

# What Types of Data Inform Strategic Factors Affