vital for the brand existence. It is mandatory to have a clear and defined idea of what the brand is and what is its promise, and then this promise needs to be fulfilled.

Failing to convey the identity to the consumers may cause a detachment between *brand identity* and *brand image*.

To build and maintain *brand loyalty*, and to generate value for the company and consumers, the identity and brand image have to remain congruent.

Firms must establish links between the brand and the consumers considering their needs and motivations, and presenting the brand promise as a way to satisfy those needs (Punniyamoorthy & Raj, 2007); (Chaudhuri & Holbrook, 2001); (Johnson, Herrmann, & Huber, 2006); (Kabiraj & Joghee, 2011).

## 1.2 Definition of Luxury

In the previous paragraph I analysed the concept of "brand". My analysis, though, focuses mainly on "luxury" brands. To understand what the link between luxury and ethical marketing is, it is fundamental to take a deeper look at the definition of "luxury". This is not a simple challenge.

First of all, it is essential to consider that “there is, above all, a consensus in the business literature that there is no consensus about the definition of luxury products and brands” (Heine, 2012). Costello et al. confirm this statement: "Despite considerable prior research on luxury branding, no widely accepted definition of luxury brand exists" (Costello, Charles, & Ko, 2017).

Historically, though, the topic of luxury and luxury brands has been under-investigated in the academic literature (Berthon, Pitt, Parent, & Berthon, 2009).

Fortunately, in these latest years, the luxury market has grown worldwide, which has increased the interest among researchers on this concept. (D'Arpizio, 2014).

To define what "luxury" is, I can start by answering some fundamental questions: How are luxury brands different from premium brands, such as Victoria’s Secret lingerie or Nespresso coffee? Why does luxury exist in the first place?

### 1.2.1 Premium and Luxury

Premium brands are brands that promise the best functional performance in the marketplace, at an increased price compared to other brands in the same market. (Steenkamp, 2017). However, there is no continuous movement from premium to luxury, given the fact that functional performances are already the highest possible (Kapferer, 2012). For example, Ford group tried to develop a luxury brand in late ’80, “Premier Automotive Group (PAG)”, by acquiring some prestigious brands, such as Jaguar, Aston Martin, Land Rover and Volvo, and applying Ford business methods to their business processes to increase their profitability.

This attempt, though, failed, with Ford selling Jaguar and Land Rover to Tata Group for 1,4 billion; those two brands had been bought for 4,6 billion.

Ford and other firms that attempted and failed to "trade up" in the luxury market are generally good, well-managed brands; their failure was not due to incompetence, but of an incorrect understanding of what luxury is.
According to Kapferer, two issues have generated this misunderstanding:

- **confusing high price with luxury**: household purchasing power has grown over the years and some of the mass consumption goods, following a premium approach, are now more expensive than the equivalent luxury products.
- **"accumulation and convergence of genres"**: many luxury brands, nowadays, sell premium or even mass products. This is particularly true for the fashion market, where each brand has a *griffe*, representing the haute couture, and medium-range brands of fashion accessories. Chanel, for example, is a luxury brand with reference to its watches or handbags; the same cannot be said for its glasses, which are accessible and easily acquirable.

  The opposite is also true: non-luxury brands more and more market themselves as luxury brands. This process has been called "democratisation of luxury" (Kapferer J.-N. , 2012), (Hauck, 2007), "masstige luxury" (Silverstein & Fiske, 2003) or "bandwagon luxury" (Kastanakis & Balabanis, 2012).

The car market is particularly apt to describe the difference between premium and luxury. In a premium car (such as Audi or Lexus) the priority that drives the acquisition is its usage value, even if there are intangibles values tied to the brand: a person buys an Audi for everyday use, and its price must be justifiable by its utility curve.
Price-utility ratio is not the first concern for someone buying an Aston Martin, still less a Lamborghini. Luxury goods exchange value is wholly disconnected from their usage value.

### 1.2.2 Purpose of Luxury

Abraham Maslow suggested a triangular diagram, called “Pyramid of Needs” (Maslow, 1943), which classifies and ranks people’s needs in five stages. The most fundamental needs are at the bottom and the need for self-actualisation is placed at the top. My question ”What is the purpose of luxury?” can be rewritten as “To what stage of Maslow’s Hierarchy does luxury belong?”

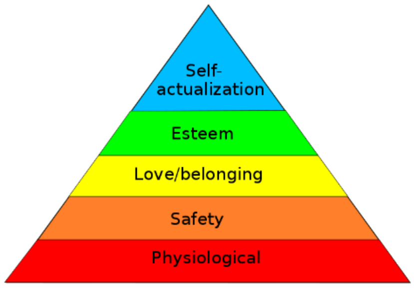



*Figure 2: Maslow's hierarchy of needs, represented as a pyramid with the more basic needs at the bottom. Source: wikipedia*

Surely not to the Physiological or Safety need. Can then one buy luxury goods to feel accepted, to belong, or to be recognised? Until a few years ago, it was believed that consumption of luxury good was driven mostly by the need to flaunt a person status or wealth (Veblen, 1899), the so-called Veblenian assumption. We can see this approach to luxury as a way to satisfy this type of need.

In the collective imagination, this use of luxury as a mean to belong and be loved is perfectly embodied by F. Scott Fitzgerald’s character Jay Gatsby, throwing incredible parties in his mansion, trying desperately to belong to Daisy’s aristocratic world. Luxury at this stage is something to show.

This stage of luxury is for people who want to feel as they belong to the élite without actually belonging to it, the “excursionists” or “happy many”, as Dubois calls them (Dubois & Laurent, 1998). These consumers are willing to imitate the wealthy by enjoying, if not their aspirational lifestyle, at least the same brands. Thanks to them the luxury business can grow and turn profits at the incredible rate of the latest years; ostentation is not, though, the essence of luxury.

In the latest years the market has changed, and people are willing to spend only for “psychologically or socially relevant causes” (Fabris, 2010). The mere presence of the brand is not anymore sufficient and, in some cases, it can even distance consumers (Wilson, Eckhardt, & Belk, 2015).

On the opposite end of luxury as flaunting, nothing is more discreet than a Hermès bag, the luxury item par excellence. Neither to show or to hide, but something to be proud of having. Once a person is quite confident with his status, once he belongs to the "happy few", the need for esteem becomes prevalent. Studies showed that "Individuals whose self-worth was harmed sought affirmation in high-status goods" (Sivanathan & Pettit, 2010).

The essence of luxury, then, is the customers' desire to mark their difference. To give men and women of power the privileges that accompany it. Luxury has a social stratification role. As the sociologist Pierre Bourdieu notes, luxury reflects the taste of the elites; its function is to demonstrate their power and impose their taste on others in society (Bourdieu & Nice, 1984).

### 1.2.3 Luxury Products

However, what characteristics a product must have to satisfy such needs? What must have a product to be defined a luxury product? Dubois et al. summarise the characteristics of a luxury product in six facets (Dubois, Czellar, & Laurent, 2005):

- high price,
- excellent quality,
- aesthetics and polysensuality,
- scarcity and uniqueness,
- ancestral heritage and personal history,
- superfluousness.

In our example above, what a premium car lacks with regard to a luxury one are its scarcity (everyone can buy a Lexus) and the ancestral heritage and history. The Lexus brand has a short but "intense" story. Toyota management, with the purpose of competing with Mercedes, has created the Lexus brand *ad hoc*. Lexus does not carry any brand myth within itself, nor does it create any.

Intangible attributes, the meaning the consumer confer to the product, have acquired a higher relevance than the tangible characteristics (Rullani, 2004).

Kapferer, referring specifically to Dubois' abovementioned definition, states that this is not a comprehensive definition of luxury and that a critical reason that the consensus on luxury definition has not been reached is that definitions created up until now are not proper definitions. Metatheory (Zaltman, Pinson, & Angelmar, 1973) theorised that a good definition of a concept clearly describes the defining characteristics that an entity, in this case, a product, must possess to be included in the concept, in this case, to be defined as luxury. He provides the following critiques (Kapferer & Michaut, 2016):

- The six characteristics described above can be applied both to luxury and antiques, without discrimination;
- Most possessions are superfluous, such as iPads or Coke;
- Superfluous or needless is a value judgment, not a defining characteristic. Also, superfluousness is measured using two dimensions (uselessness, non-functionality), which can be applied more appropriately to art than to luxury. For example, a Porsche is a useful, dependable, functional car, but it still is a luxury.
- Not all six factors are necessary for a product to be considered luxury. High price is a relative term. For example, the typical bags by Coach, Tory Burch, or Michael Kors sell for less than $1000, which is the entry price for Hermes, Dior, or Chanel bags. Both sets qualify as luxury brands, but they express different degrees and define "high price" differently.

  For the same reason, a 35 € Dior Diorific lipstick can be defined as a luxury product: while the price is high relative to other lipsticks, it is nevertheless accessible. Women who buy it consider it "a luxury" mostly due to the glamour and feelings of exclusivity attached to the brand name Dior.
- Finally, the definition raises concerns about scarcity. A few brands, such as Ferrari cars and Hermès Kelly bags limit their production purposely to starve the market (Eideh, 2016). Nevertheless, luxury has grown exponentially in the last years (Bain & Co., 2016). Such growth is possible only by eliminating scarcity. Thus, the luxury industry has moved from scarcity to virtual rarity, produced by feelings of exclusivity and uniqueness, also called "abundant rarity" (Kapferer, 2015).

Heine et al. definition of luxury is similar to the Dubois one; in this list we can find some recurrent characteristics, such as premium image, the importance of product quality and brand image. This definition, though, is more comprehensive and can answer the critiques moved by Kapferer and described above.

These identifying characteristics are (Heine & Waldschmidt, 2014):

- **Price**: The brand offers products that belong to the most expensive products in their category. The notion that consumers, to assess quality, rely on cues, information other than quality itself, is well established. It has been relied upon in both marketing (Allison & Uhl, 1964), (Olson, 1977), (Mayzlin & Chevalier, 2003), (Purohit & Srivastava, 2001) and economics (Klein & Leffler , 1981), (Nelson , 1974). For example, in the absence of other diagnostic information, consumers tend to rely on price as an indicator of quality, particularly for experience goods.
- **Quality**: luxury products are of the utmost quality, and will not be dismissed even after extended utilisation or defect.
- **Aesthetics**: The brand must recall an idea of beauty and elegance.
- **Rarity**: In contrast to mass-market brands, the luxury brand is difficult to acquire, due to limits to the production, not divulging sales number and making artificially challenging to obtain the product. For example, Ferrari places harsh conditions on who can acquire their limited edition cars.
- **Extraordinariness**: The extraordinariness of a luxury product often results from a different design. Luxury manufacturers often determine trends and fashion, which are successively adopted by mass-market manufacturers (Goody, 2006).
- **Symbolism**: While mass-market products (and premium products, to an extent) mainly stand for their functionality, luxury products generate numerous abstract associations, which often even exceeds their functional benefits (Mortelmans, 2005).

This definition above answers Kapferer critiques by placing the luxury products as the most expensive *of their category,* and interpreting the rarity characteristic as *difficult to acquire*. The symbolism characteristic also excludes art and antiques from this definition. Moreover, all characteristics described above must be present for a product to be considered as a luxury product.

By looking at the differences between premium and luxury product, at the purpose and function of luxury in modern society, and at the characteristics of a luxury product emerges a common denominator, in which luxury can be defined as:

**"*Access* to hedonistic, very high quality objects, experiences, and personal services, sold at a price far beyond what their functional value would command, which represent sources of a sense of privilege, taste, and refinement and produce recognition by relevant others, due to the power of the brand"** (Kapferer & Michaut, 2016).

### 1.2.4 Luxury Brands

Brands create the core of luxury; nobody can sell a 35€ Diorific lipstick, or a 10.000€ Hermès bag if it does not have the Dior or Hermès brand upon it. Luxury brands are not merely brands that sell luxurious products (Chandon, Laurent, & Valette-Florence, 2016).

A luxury brand is a brand first and luxury second. Although there are some reasonably well-established definitions of what a brand is, as we have seen in the previous paragraph, there is no corresponding delineation of what constitutes a luxury brand.

We can begin to understand the concept of luxury brand from its characteristics. According to (Tynan, McKechnie, & Chhuon, 2010), in order to be identified as luxury brands, they need to:

- Be of high quality;
- offer authentic value via the desired benefits, whether functional or emotional;
- have a prestigious image within the market built on qualities such as artisanship, craftsmanship, or service quality;
- be worthy of commanding a premium price;
- be capable of inspiring a deep connection, or resonance, with the consumer.

Keller has a more detailed list of which characteristics define a luxury brand (Keller, 2009). A luxury brand:

- maintains a premium image;
- creates intangible brand associations;

- is aligned with quality;
- uses logos, symbols, packaging as drivers of brand equity;
- develops secondary associations from personalities, events, and other entities;
- controls distribution;
- has a premium pricing strategy;
- carefully manages its brand architecture;
- has a broadly defined competition;
- Implements strict legal protection of its trademarks.

A brand, especially a luxury one, is more than the sum of its characteristics. To understand luxury brands it is essential to capture the relationships among people, products, and brands. The "three worlds" hypothesis of Karl Popper provides an insightful mean of achieving this (Popper, 1979):

- World 1 is the realm of physical objects, states, and systems;
- World 2 is the domain of subjective experience involving thoughts, emotions, perceptions, and so on;
- World 3 is the sphere of "culture" rooted in objective knowledge, science, language, literature, and so forth.

In the context of luxury brands, the three worlds correspond to:

- **World 1**: Goods and services offered by the brand; this is where the quality and aesthetics of the products have the most meaning: this world is the domain of what an object does in the material world, rather than what it represents.
- **World 2**: the experiential dimension of the brands, regarding all contact with a consumer with the brand, be it with its staff or with its products. It is where we can find the personal, hedonic value of a brand.
- **World 3**: collective narratives, knowledge, symbols, and images. Here the symbolic nature of luxury brands comes into play, the constructed and evolved narrative, myth, or dream-world of the brand. It has two aspects:

the value of a luxury brand signals to others and the value of that signalling to the signaller.

From this we can deduce that luxury brands have three components: the objective (material), the subjective (individual) and the collective (social).

Both Grandinetti and Collesei reach a similar conclusion, defining three dimensions of a product offering that contribute to generating value for the consumer (Collesei, 2006) (Grandinetti, 2008):

- A functional one (World 1), tied to performances;
- A psychological one (World 2), tied to the emotional component of the brand;
- A semiotic one (World 3), regarding the role of the product as a social relationship tool.

We can then conceptualise a luxury brand as **"An offering that delivers high levels of symbolic, experiential and functional value at the extreme luxury end of the utilitarian-luxury continuum"**.

## 1.3 Business Ethics

The last concept that we want to define is the concept of "Business Ethics". There are three concepts for which we can use this term (De George, 2018).

The first concept is Business Ethics as "Ethics in Business", the application of everyday moral or ethical norms to business, including ethical analyses of the production, distribution, marketing, sale, and consumption of goods and services (Donaldson & Walsh, 2015).

The second meaning is "Business Ethics" as an academic field. While common sense morality and the "Ethics in Business" approach are fine for the everyday aspects of business, the same cannot be said for new, complex issues, such as leveraged buyouts, greenmail, outsourcing, or restructuring.

What this "branch" of business ethics can add is not only arguments that show why most common sense judgments are indeed correct, but also the tools to discuss and evaluate the morality of these new, complex issues.

The last concept that is included in the “Business Ethics” term is “Business Ethics” as a movement. That is, the development of structures internal to the corporation that help it and its employees act ethically.

Some companies have always been ethical and have structured themselves and their culture to reinforce ethical behaviour. General Robert Wood Johnson wrote Johnson & Johnson's *Credo* in 1943. Most companies in the 1960s, though, paid little attention to developing such structures.

That slowly began to change with each wave of scandals (Lockheed bribery scandal of 1977, the Bhopal disaster in 1984, the Enron scandal in 2001, the subprime crisis of 2008, to name a few). Each one caused more and more pressure for societies to incorporate ethics into their structures from the public, media scrutiny, their corporate consciences; and, most importantly, from legislation.

Each one of these concepts is intertwined and is responsive to the other two. However, I want to focus on the concept that is more probably considered when a consumer thinks about “Business Ethics”; the one that is closer to the common man thinking. I will focus on the concept of Business Ethics as “Ethics in Business”.

### 1.3.1 Business Ethics as “Ethics in Business”

The thematic of the application of everyday moral or ethical norms to business has a long tradition. Aristotle, in his Politics, explicitly discusses economic relations under the head of the household, making moral judgments about greed, and on the unnatural use of one's abilities in the pursuit of wealth as an end in itself.

He is also the author of the classic definition of justice as "having an equal amount both before and after the transaction" (Aristotle, Nicomachean Ethics).

Throughout the development of industrial economies, from the eighteenth to the early twentieth centuries, philosophers (see Adam Smith, John Stuart Mill or Karl Marx, for example) tackled questions about political economy, from the ethics of lobbying and the rights of workers, to the justifications and critiques of socialist and capitalist models of ownership.

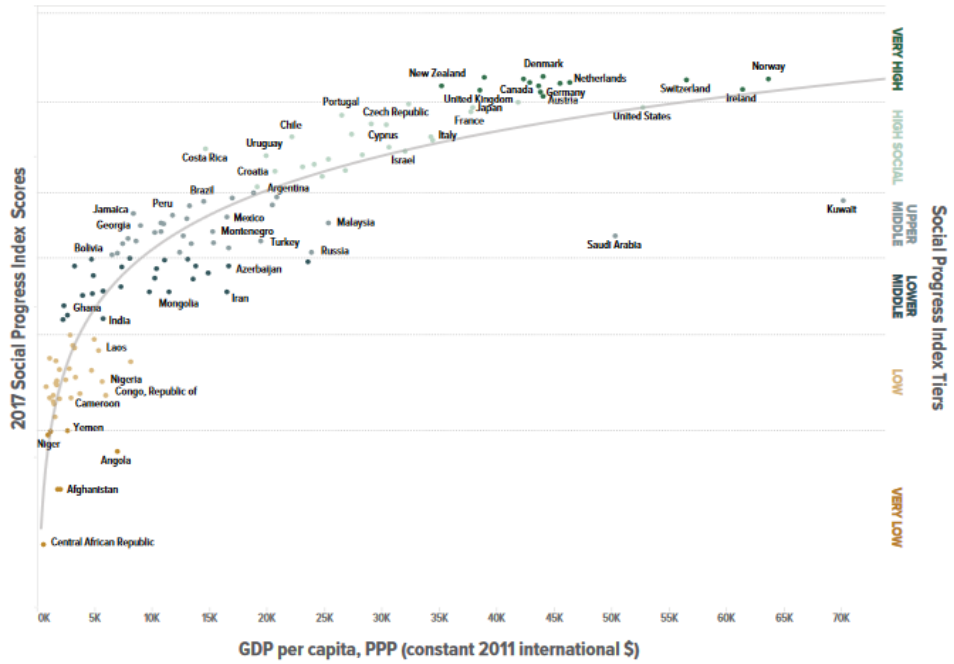
In general, this thematic focuses on the moral or ethical actions of individuals. Included with this notion, however, is also the criticism of multinational corporations that use child labour or pay pitifully low wages to employees in less developed countries or who utilise suppliers that run sweatshops.

The idea of ethics in business continues to the present day. Business, in general, helps in making the world a better place: Porter and Stern (2017), gathered data from 128 nations about social progress (basic human needs, foundations of wellbeing, and opportunity) and economic growth (considering GDP per capita) and looked at the relationship between these measures. They found a positive and strong relationship between the 2017 Social Progress Index and GDP per capita, which confirms our previous statement.

On the other hand, many fear the firm. The numerous scandals over the past three decades have been defined as “dreadful corporate behaviour” (Greve, Palmer, & Pozner, 2010) and have damaged business legitimacy and the social trust that serves as its foundation.

Taken as a whole, consumers recognise the role of business as an agent of world benefit but are also wary of any single firm’s activities. Society now expects more from businesses than merely providing quality goods and services at a fair price and creating wealth.

*Figure 3: Social Progress Index vs GDP per capita. Source: Social Progress Index 2017 Report*



For example, a recent survey states that only 7% of the US population believes that business should only make money for its shareholders and that about 90% want companies to support social or environmental issues and want to be informed about their efforts (Conecomm, 2013).

With this kind of pressure on firms to serve as agents of world benefit, firms responded with a variety of "corporate social responsibility" initiatives. It has been shown that such initiatives have a positive effect on attracting and retaining a loyal customer base (Batra, Ahuvia, & Bagozzi, 2012) (Varadarajan & Menon, 1988) and on attracting and retaining high quality employees (Backhaus, Stone, & Heiner, 2002) (Jones, Willness, & Madey, 2014). Moreover, socially responsible investment practices attract impact investors (Dhaliwal, Li, Tsang, & Yang, 2011). Porter and Kramer (2006, 2011) encouraged firms to scour their value chain for opportunities to serve both society and their bottom line. A recent PriceWaterhouseCoopers' (2015) CEO survey states that 68% of all CEOs believe that the purpose of business is to balance the interests of all stakeholders.

### 1.3.2 Business Ethics in the Luxury Business

Some literature proposes that sustainability is incompatible with the luxury industry (Lochard & Murat, 2011). Luxury industries generally use rare materials, such as furs and hides, and focus on the emotional features offered by luxury products rather than their functional ones. This behaviour is an antithesis of sustainable development, which places its concern on the environmental and ethical issues (Pascaud, 2011) (Vigneron & Johnson, 2004).

As stated above by Grandinetti and Collesei, there are various dimension that compose a product offer. We have already enunciated that consumer satisfaction is connected to the utility and the qualitative characteristics of the luxury product, the functional dimension.

In luxury, the dimension that mainly contributes to the generation of value for the consumer is the semiotic one (Kapferer & Michaut, 2016). The value of a luxury product is tied to the perception that the others have of the product itself, to the social position and to the prestige it gives to the owner. The consumer associates to this product a symbolic value of status, which goes beyond the specific functions of use and justifies the willingness to pay a premium price.

A firm must promote the differentiating characteristics of the brand and promote the intrinsic elements of the product/service offered to preserve the value of the brand identity. This picture indicates the growing importance attributed to the topics of responsibility and sustainability, importance that appears intimately connected to the evolution of the concept of luxury itself and its intrinsic values.

The same reasons that Lochard & Murat enunciated as the reason for which sustainability is incompatible with luxury, such as choosing excellent materials, authenticity, elegance, quality and value over time, in the modern society create the bridge that links the world of luxury with that of sustainability.

Luxury is connected to the concept of sustainability since the value of craftsmanship, especially if territorial, is firmly connected to that of social responsibility; through the know-how often passed down for centuries, the luxury product acquires hugely different characteristics from those of an item for mass consumption.

From the psychological dimension of the product offer, the unreachable dream connected to the possession of a particular product, the concept of luxury tends to free itself from the concept of economic value. Luxury products are surely expensive, but that is *not* the reason why a person buys them.

Luxury is connected more and more to a more ethical/social idea of value, to a lifestyle connected to emotional and experiential values. The concepts of responsible and sustainable luxury become not anymore a mere marketing choice, but a strategic one, an essential tool for differentiating.

As stated in the previous paragraph, luxury has a role in society. Thus, it also adapts to the always-evolving dreams of human society (Berthon, Pitt, Parent, & Berthon, 2009).

During expansive economic periods, marketers leverage the social aspects of luxury to extend luxury brands to the mass market. This process is also called “democratization of luxury”. In the process, the functional and experiential uniqueness of the luxury brand tends to be diluted.

In contrast, during recession periods, there is a tendency for a retreat to the elite. During these periods, most middle-class people are reluctant to signal their wealth and sophistication to others who may be suffering. Consequently, the symbolic aspect of luxury brands is reduced or even rejected. The very notion of luxury is reinterpreted, from a symbol of aspiration to a symbol of dispassion.
This reinterpretation does not happen for the "inaccessible luxury" (Kapferer, 2012): luxury for the elite is about the experiential and the functional, and the brands that deliver in these areas are the ones that excel during a recession.
Apart from the retreat to the elite, recessions trigger another essential phase in this "luxury brand cycle": a reassessment of what constitutes luxury. This reassessment reflects the change in values that typically occur during and immediately after periods of socio-economic austerity. Often, the symbols of aspired luxury in one economic cycle can become the symbols of decadence in the following one.
As old symbols of luxury are rejected, new symbols emerge that are more attuned to the revised value system. The values that are emerging from the current recession seem to be those related to ecology and nature (Kahn, 2009).
Luxury is entirely compatible with sustainable development. Even more, it has become an integral part of it: a luxury brand strategy is about the client's dream, and not about the consumer's artificially created desire. A sustainable luxury product has a long lifespan and is produced by qualified personnel, not by soulless machines or exploited workers on the other side of the world. Sustainability may be conceived, in modern society, as a source of luxury (Wiedmann, Hennigs, & Siebels, 2012).

# 2 Brand Perception

## 2.1 What is Brand Berception?

In the previous chapter, I described the brand as "*the sum of all mental connections people have around it*" (Brown, 1992).

In order for these connections to be created, though, it is necessary that the consumer is exposed to the brand. What the customer perceives and experiences while in contact with the brand will shape his idea of it, his *brand perception*.

In a way, consumers build brands, not companies (Gunelius, 2018). A company can put out messages through advertisement and move conversations with the consumers in specific directions through the use of social media. Nevertheless, it is the consumers who experience, who become emotionally connected to brands. The outcome of all actions a firm does to improve its brand depends on how consumers perceive it.

Brand equity is customer-based: equity is present when the customer is familiar with the brand and holds some "favourable, strong, and unique" brand associations in memory (Kamakura & Russel, 1991).

What consumers know about a brand influences their reaction to any future contact they will have with the brand itself, be it advertisement, products or staff (Koll & von Wallpach, 2009).

While brand knowledge characteristics refer to brand perception, customer response “refers to the customer’s processing of those perceptions to form subsequent comparative evaluations, preferences, behavioural intentions, or behaviour” (Hartman & Spiro, 2005). Managing brand knowledge is a crucial task for brand managers (Aaker, 1996) (Kapferer, 2012) (Keller, 2003).

## 2.2 Brand Perception Studies on Luxury

The use of perceptual maps as a way to display the perceptions of customers or potential customers is a widely used technique in marketing, both for products (Urban, 1975) and for brands (Lehmann, 1972) (Shugan, 1987).

Less recent studies relied only on surveys to gather the necessary data. In the latest years researchers have usually integrated the survey with a focus group or open questions, to further explore their findings.

Vigneron and Johnson (2004) analyze the perceived luxuriousness of a brand using a scale used to explain the decision-making process of the luxury consumer (Vigneron & Johnson, 1999). It is composed of twenty items that measure five different dimensions: conspicuousness, uniqueness, quality, perceived extended self, and perceived hedonism. The respondents were asked to evaluate a luxury brand thorough a questionnaire and an open question. The consistency of measurement was determined by collecting data on two occasions separated by two weeks using the same subject population. The result is a “BLI scale” that measures the amount of luxury contained in a luxury brand.

Stępień (2018) uses a two-step survey to measure the difference in brand perception between “snob” and “bandwagoners”, referring respectively to the “snob” effect, when the willingness to purchase publicly-desired goods decreases, and to the bandwagon effect, which occurs when consumer demand increases while other people purchase the same kind of goods/services. The first step is quantitative, an online survey among 1193 consumers; the second step is qualitative, a semi-structured interview with affluent consumers, which allowed for a more in-depth exploration of the results of the first step.

Bandwagoners want to conform to the public image of the upper class by virtually copying their purchase behavior, whereas the snobs tend to publicly manifest their individual sophistication and superior taste.

Their conclusion is that both snob and bandwagon attitudes towards luxury can be expressed by the same individual. Both snob and bandwagoners want to differentiate themselves from their peer groups. The difference between them lies in the different peer group and in their motivation: bandwagoners want to be affiliated with higher social classes, while snobs want to be socially recognized as superior and unique.

## 2.3 Limits of Survey-Based Research

Conventional market research data often depends on the individual comments and observations of consumers about their attitude toward a brand.

It is widely accepted that attitudes guide human behavior (Bredahl, 2001). Models such as the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and Theory of Planned Behavior (Ajzen, 1985) (Ajzen, 1991) theorized that attitudes affect people's intentions, and intentions in turn impact behavior (Petty, Unnava, & Strathman, 1991).

Consumers, though, may say one thing and intend to do another one (Martinez, 2012). Consumers may say that they will recommend a product to a friend, or that they will try a product or service, but never follow through.

The information that marketers, advertisers, and publishers learn about consumers is based on what consumers say. Consumers tell what they are thinking, feeling, and doing with regard to brands. They may not be aware of all that they are thinking and feeling about a brand (Carrington, Neville, & Whitwell, 2010).

In particular, they may not be entirely truthful about what their intentions and actions are with regard to topics that are considered delicate, such as ethical consumption (Johnstone & Tan, 2015).

Some researchers state that while consumers have a positive attitudes about the environment, it does not necessarily translate into actual purchase behavior (Carrigan & Attalla, 2001) (Chatzidakis, Hibbert, Mittusis, & Smith, 2004) (Gupta

& Ogden, 2009) (Pickett-Baker & Ozaki, 2008). As Carrigan and Attalla's (2001) study states, ethical considerations are not always considered when evaluating the purchase of a product or service.

Other researchers, instead, suggest that survey methods, which rely on consumers attitudes, have overstated how much ethical issues influence purchase intention (Auger & Devinney, 2007) (Chan, 2001). This is because there is a social expectation about how much a person cares about ethical and environmental issues. This expectation makes so that the discrepancy between pro-environmental attitudes and actual behavior is overestimated (social desirability bias).

Moreover, the uncertainty about the effectiveness of pro-environmental behaviors causes self-interest to outweigh the cost of making this type of choices when buying products or services, regardless of how positive is the consumers' attitude towards the environment (Gupta & Ogden, 2009).

To understand this gap between attitudes and behavior, we can use the theory of neutralization. It helps to explain how people justify or rationalize norm-violating behaviors. "Neutralization is a process of restoring equilibrium without attitude change" (Chatzidakis, Hibbert, & Smith, 2007).

The theory of neutralization has been used shoplifting (Strutton, Vitell, & Pelton, 1994), white-collar crime (Piquero, Tibbetts, & Blakenship, 2005), and more deviant behaviors such as genocide (Alvarez, 1997) and hitmen (Levi, 1981).

More recently, it has been applied to ethical consumption practices (Chatzidakis, Hibbert, Mittusis, & Smith, 2004) (Chatzidakis, Hibbert, & Smith, 2007), and consumer misbehavior (Harris & Dumas, 2009) (Harris & Daunt, 2011).

Over the years, consumers have become more environmentally conscious, and there is a growing social expectation that one should be concerned about the environment. Communicating otherwise would go against the norm (Johnson, Fryer, & Ragget, 2008). Consumers will try to maintain or enhance their self-esteem when there is a discrepancy between attitudes and behavior (Sirgy, 1982).

It follows that, as stated before, people attitudes do not necessarily reflect their actual consumption behaviors (Gupta & Ogden, 2009) (Pickett-Baker & Ozaki, 2008).

Sykes and Matza proposed the existence of "five neutralization techniques" that individuals use to maintain their self-esteem and protect themselves from self-blame. These are (Sykes & Matza, 1957):

1. *The denial of responsibility*: a person blames others or their circumstances, stating that their behavior originated from causes beyond their control (Vitell & Grove, 1987);
2. *The denial of injury (or benefit)*: this occurs when a person states that their misconduct does not cause serious harm to others. Alternatively, the *denial of benefit* is used when individuals do not believe their actions would make a difference (Sykes & Matza, 1957);
3. *Denial of victim*: this occurs when a person affirms that the victim "deserved it" as an excuse to explain their actions (Chatzidakis, Hibbert, & Smith, 2007);
4. *Condemning the condemners*: this occurs when the accused person shifts accuses the condemners in turn, stating that they too do the same (Vitell & Grove, 1987);
5. *Appeal to higher loyalties*: this occurs when a person claims that his "norm violating behavior is the result of an attempt to actualize some higher order ideal or value" (Chatzidakis, Hibbert, Mittusis, & Smith, 2004).

Johnstone & Tan (2015) analyzed the causes of the "green attitudes-behaviour gap" in a neutralization theory framework. While this study does not focus on luxury consumption, it can shed some light on the causes of this gap. They interviewed a total of 51 people, aged between 19 and 70 years, making them participate in various focus groups. They used focus group in order to explore complex behaviours and motivations, since this technique allows explicit use of group interactions (Carson, Gilmore, Perry, & Gronhaug, 2001).

They found that three classic neutralization techniques were frequently used: denial of responsibility, denial of injury (or benefit), and appeal to higher loyalties. Moreover, they identified two new techniques: protecting one's sense of self and consumer attachment to the brand:

- *Denial of responsibility*: personal circumstances, increased price and doubts about the effectiveness of the "ethically friendly" products were the excuses most frequently used to justify consumption choices;
- *Denial of injury (benefit)*: consumers do not see the impact of using "not-ethically friendly" products, so they see no point in changing their behavior.
- *Appeal to higher loyalties*: some people made purchase decisions for individual gains, for example saving money for family, rather than social gains;
- *Protecting (maintaining) one's sense of self*: Some consumers believe being "ethically friendly" requires sacrifice. There is a perception that "green consumers have to forgo life's comforts";

  Moreover, green consumers or the green message were not always perceived in a favorable light. Individuals will avoid to behave in a way that will associate them with a group if its identity not aligned with the individual's one (Banister & Hogg, 2004);
- *Consumer attachment to the brand*: Consumers can form strong attachments to brands, which may lead them to forsake personal resources, such as finances, to maintain that relationship (Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010).

While the intention-behavior gap can be observed also for higher income consumers (Nielsen, 2011), the motivations given to justify their intention-behavior gap cannot be applied so easily to luxury consumption. In fact, the main given justifications were the following ones:

- *Price*: an "ethically-friendly" product is more expensive. As stated in the previous chapter, one of the characteristic of a luxury product is that its price is the highest in its category, so this motivation cannot be used;
- *Performance*: an "ethically-friendly" product is less effective or less comfortable than its "standard" counterpart. The best performance and comfort money can buy is another distinctive characteristic of a luxury product. Thus, also this motivation cannot be used;

- *Habit*: consumers are used to a certain product, or attached to a brand and are not willing to change their ways. This is the only motivation that can be applied also to luxury consumption, since history and the myth surrounding a luxury brand are one of its main aspects.

Based on the previous considerations, I can expect that the correlation between the “ethically-friendly” image and the “fashionable” image of a brand is stronger for luxury brands than for non-luxury ones.

By using social media data, my study also dampens another aspect of the intention-behavior gap: in fact, all results are based not on what consumers say (as for surveys), but on how they have acted.

The act of following a specific Twitter account, in fact, is a *behavior* and a social cue, that shows the loyalty of the consumer to the brand (Danaher, Wilson, & Robert, 2003); and that can be used to define the public image of a brand (Naylor, Lamberton, & West, 2012).

# 3 Tap Into Folks' Knowledge

My research moves from the following hypothesis, which is the basis of this work. The objective of this thesis is to discover if there is a connection between the "fashionable" perception of a luxury fashion brand and its eco-friendly image. In particular, I assume that the increase of the eco-friendly perception will influence the brand image positively.

The research question is the following:

*For a luxury fashion brand, is there a relationship between being considered "eco-friendly" and being considered "fashionable"? In other words, is there a convergence between the "eco-friendliness" and "fashion" concepts?*

A convergence of these two concepts indicates that, in the fashion luxury industry, being "ethically-friendly" is becoming more and more a part of its core business and not just an added value to the firm's offer.

To measure the improvement of brand perception, I assume that the general quality of the image of a fashion luxury brand can be measured as how much "fashionable" this brand is perceived.

I verify this hypothesis using an algorithm, which takes as inputs a specific brand (for example "Gucci" or "Hermès") and a brand attribute (for example "eco-friendliness" or "ethical"). The algorithm automatically generates a score. The higher the score, the stronger the perceived relationship between the brand and the attribute.

I selected a range of fashion brands, collected from the SocialBakers website, which curates a list of the most prominent brands in social networks.

For each brand, I calculated the scores that indicate the degree of eco-friendliness and fashion perceived by consumers. If the "fashion" scores result to be dependent on the "eco-friendliness" ones using the collected data, then we can assume that the "eco-friendly" perception of a brand is correlated with its "fashionable" one.

To calculate the described scores, I relied on Twitter data. I have chosen this social network for multiple reasons.

Twitter is relevant: even though another social network may have more users (for example Facebook or Instagram), and the rate of firm using social networks are similar (the 88% of Fortune 500 companies actively maintain a Twitter account, whereas 85% of them maintain a Facebook account), Twitter is more direct than Facebook when it comes to brand promotion. The Twitter Timeline is not an entirely algorithmic timeline[1], unlike the Facebook Newsfeed and the Instagram feed, that are heavily controlled by algorithms.

The Twitter timeline consists of three main sections:

- Ranked tweets
- "In case you missed it."
- Remaining tweets in reverse-chronological order

The algorithm evaluates the relevance of each tweet based on how much recent the tweet is or whether it contains media, the eventual past interactions with the author of the tweet, and tweets the user found engaging in the past.

The most relevant tweets ("Ranked tweets") are put on the top of the timeline, while the "In case you missed it" section, composed by older but still relevant tweets, appears if the user has not accessed Twitter for several hours (Oremus, 2017).

After these two sections, the algorithm shows the rest of the tweets of the accounts followed by the user in reverse-chronological order. When the users refresh their timeline, the ranked tweets will sink out of view, to show only the last tweets: a

[1] https://twitter.com/jack/status/696083407588106240 (Jack Dorsey, CEO of Twitter)

brands' tweet will always show up in the brand followers' Timeline as long as the user is online.

Facebook, on the other hand, prioritises the contents from friends and family[2], and after that the contents that generate a high volume of Likes, comments, or shares in a short time[3].

The difference in messages priority between the two social networks translates into the fact that 50% of Twitter users follow at least a brand, compared to the 44% of Facebook[4].

For these reasons, Twitter is extensively used for brand image and brand personality development. The brand community can be reached directly and at low costs, with frequent messages that have a conversation-like quality that is missing from other social media (Etter & Plotkowiak, 2011). For example, tweets, while public, can be addressed to specific users through the usage of the @ symbol (Boyd, Golder, & Lotan, 2010). Each firm can maintain different accounts, for example at the brand and the firm level, to develop communities at a scale appropriate to a firms' brand strategy and to distinguish the different images tied to the different brands belonging to a firm. An important distinction when studying brand image perceptions, as brands can be dominated to varying degrees by their parent corporate brands (Berens, van Riel, & van Bruggen, 2005).

Another reason why Twitter data are used in this research, and not other social networks data, is that all social connections (follow and followers) are public, except for a minority of private accounts (about 11.8% (Patel, 2017).

Moreover, these connections can be accessed automatically and dynamically using the Twitter API.

This fact is significant, because the act of "following a brand" is a social signal that can tie the social network data and the users, and this data can be processed to define the brand image (Naylor, Lamberton, & West, 2012).

[2] https://newsroom.fb.com/news/2016/06/building-a-better-news-feed-for-you/
[3] https://www.facebook.com/FacebookforDevelopers/videos/10153644318738553/
[4] https://blog.globalwebindex.net/chart-of-the-day/half-of-instagrammers-follow-brands/

Finally, Twitter is organised: users often classify Twitter accounts using thematic lists. These lists can be accessed dynamically and provide a tool to define which Twitter accounts are the most relevant to a particular topic.

Since the research focuses on a sample, some doubts about whether the obtained results can be generalised to the whole population are acceptable. The first researches on the topic show the presence of a relationship between online and offline loyalty to a brand (Danaher, Wilson, & Robert, 2003). Moreover, consumers are increasingly looking at a brand's social media presence to form judgments about the brand (Baird & Parasnis, 2011) (Naylor, Lamberton, & West, 2012). Studies show that firm-generated content has a positive effect on spending, cross-buying, and customer profitability of the customers that come into contact with such content (Ashish, Ram, Rishika, Ramkumar, 2016).

## 3.1 Is It True That a "Follow" Means Something? What Does It Mean?

The most common approach to detect the perception of a user about a particular concept using his social network data is to analyse the so-called UGC (User Generated Content). UGC definition is "media content created or produced by the general public, rather than by paid professionals, and primarily distributed on the Internet" (Daugherty, Eastin, & Bright, 2008).

One of the most common techniques used in this case is the *associative analysis*. Starting from a text that speaks about a product, for example a review, the analysis defines which attribute (or attributes) of the product are present in the text and how these attributes are evaluated (Archak, Anindya, & Panagiotis, 2011) (Paul, Stuart, Krystin, & Roland, 2017). This analysis is executed using text-mining tools and is a direct evolution of sentiment analysis, which aims only to define the attitude of the content generator regarding the product or the topic the text is about (Michael & Kristof, 2018) (Ludwig, et al., 2013).

These methods, while returning a clear image of how the users perceive a product, require the presence of a vast amount of data that speaks about the brand and a specific attribute, and the text must contain information about how the user evaluates the brand regarding that specific attribute.

Moreover, the generalizability of the results obtained with such methods is not always ensured (Das & Mike, 2007). For example, empirical research has revealed that the sentiment of investors, collected using sentiment analysis, does not predict stock returns, either at the aggregated or detailed level (Kim & Hall, 2014).

For these reasons, to estimate the consumer perceptions of brands along attributes of interest; I instead use a method that relies on the assumption that proximity in a social network and similarity are tied one another.

This assumption relies on the concept of "homophily", that is the tendency of individuals to associate and bond with similar others. This concept has already been observed in various kinds of "classic" social environments, such as high schools (Currarini & Redondo, 2010) (Currarini, Jesse, & Fernando, 2016).

We can apply this concept also to social networks: when a user in a social network "follows" an account (in Twitter), or "likes" a page (in Facebook), or connects itself to another entity in a social network, it publicly associates itself with that entity. We can interpret this association as an expression of affinity between the user and the entity. Survey research also supports that the primary reason users connect to a brand is that they like its products and that most fans are customers (Pereira, Salgueiro, & Mateus, 2014).

For these reasons, we will measure the users' perception of a brand by looking at how many users that follow a particular brand, also follow Twitter accounts that are representative of a particular concept. Users that follow accounts widely acknowledged as exemplifying a particular attribute are likely to consider that concept important. Using "eco-friendliness" as an example, if a user follows the Greenpeace Twitter account, it is likely that this user is sensitive to environmental issues.

We can assume that if a brand has many users that follow those accounts, we can also affirm that users perceive this brand as closely related to that attribute or concept.

While there is a multitude of reasons for which a user can follow both the brand and these *exemplar* accounts, we assume that the main one is that the user values both accounts as "strong" in that particular attribute. We can suppress the noise generated by "casual" Twitter followers by inferring this connection using the vast amount of data that the Twitter social network can provide.

## 3.2 Folksonomy

In the previous paragraph, I described how the collection of Twitter accounts followed by a user is a social "marker" that communicates characteristics about that user values and beliefs. Determining which accounts are deemed "important" for a concept (such as "environmentalism" or "fashion") allows us to determine also if a set of values is deemed essential for each user.

In a vast and ever-developing environment such as the Twitter social network, it is impossible to classify data centrally correctly; we use, to execute this classification, the concept of *folksonomy*.

Thomas Vander Wal coined the term "Folksonomy" in 2004, by blending the words "folk" and "taxonomy". It refers to "the result of personal free tagging of information for one's retrieval" (Vander Val, 2007). The collection and aggregation of this data result in a classification system of online content based on tags, defined as "keywords" (Tonkin & Guy, 2006), that act as a sort of simple metadata. Users apply these tags to classify content to their advantage, while the host of the content aggregates these tags and classifies the information based on which tags are used and how often. This classification system is directly opposed to the *taxonomy*, where content is categorised exclusively by its owner (Manish, Rui, Zhijun, & Jiawey, 2011).

One of the first and most famous sites that introduced the tagging system was del.icio.us, in which the users could save bookmarks of their favourite web pages and tag them to classify them (Smith, 2008). The site, once a user classified enough content, started to propose web pages with tags similar to the ones the user bookmarked.

Folksonomy is a trade-off between classical taxonomy and absence of classification. As such, it has different benefits and disadvantages with regards to taxonomy. The main advantages are:

- Tags are a simple activity, that does not require training or expertise (Quintarelli, 2005);
- Tags are flexible, as opposed to the rigidity of taxonomy classification;
- Tagging can be done by large groups of people, allowing the classification of an amount of content that taxonomy cannot do.

Some of the drawbacks are generated directly from the above-describes advantages:

- For example, since tagging requires no training, the quality of the classification is often poor (Hayman, 2007);
- The high quantity of people that can tag content can use different ways of tagging, or use synonyms, composite words or overly personalised tags (Tonkin & Guy, 2006).

While the main tagging system used in the Twitter social network is the hashtag, it cannot be used in this research because it classifies single tweets, not Twitter accounts. To define which Twitter accounts are more relevant to a given "tag", we will use Twitter lists, curated group of Twitter accounts.

# 3.3 Methodology

## 3.3.1 Brands to be Analysed

The brands subject to the research to be analysed have been selected from a list, curated by Socialbakers, that consist of all the fashion clothing brands with the highest number of followers[5].

We chose this type of selection for a variety of reasons:

- In the first place, the selected twitter accounts need to have a sizeable number of followers to collect enough data to execute the analysis. Accounts with less than 100.000 followers have been excluded from the analysis;

[5] https://www.socialbakers.com/statistics/twitter/profiles/brands/fashion/clothing/

- In second place, there isn't a consensus on what the term "fashion" means. In the last decade, there has been a process of "Democratization of Luxury" (Okonkwo, 2009) that blurred the lines in stating if a brand can be defined as luxury or not (Nieto, 2015). The recent collaborations between fast-fashion and luxury fashion brands contributed to this blurring of lines; research also shows that this kind of collaborations improved the luxury brand image (Amatulli, Mileti, Speciale, & Guido, 2016).

For this reason, I have collected brands without distinguishing between fashion and luxury fashion brands, relying only on the general classification provided by Socialbakers. This way, I can also verify if the brand perception measurement method used in this research can correctly perceive how "luxury" a fashion brand is.

I filtered the list collected from the Socialbakers site to eliminate duplicate accounts, not English-speaking accounts and to collect only international brand accounts, excluding the ones that referred to particular places (for example, Levi's Mexico).

For each of these accounts, I collected their followers' user codes automatically. Twitter's API, though, limits how many user codes can be collected in a period[6]. Since many of these accounts have more than 10 million followers and collecting them would be impractical, I collected up to a million followers' codes, using random sampling.

### 3.3.2 Choice of the Exemplars

The first input for the brand perception algorithm provides automatically a Twitter account for which collecting its followers. It is not immediate to define the second input, the perceptual attribute to be measured.

To collect data about a *concept* that can be compared to a brand's list of followers, we need to have a list of the Twitter accounts that best exemplify that concept. We call these Twitter account *exemplars*. While some accounts can be readily

[6] https://developer.twitter.com/en/docs/basics/rate-limiting

determined (for example, Greenpeace for eco-friendliness), I prefer to automate this process, because (Culotta & Cutler, 2016):

- For some attributes, it can be challenging to find suitable exemplars;
- By automating the process, it becomes scalable and generalizable to multiple attributes;
- Less-known accounts are usually more valuable in computing the final perceptual score. The rationale behind this reasoning is that well-known accounts with many followers (such as Greenpeace) are followed by people that are not that invested in the concept that we are trying to measure, while niche accounts are followed only by people who are interested in the topic.

In Twitter, the concept of folksonomy is materialised in the *lists*. Twitter lists are a group of Twitter accounts, curated by a single user. I assume that a user creates a list because he wants to aggregate the most relevant accounts (for the user) regarding a single topic (ex. photography, racing, social activism, journalism, environmentalism).

To find which lists are the most influential when speaking about a concept, I used the Google search engine, using a query for the concept I wanted to analyse (e.g. "fashion", "style", or "environment"), filtering only the web pages that correspond to a Twitter list[7]. After removing duplicate lists, I collected the Twitter accounts contained in the first 50 results of the Google query.

A Twitter account is considered as an *exemplar* if it appears in at least two of the lists collected in the previous step and has more than 1000 followers. For each of these exemplar accounts, I collected their followers with a procedure similar to the one used for the brands.

For feasibility reasons, we collect up to 100.000 followers' codes for each exemplar, using random sampling.

### 3.3.3 Calculation of the SPS (Social Perception Score) Index

Once I collected both the brand's followers and the followers of the exemplar Twitter accounts, I calculated a similarity index, which describes how many

[7] Webpages that matches the expression `http://twitter.com/*/list/*`

followers of the brand also follow an exemplar account. This index is calculated using the Jaccard similarity index[8].

$$J(B,E) = \frac{F_{B,E}}{F_B + F_E - F_{B,E}}$$

Where the Jaccard Index between the Brand B and the exemplar account E is the ratio between the followers in common between them ($F_{B,E}$) divided by the users that follow at least one of the two Twitter accounts ($F_B + F_E - F_{B,E}$). I subtract the followers in common in the denominator to avoid counting those users twice.

For each brand, there will be an index for each *exemplar* account of the concept we want to measure. To calculate a single score that defines the perception of the brand about the attribute, I need to average these indexes.

To do so, I used a weighted average, where the weight of each score calculated is inversely proportional to the number of followers of the *exemplar* account: as stated in the previous paragraph, niche accounts are deemed more informative than famous ones. This processing is similar to the "inverse document frequency" adjustment, used in information retrieval to encourage documents containing rare query terms to be ranked higher than documents containing common query terms (Manning, Prabhakar, & Hinrich, 2008).

### 3.3.4 Extrapolation of Brand Perception Correlation

Aa a result of the computation specified in the above paragraphs, I obtained a score for each brand and for each term we used to measure the brand perception.

To determine if the "environmental-friendly" perception of a fashion or luxury brand influences the reputation of the brand itself, I execute a simple linear regression on the "Environment" SPS against the "Fashion" ones. The linear model used in this estimation is the following:

$$SPS_F = \beta \cdot SPS_E + \varepsilon$$

Where $SPS_F$ is the Social Perception Score of a brand for the "Fashion" concept, $SPS_E$ is the "environmental-friendly" one, while $\beta$ is the coefficient, estimated by the linear model, that describes the relation between the two scores.

[8] https://en.wikipedia.org/wiki/Jaccard_index

If this score is statistically higher than zero, it is an indication of the presence of correlation between the “environmental-friendly” image of a fashion brand and its reputation.

# 4 "Any Colour You Like"

In this chapter, I will show the results of the SPS calculation, the particularities that have emerged from the data and the evidence of the presence of correlation between "environmental-friendly" perception of a fashion brand and its reputation.

Before doing that, though, I need to define the terms that will be used to calculate the SPS. In fact, the inputs for the algorithm are:

- the Twitter account name of a brand;
- a query that describes the concept for which we want to measure the brand perception.

While the algorithm requires only one query to measure the brand perception of a brand for a particular concept, I will repeat these measurements using multiple queries. I run this analysis for two main reasons: the first one is to verify that each term is correctly tied to the target concept. For example, while the term "luxury" is apparently tied to the reputation of a luxury fashion brand, it poorly relates with the other terms used for this concept. Moreover, the exemplar accounts generated by this term are few and not tied to the fashion world.

The second reason is to have slightly different points of view for the same concept. For example, for the "environmental-friendliness" concept, we select two queries: the first is "environment", while the second is "ethical business". These two terms, while ascribable to the same concept, are different, and thus provide further depth to our analysis.

I chose the words that will be used in the analysis from a pool of words that consumers, in a study concerning the personality of luxury fashion brands (Heine, 2009), consider to be related to the fashion environment.

From this pool of words, I removed words not directly ascribable to the fashion environment (such as creative, cool, experience), and words that didn't generate at least 20 exemplar accounts (for example, luxury and elegance).

The remaining words that have been used for the subsequent analysis are *fashion*, *glamour* and *style*.

## 4.1 Fashion terms

The three words I selected in the paragraph above, "fashion", "glamour" and "style", are all descriptive of the "fashion" concept, thought through slightly different points of view.

To better understand what these terms mean to the Twitter users, we compiled a word cloud of the most cited words in the first 500 tweets of each exemplar account that the algorithm, described in the previous chapter, has found.

The dimension of each word in the word cloud below is relative to the frequency of that word relative to the others. This is not a content analysis of the tweets of the exemplar accounts, but this qualitative analysis helps to understand the meaning of a brand having different scores for each term used.

### 4.1.1 Fashion

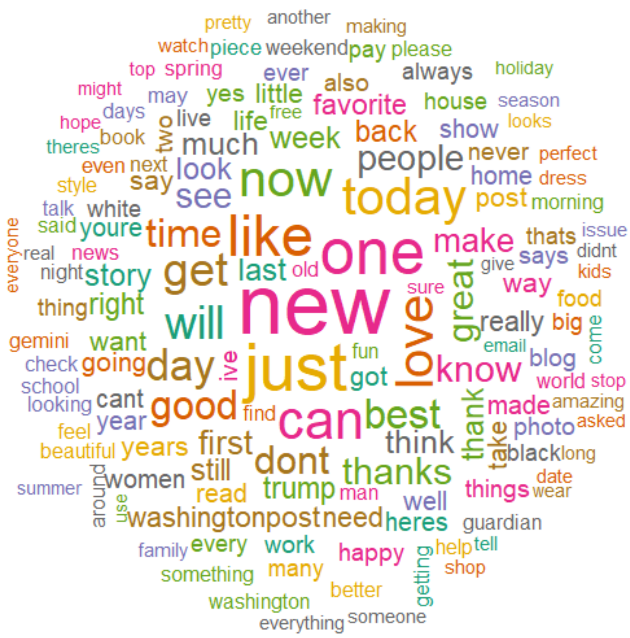
*Figure 4. Source: Twitter API*

### 4.1.2 Glamour

*Figure 5. Source: Twitter API*

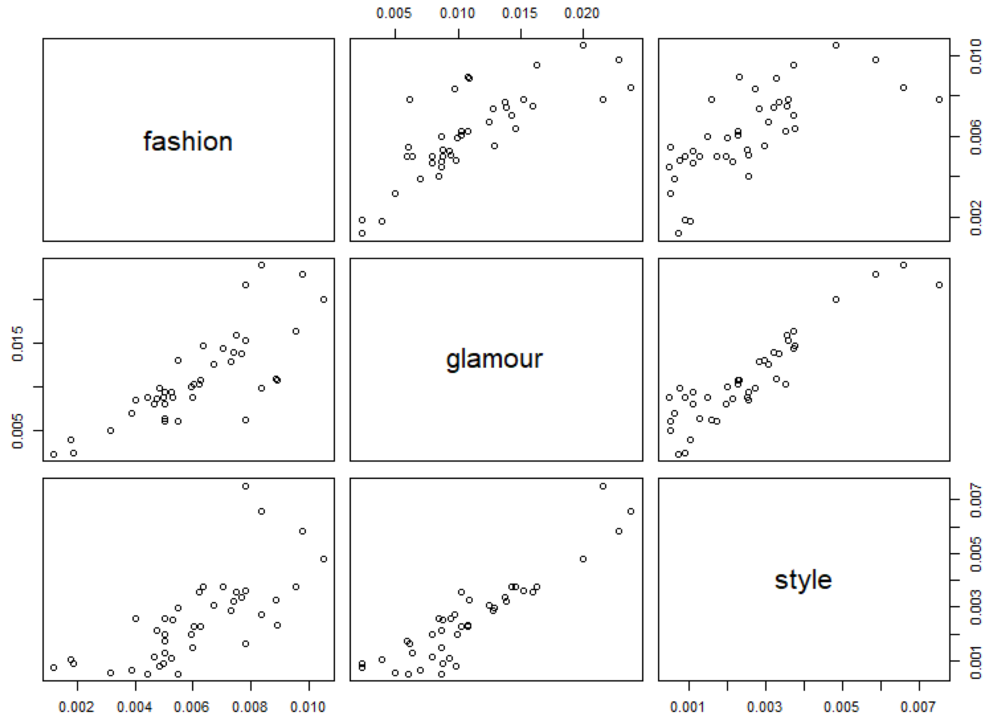

### 4.1.3 Style

*Figure 6. Source: Twitter API*



In all the terms above, the words “new” and “now” are the most used. The terms more connected with the fashion industry, such as “collection”, are present in the “fashion” and “glamour” term, though for “glamour” is less prominent.
“Style” exemplars do not seem to use the term at all, while it seems that the exemplar Twitter accounts for the “Style” term use general positive adjectives referred to experiences more than products (“love”, “great”, good”, “best”, “time”, “day”).
In “Figure 7” below, all scores for all brands are plotted for the three words described in this paragraph. The plot clarifies the presence of a correlation between the SPS scores: the more the points in the scatter plot are plotted along a line, the more the SPS scores of the two terms are correlated.
The presence of this correlation implies that these terms describe similar concepts and thus we can use them in our analysis.

*Figure 7. Source: Twitter API*




The Fashion/Glamour and Glamour/Style plots show the highest correlation, while the “Fashion” and “Style” scores (top-right and bottom-left scatter plots) are the least correlated, while “Glamour” occupies a central position between the other two terms.

Looking at the word clouds computed in the previous paragraph, and especially at the frequency of the most “fashion-related” words, I find these results to be in line with our previous considerations.

On the basis of this qualitative analysis, I expect luxury fashion brands to have a higher “Fashion” and “Glamour” score than the “Style” one, while for other non-luxury fashion brands, I will expect the opposite.

## 4.2 Environment terms

For the environmental-friendly concept, we evaluated two terms: environment and ethical business.

As for the terms used to measure the “Fashion” perception of brands, I extracted the most used words by the exemplars for the two terms used to evaluate the “environmental-friendly” perception of brands and computed a cloud word for each term, based on the frequency of use of each word. The resulting cloud words are the following ones:

### 4.2.1 Environment

*Figure 8. Source: Twitter API*

The environment term has a clear focus on the thematic of climate change, clean energy (“climate”, “flood”, “water”, “big”, “oil”) and on the institutions that have an impact on the regulations that are supposed to help fight this phenomenon (“EPA”, “Trump”, “first”, “world”). It also has a positive and future-oriented connotation (“great”, “now”, “change”, “today”, “will”, “thanks”).

### 4.2.2 Ethical Business

*Figure 9. Source: Twitter API*


The ethical business term is more general in its connotation concerning the environment since it also considers thematic such as discrimination, exploitation of child labour or the implementation of ethical business practices.

The “ethicalhour” word refers to a community of “ethical & sustainable businesses, consumers & bloggers”[9]. It is more business oriented than environment (“business”, “brand/brands”) and has also a direct link with “fashion”.

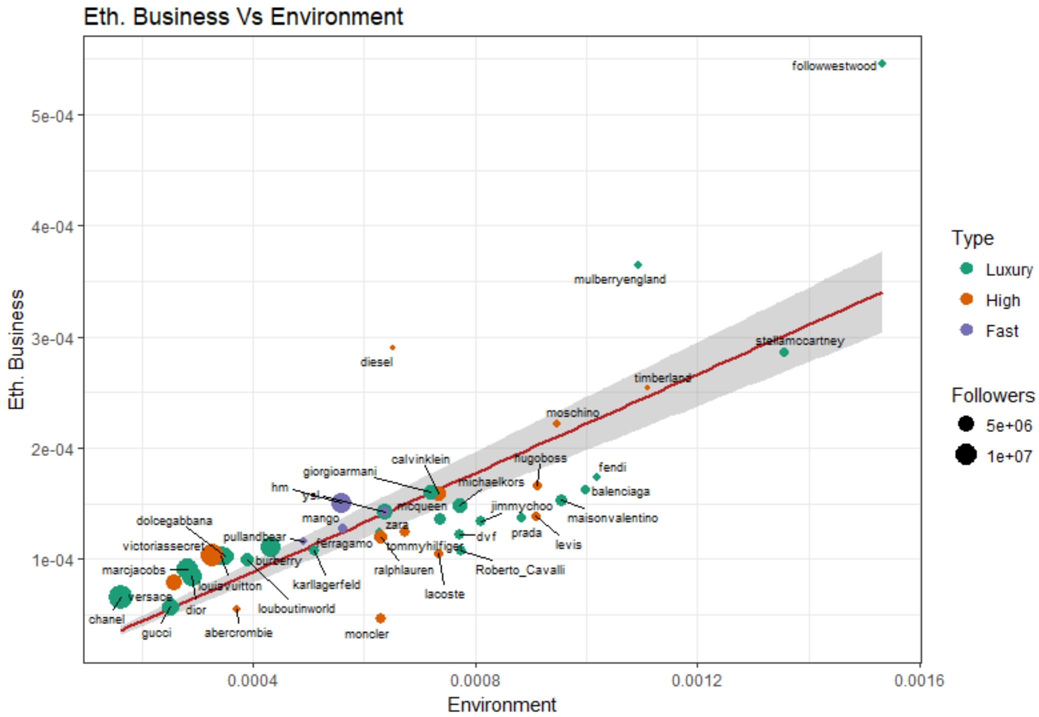
[9] https://twitter.com/hashtag/EthicalHour?src=hash

The following plot shows the SPS scores calculated for the two terms; the line indicates the linear regression estimate of the two series of scores.

The dimension of each point represents the number of followers for each Twitter account, whereas the colour represents the “type” of each brand. The type of brands is relative to the price point of its “flagship” product (for example, Lacoste’s shirt):

- “Luxury” brands are brands with the highest price point (such as Gucci or Stella McCartney);
- “High” brands are brands with a lower price point than “luxury” brands, but can be defined as not “casual” brands (for example, Lacoste or Ralph Lauren);
- “Fast” brands have the lower price point (for example, H&M or Zara).

*Figure 10. Source: Twitter API*




It appears that there is a clear link between the “ethical business” scores and the “environment” ones, with a few exceptions:

- “*Diesel*” brand: Diesel is famous for its campaigns, focused on social issues and ethics. A few iconic examples are the “Kissing Sailors” picture, published in 1995, or the recent “#MakeLoveNotWalls” campaign, which refers to the wall Donald Trump wants to build between USA and Mexico (Rossini, 2017).


*Figure 14: La Chapelle, David, "Kissing Sailors". Colour offset lithography, 1995.*

- "*Mulberry*" brand: this brand is closely tied to the Windsor family, especially with Catherine Middleton, Duchess of Cambridge, who has worn Mulberry clothing and accessories in several occasions. The brand, moreover, prides itself in producing the majority of their products locally;
- *"Vivienne Westwood"* brand: in this case, the brand is influenced by the personality of its founder of the same name, famous for her initiatives on ethical business and environmentalism. The brand is "one of the *Ethical Fashion Initiative*'s first partners"[10], and when accused of using non-ecological materials for her production in 2013 (Lyons, 2015), the firm used only ethically sourced organic cotton for its next collections (Madsen, 2014).

## 4.3 Why follow a brand?

A concern that can arise when measuring SPS scores is that people who consider the concept to be measured as important, follow a Twitter account because the brand

[10] http://ethicalfashioninitiative.org/partners/vivienne-westwood/

it represents has a negative image for that concept, acting as a sort of “watchdogs“ on the activities of the brands.

To verify this, I executed a sentiment analysis on some of the brands we analysed. More specifically, I analysed the brands with the lower scores for the environment concepts, that is Gucci, Chanel and Versace; and the brands with the highest scores or that have been deemed “outliers” in the previous paragraph, that is Vivienne Westwood, Diesel and Stella McCartney.

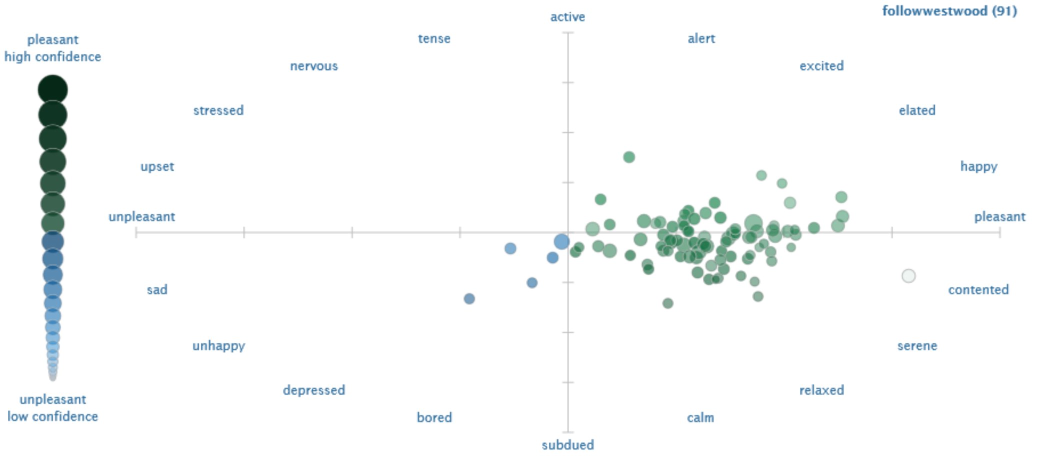
All of the following graphs have been generated using the “Tweet Sentiment Visualization” tool[11] made available by Dr Christopher Healey, Goodnight Distinguished Professor in the Institute of Advanced Analytics at North Carolina State University.

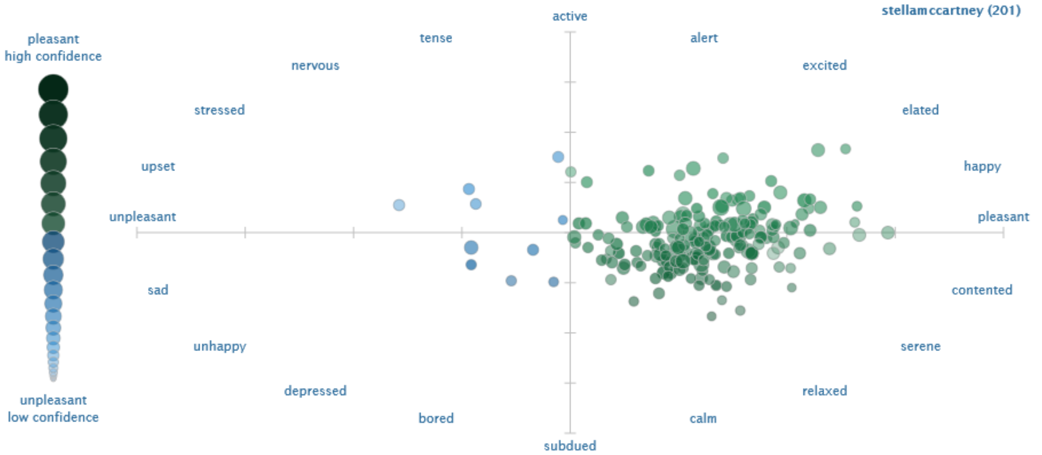
For all brands, we can notice that the majority of tweets lies in the right part of the graph. Tweets on the left side of the graph, which indicates a “negative” connotation, are more numerous for brands with a low score on the environment scale than for the ones with a higher score.

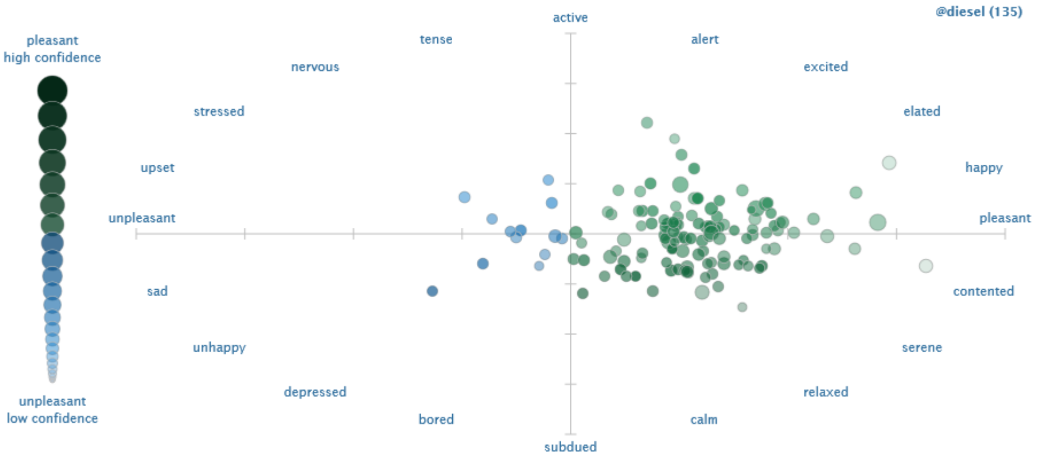
This analysis cannot replace a proper content analysis on the behaviour of the user that follow a brand, but we can assume that people that follow a brand do so mainly because they enjoy the brand products and the brand message, and that “watchdogs” users are only a minority of the total.

[11] https://www.csc2.ncsu.edu/faculty/healey/tweet_viz/tweet_app/

### 4.3.1 Brands with high "environment" SPS

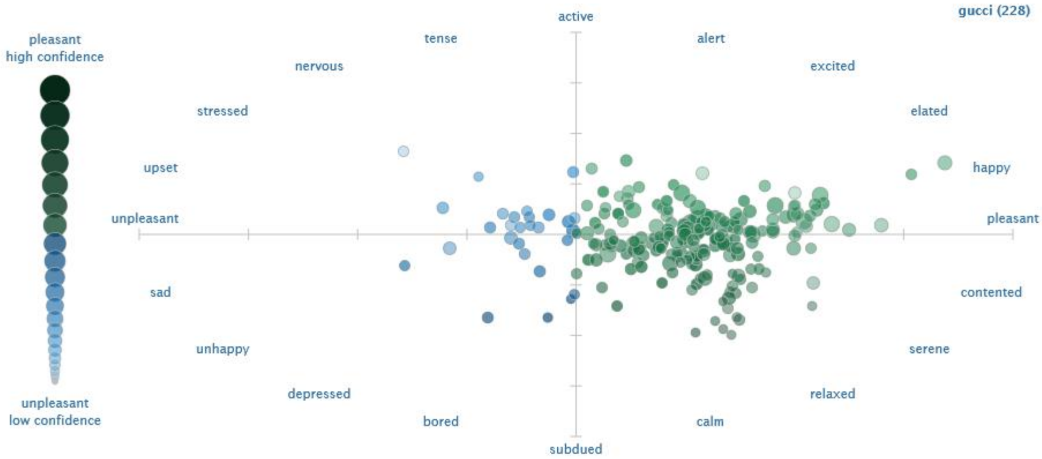


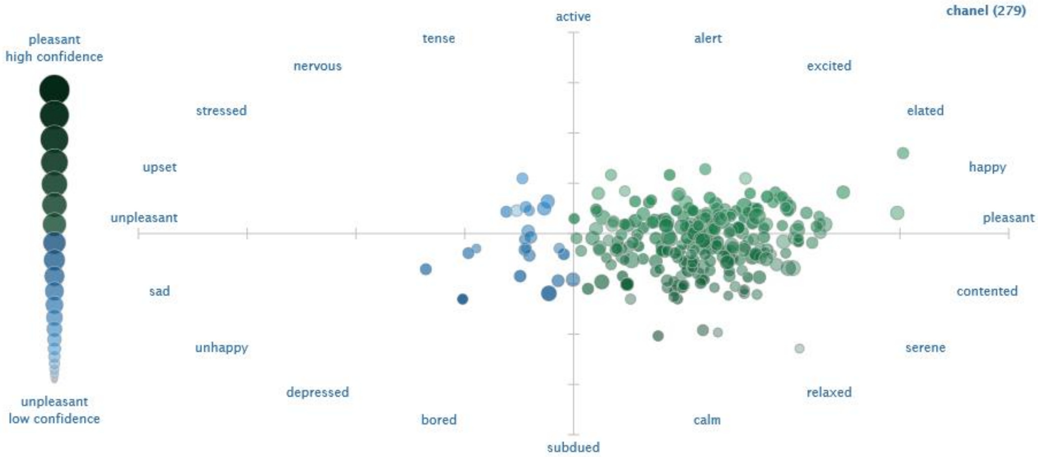



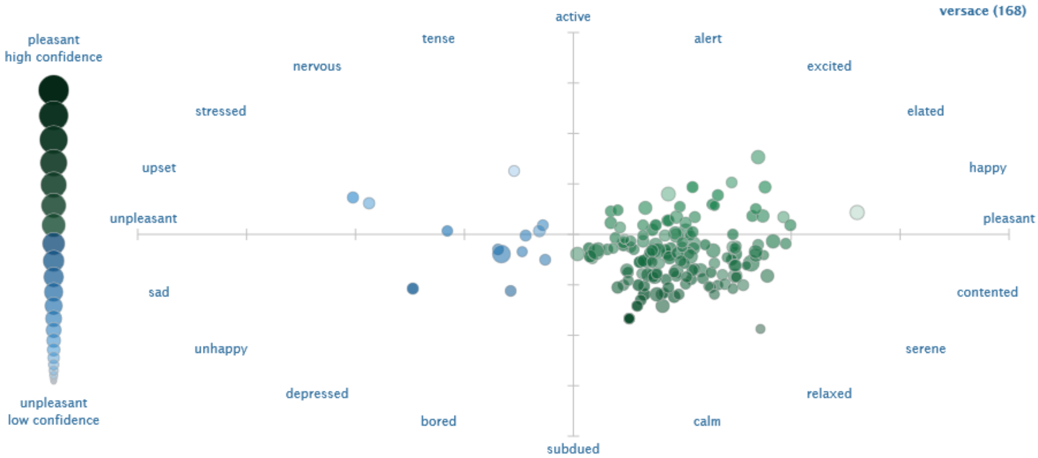




We used "@diesel" instead of "diesel" to distinguish tweets that talked about the brand from tweets that talked about diesel fuel or engines.

### 4.3.2 Brands with low "environment" SPS



## 4.4 Fashion and Environment SPS scores comparison

To evaluate the existence of a correlation between the SPS scores of the Fashion terms and of the Environment ones, I have executed a simple linear regression on these scores. The estimated coefficient describes the relationship between the "Environment" SPS score and the "Fashion" one. If the estimated coefficient results to be statistically significant (that is, the standard error is lower than half the coefficient), then the correlation exists.

### 4.4.1 Fashion and Environment

The first terms I tested were the one that mostly exemplify the "Eco-friendliness" and "Fashionability" concepts we want to measure: "Environment" and "Fashion". To follow, the results of the simple regression:

| formula = fashion ~ environment (no intercept) | | |
|---|---|---|
| Environment coef. | 8,1088 | |
| Standard Error | 0,4845 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 87,19% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 1: Results of "Fashion" vs "Environment" SPS scores regression*

The regression coefficient is greater than zero and statistically significant: this indicates a strong correlation between the "Eco-friendly" perceptions of a brand with its "Fashionable" one. Moreover, the high R squared score (87,19%) indicates that the model described in the previous chapter ($SPS_F = \beta \cdot SPS_E + \varepsilon$) correctly describes how the "fashionable" perception of a brand is correlated by its "eco-friendly" one. This coefficient results significant even when the model takes into account in the number of followers[12] for each Twitter account.

[12] Both coefficients result significant, but the R squared coefficient increase is too little. This result is expected given that the SPS scores are computed as ratios on the number of followers.

The below graph represents the Fashion and the Environment SPS scores and the result of the regression (the red line).

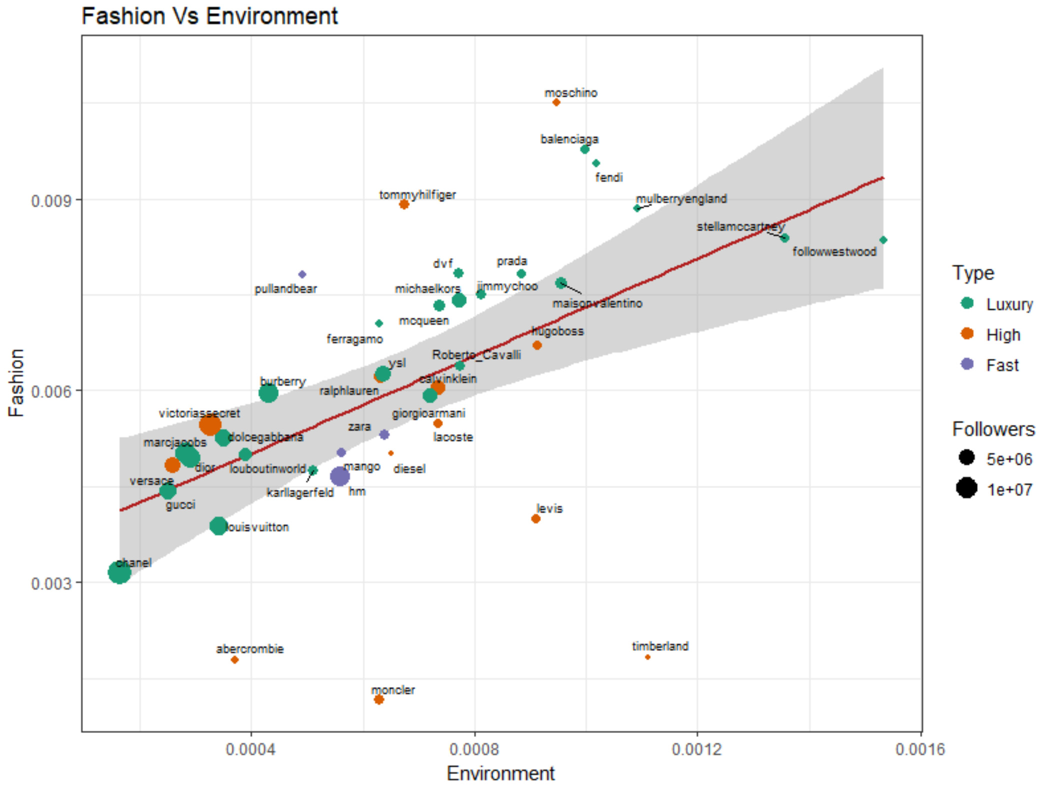



*Figure 15: "Fashion" vs "Environment". Source: Twitter API*

On the basis of the above graph, I identified four outlier brands:

- *Levis* and *Timberland*: these brands have a low Fashion score because their image focuses more on contact with nature and ruggedness, rather than fashion and trends. Timberland provides responsibility targets to be achieved in their production[13]. Levis has always been a brand that values sustainability. In 1991 it established "terms of engagement" that laid out the brand's global code of conduct throughout its supply chain; setting standards for worker's rights, work environment, and environmentally safe production procedures (Segran, 2017).
- *Abercrombie*: this brand, on the other hand, has suffered from difficulties in engaging the customers, which can reflect on results. Only in 2018

[13] https://www.timberland.com/responsibility.html

Abercrombie has had a rise in comparable sales after five years (Wahba, 2018);

- *Moncler*: The Moncler brand suffered damage to its image due to the Report inquiry (Piromallo, 2014) about the cruelty on animals used to produce the plumage used for its coats and for the fact that all production has been moved to Moldavia.

Looking at the types of the brands in the above graph, I can notice that the majority of the outliers belong to the "high" brand type and that the "Luxury" brands are all clustered along a line which is slightly more inclined than the one in the graph.

After repeating the linear regression considering only the "Luxury" brands, we obtained the following results:

| formula = fashion ~ environment (no intercept) | | |
|---|---|---|
| Environment coef. | 8,4819 | |
| Standard Error | 0,4847 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 92,71% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 2: Results of "Fashion" vs "Environment" SPS scores regression, Luxury brands only*

The regression coefficient is very similar to the one obtained using data from all brands (8,48 vs 8,10). The increase in the R squared coefficient (from 87,19% to 92,71%), though, shows that the effect of the "eco-friendly" perception of a brand correlates with its "fashionable" perception mainly with regards to luxury brands, while for the other brands this effect is less prominent.

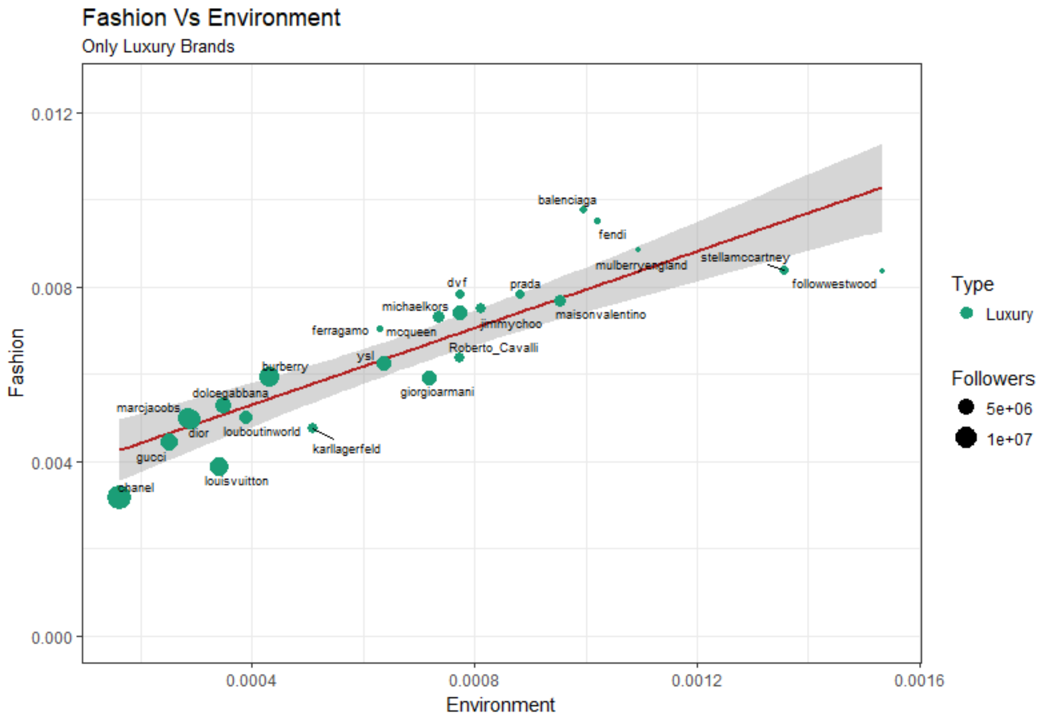



*Figure 13: "Fashion" vs "Environment", only Luxury Brands. Source: Twitter API*

### 4.4.2 Fashion and Ethical Business

I repeated the same analysis of the previous paragraph comparing the SPS scores for the "Fashion" term with the "Ethical Business" ones. The results of the regression between the SSP scores are the following:

| formula = fashion ~ ethical_business (no intercept) | | |
|---|---|---|
| Ethical Business coef. | 32,616 | |
| Standard Error | 2,753 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 77,26% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 3: Results of "Fashion" vs "Ethical Business" SPS scores regression,*

The estimated coefficient is higher than the one obtained for the relation between "Fashion" and "Environment" SPS scores, and the R-squared coefficient is much lower (77,26% against the 87,19% obtained from the “environment” SPS scores), suggesting a poorer fit of this model with the data.

The below graph of the SPS scores shows that this is the case: we can see how some brands with an unusually high SPS score for the “Ethical Business” concept, are separated from the rest:

- Three of these brands (Mulberry, Diesel, Westwood) are the ones we identified when comparing “ethical business” and “environment” SPS scores;
- Timberland was identified in the “Environment” and “Fashion” SPS scores comparison in the previous paragraph;
- Stella McCartney has been exploring ethical fashion since its foundation in 2001 and continued to his day (Marriot, 2018).

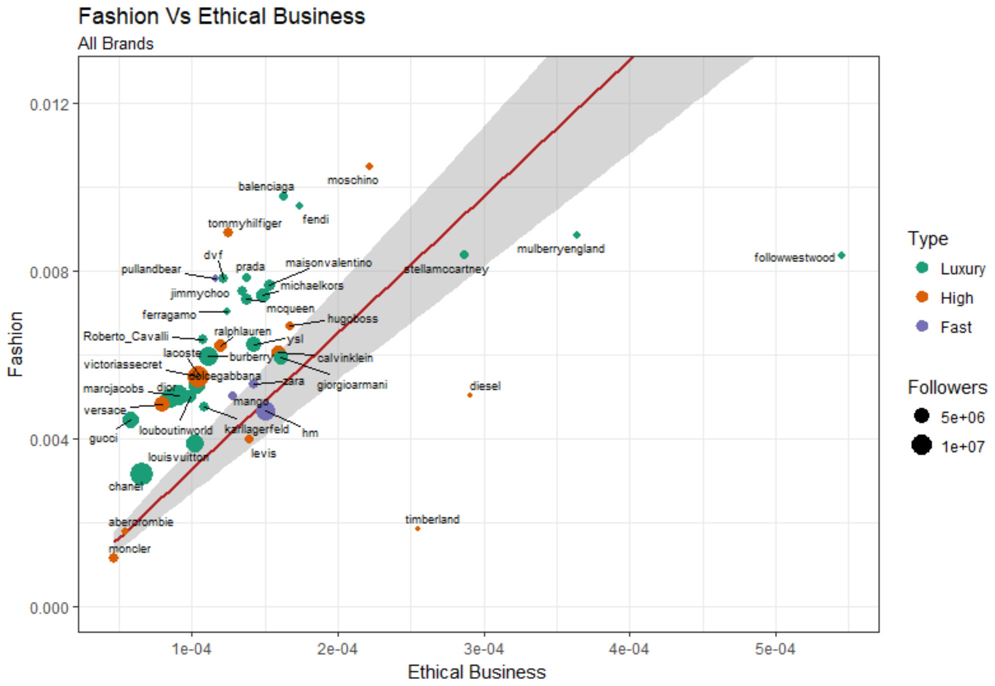



*Figure 8: "Fashion" vs "Ethical Business". Source: Twitter API*

All of these outlier brands have been advocating ethical business practices for a long time. This historical commitment is reflected by their higher “Ethical Business” SPS scores, while the linear correlation between these scores and “Fashion” ones seems to hit a ceiling, and further increases in the “Ethical Business” score do not correspond to an increase of the “Fashion” score.

From these results I can assume the following:

- The relationship between "fashionable" and "eco-friendly" perception of a brand is stronger for Luxury brands, while for other types of brands is less prominent;
- An early commitment to ethical business practices pays off in brand recognition: to be indeed considered as an "ethical" brand, the firm must commit itself for a long time;
- The relation between "ethicality" and "fashionability" is present up to a certain point: being ethical helps in being considered fashionable but being more ethical does not help in being considered more fashionable;
- As shown by the Diesel, Levi and Timberland brands, a brand can be ethical even without being "fashionable": these brands do not advocate a "fashionable" or luxury image but are involved in promoting ethical business practices.

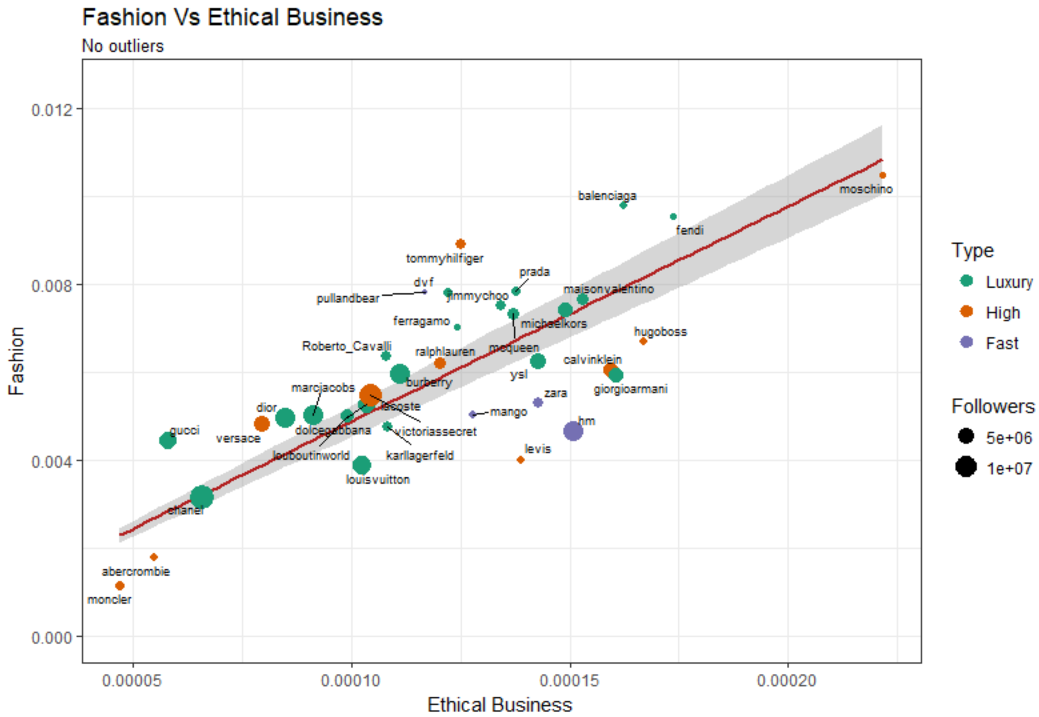
To confirm the fact that the correlation between "Fashion" and "Ethical Business" SPS scores hits a ceiling, we repeat the regression removing all the "outlier" brands[14]. We obtain the following results:

| formula = fashion ~ ethical_business (no intercept) | | |
|---|---|---|
| Ethical Business coef. | 48,874 | |
| Standard Error | 1,752 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 95,58% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 4: Results of "Fashion" vs "Ethical Business" SPS scores regression, No outliers.*

[14] An alternative method to verify the presence of this "ceiling" would be to estimate the correlation coefficient exclusively for the outlier brands: if this coefficient is not statistically significant, then the correlation has no effect after a certain value of the "Ethical Business" SPS score. Unfortunately, such a regression does not return significant results due to the scarce number of the outlier brands.

By removing the outlier brand, we can see how stronger the correlation is: the "Ethical Business" coefficient is higher and remains significant, and the R-squared one increase to 95%, confirming our previous hypothesis.




### 4.4.3 Style and Environment

I repeated, for the "Style" SPS scores, the analysis conducted for the "Fashion" ones in the previous paragraph. The results of the linear regression are the following:

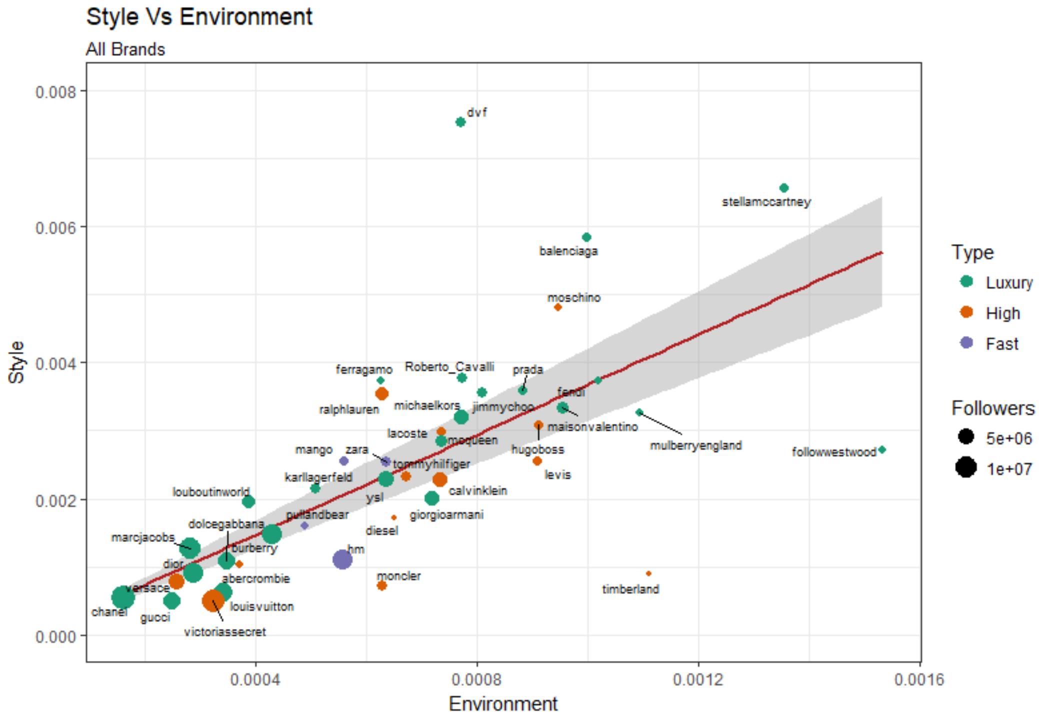
| formula = style ~ environment (no intercept) | | |
|---|---|---|
| Environment coef. | 3,6745 | |
| Standard Error | 0,2628 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 82,59% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 5: Results of "Style" vs "Environment" SPS scores regression.*

The results obtained for the “Style” scores are similar to the “Fashion” ones: the “Environment” coefficient is significant, and the R-squared coefficient is high (82,59%).

By looking at the various brands in the graph below, I can see that this relation seems to hold up to a certain point: almost all brands with the highest “Environment” SPS scores have a “Style” SPS score that diverges by the one that the regression expects.

This behaviour is similar to the one presents in the previous paragraph for the “Fashion” and “Ethical Business” scores. The correlation between “Style” and “Environment” SPS scores is clearly defined only up to a certain value; after that, the two types of brand perception result independent from each other.

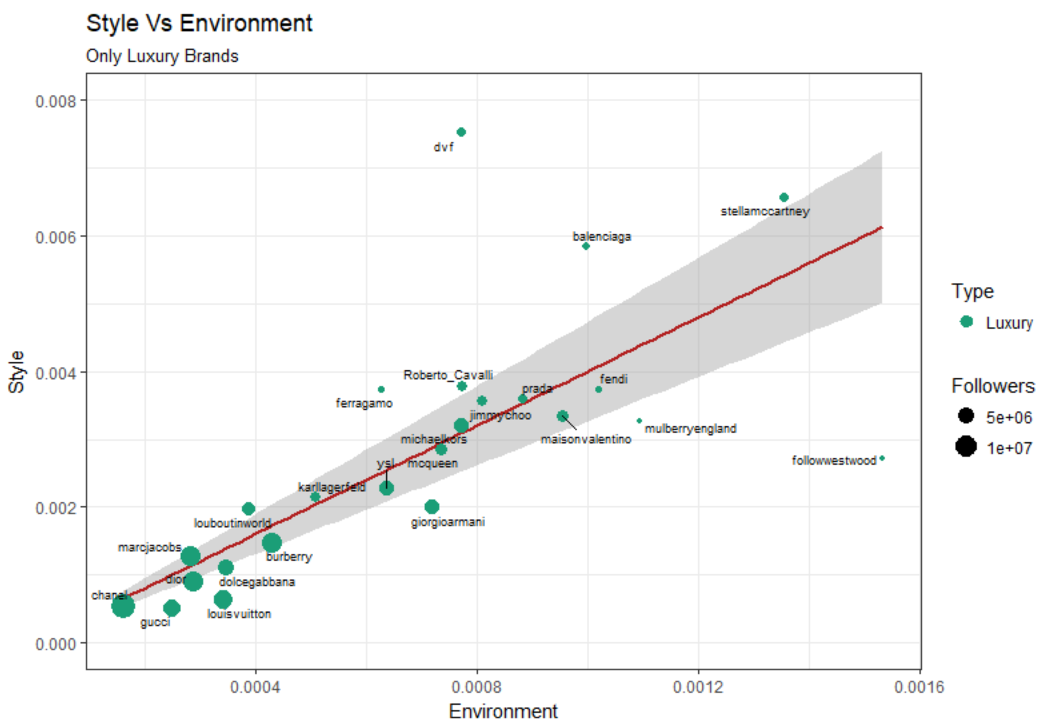



As for the “Fashion” and “Environment” relationship, I analyse the “Style” and “Environment” one, isolating the Luxury brands.

In this case, the regression result is not significantly different than when considering all brands: both the “Environment” coefficient (3.67 vs 3.99) and the R-squared one (82.59% vs 84.07%) are similar to the regression above, which considers all brands.

| formula = style ~ environment (no intercept) | | |
|---|---|---|
| Environment coef. | 3,9995 | |
| Standard Error | 0,3539 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 84,07% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 6: Results of "Style" vs "Environment" SPS scores regression. Luxury brand only*



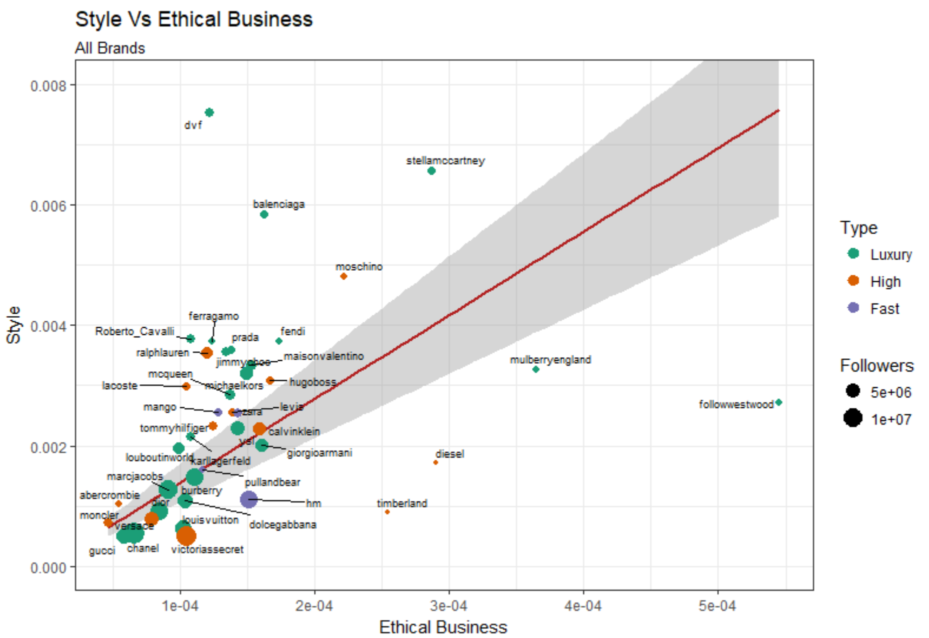

### 4.4.4 Style and Ethical Business

Analyzing the results of the regression between “Style” and “Ethical Business” SPS scores, I found that the coefficient is greater than zero and statistically significant, but the R-squared score is very low (only 64,33%):

| formula = style ~ ethical_business (no intercept) | |
|---|---|
| Ethical Business coef. | 13,89 |
| Standard Error | 1,604 |
| P-value | ~0 * |
| Adj. R-squared coef. | 64,33% |
| Note: a p-value <0,05 (*) indicates a significant coeff. | |

*Table 7: Results of "Style" vs "Ethical Business" SPS scores regression.*

Looking at the SPS scores for each brand, this low score may be due to the high number of brands that have one of the two scores much higher than the other one.




In the consumer's perception map, it appears that the distance between the "Stylish" and "Ethical" perception of a brand is greater than the distance between the "Fashion" and "Ethical" perceptions.

Compared to Luxury, where all brands can be found on the same axis, there are two types of brands. Some brands, such as Moschino and Stella McCartney, are considered more "classical" brands focused on the "stylish" aspect of fashion; others, such as Mulberry and Westwood, are considered more "Ethical" in their business practices.

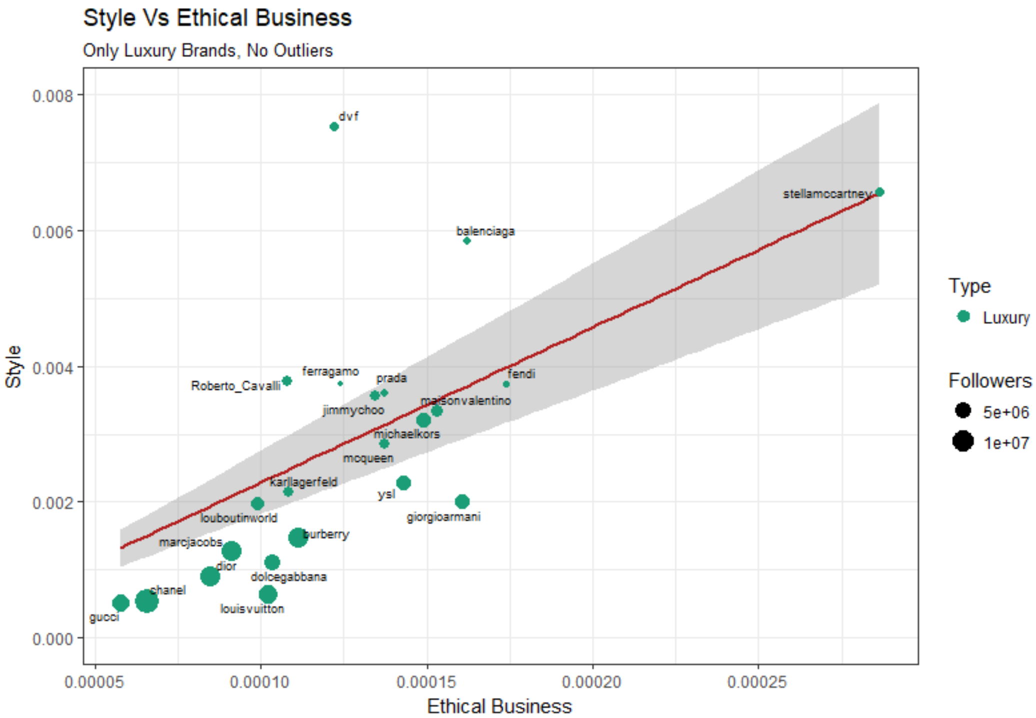
We can notice that most of the luxury brands, except for Westwood and Mulberry, are concentrated on the left side of the graph above. We can assume that the correlation between these perceptions is stronger for luxury brands (with exceptions). To confirm this, we re-execute the regression between "Style" and "Ethical Business" SPS scores isolating only the Luxury brands and removing outlier scores[15]. The regression results are the following:

| formula = style ~ ethical_business (no intercept) | | |
|---|---|---|
| Ethical Business coef. | 22,877 | |
| Standard Error | 2,248 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 82,34% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 8: Results of "Style" vs "Ethical Business" SPS scores regression. Luxury brands only*

The regression confirms the assumptions in the above paragraph. The correlation between "Stylish" and "Ethical" perception of a brand is stronger for Luxury brands, as suggested by the increase in the "Ethical business" coefficient value (22.87 vs 13.89 when considering all brands) and the R-squared one (82.34% vs 64.33% when considering all brands).

[15] The regression on all luxury brands gives similar results to the ones obtained including all brands in the dataset.




## 4.4.5 Glamour and Environment

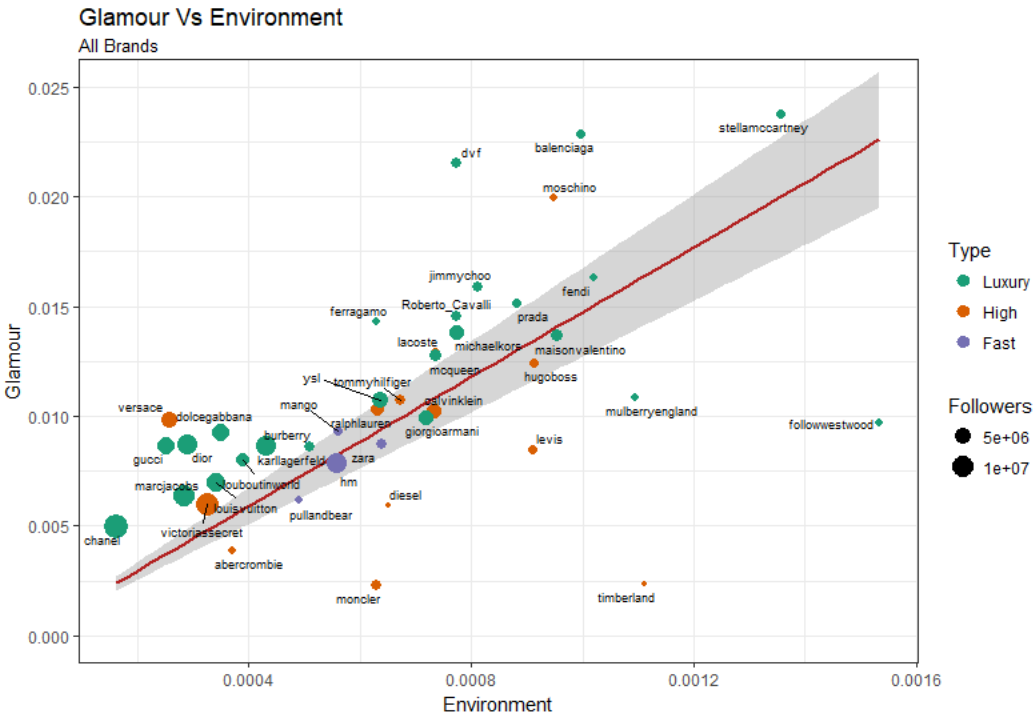
The results obtained for the "Glamour" SPS scores confirm what we observed analysing the "Style" scores: R-squared coefficients are similar to the ones obtained for the "Style" SPS scores:

| formula = glamour ~ environment (no intercept) | | |
|---|---|---|
| Environment coef. | 14,741 | |
| Standard Error | 0,9991 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 84,09% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 9: Results of "Glamour" vs "Environment" SPS scores regression.*

From the graph we can also observe how this data confirm some of the supposition expressed in the previous paragraph:

- The correlation between “Glamour” and “Environment” SPS scores of the “Luxury” type brand is stronger (green colour in the graph below). The points corresponding to these brands are more aligned than the others;
- This correlation is stronger for lower values of the “Environment” SPS score. Brands with a high “Environment” score (such as Balenciaga, Timberland or Stella McCartney) tend to have a “Glamour” score that diverges from the one expected from the model estimated in the regression.



### 4.4.6 Glamour and Ethical Business

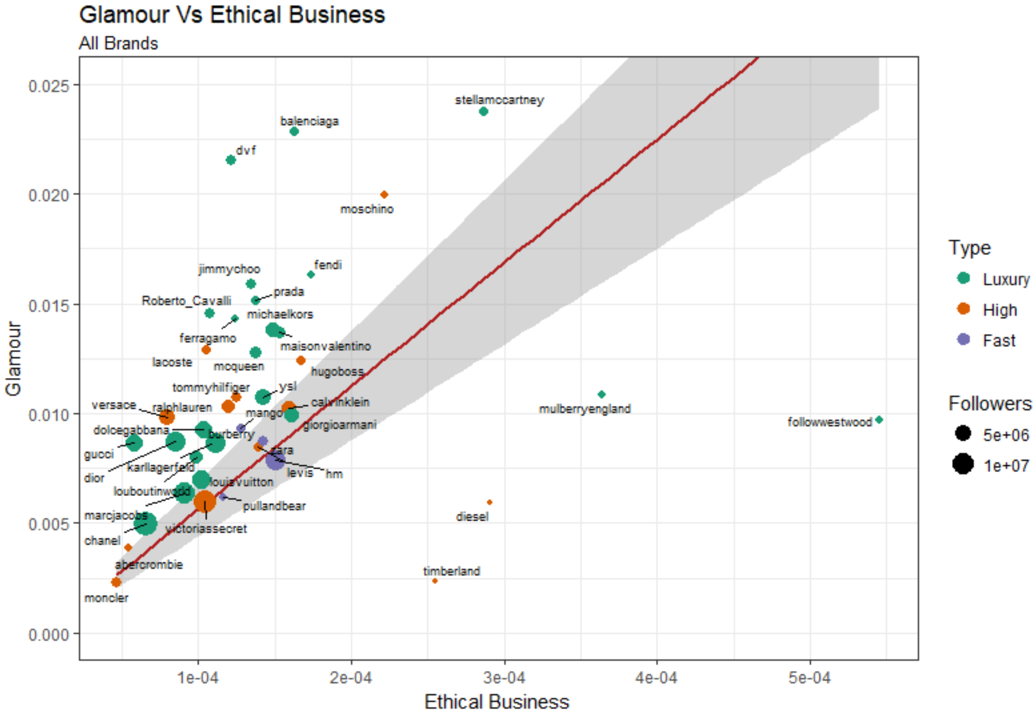
Also, the regression between “Glamour” and “Ethical Business” returns similar results to those obtained for the “Style” scores. The R-squared coefficient is very low compared to the other regressions, whereas the ethical coefficient itself is greater than zero and statistically significant:

| formula = glamour ~ ethical_business (no intercept) | | |
|---|---|---|
| Ethical Business coef. | 56,260 | |
| Standard Error | 6,153 | |
| P-value | ~0 | * |
| Adj. R-squared coef. | 66,83% | |
| Note: a p-value <0,05 (*) indicates a significant coeff. | | |

*Table 10: Results of "Glamour" vs "Ethical Business" SPS scores regression.*

Looking at the graph below we can see how, similarly to the “Style” case, the “ethical business” effect is lower than the one estimated by the model, since the majority of points are concentrated on the top-left side of the graph. This distortion is caused by the four brands in the bottom-right corner, the outliers: Timberland, Diesel, Mulberry and Westwood.

We showed in the previous paragraph how these brands are different from the other ones with regard to ethical business practices.




### 4.4.7 Summary Table

The following table summarises the regression coefficients, the standard error (between parenthesis) and the R-squared coefficient obtained by comparing the SPS scores of the various terms used. All coefficients are statistically significant:

| | *Environment* | *Ethical Business* |
|---|---|---|
| *Fashion* | 8,1088 (0,4845) | 32,616 (2,753) |
| | R2 = 87,19% | R2 = 77,26% |
| *Glamour* | 14,7407 (0,9991) | 56,26 (6,153) |
| | R2 = 84,09% | R2 = 66,83% |
| *Style* | 3,6745 (0,2628) | 13,89 (1,604) |
| | R2 = 82,59% | R2 = 64,33% |

*Table 11: Regression results for all terms used. Only Luxury and No outliers regression excluded.*

# 5 Conclusions

During my dissertation, I have inquired on how it is possible to obtain an estimation of the perception of a brand regarding a concept by using social network data, more specifically Twitter.

We used this method to verify if there is correlation between the “Environmental-friendly” perception of a brand and its “fashionable” perception.

The results we obtained are both on the methodological and the epistemological side.

Methodologically, I implemented an algorithm that, starting from publicly accessible data (Twitter API), can provide - in an economical and fast way (the algorithm used in this paper required less than a day to generate the scores) - an estimation of the brand perception regarding a specific topic.

The conditions for obtaining these results are strict. In fact, in order to to obtain reliable estimates, a brand should be characterized by the following features:

- It must have international reach;
- Its Twitter account must be active and have a sizable number of followers (in this work, a Twitter account is considered for analysis only if it has at least 100.000 followers).

On the epistemological side, the conclusions we derived are the following:

- There is a correlation between the "fashionable" and "eco-friendly" perception of a brand[16]; this correlation, though, is far stronger for Luxury brands than for non-Luxury brands, where it is much less prominent. The difference in the correlations confirms the tendency of fashion luxury firms over the last few years to consider dealing with environmental issues more and more as a core business and not just as an added value to the firm's offer (Kapferer & Bastien, 2010) (Lochard & Murat, 2011) (Thomas, 2015) (Niemtzow, 2016) (Pavione, Pezzetti, & Dall'Ava, 2016);
- An early commitment to ethical business practices pays off in brand recognition. To be indeed considered as an "ethical" brand, the firm must commit itself for a long time;
- The correlation between the "ethical" perception of a brand and its "fashionable" one exists, but after a certain point, this correlation seems to end. We can interpret this results to the fact that "being ethical helps in being considered fashionable, but being more ethical does not help in being considered more fashionable";
- On the other hand, the presence of brands that retain their perception as "stylish" brands, while they're not considered "ethical" indicates that consumers do not seem to be as aware about firms' ethical business practices issues as much as their environmental issues;
- Our data confirm the thesis that the concept of sustainability has attained wide acceptance over time, to the point of superseding that of social responsibility (Colombo & Gazzola, 2015) (Giron, 2010).

## 5.1 Improvements and Future Research

The algorithm used in this work returned plausible results. Nevertheless, there are various areas for improvement, which can help in generating more precise estimates of brand perception, or allow the execution of this estimate for brands with less reach and followers.

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[16] We remind that correlation does not imply causation.

In the first place, this analysis can be executed at various points in time to generate a panel dataset and use regression algorithms created explicitly for panel data, such as the “within” estimator (Nerlove, 2002) to analyse the collected dataset.

This estimator allows us to regress the “environment” and “ethical business” coefficients removing all *time* and *brand-invariant* effects from the estimate.

Another area of improvement is the generation of the list of exemplar accounts for each topic: the method herein used leverages the Twitter lists to automatically classify Twitter accounts. Using a semi-curated exemplar list, by adding to the accounts generated with the current method the Twitter accounts resulting from an ad-hoc survey, can help in increasing the precision of the brand perception estimates.

Ultimately, the methodology used in this dissertation measures consumers’ perception of a brand starting from a behavior, the act of following a Twitter account.

This fact implies that measurements done using this technique would reduce the overestimation of the discrepancy between pro-environmental attitudes and actual behavior (social desirability bias), and thus can provide ulterior insights in research that explore the thematic of link between “green” attitudes and “green” consumption.

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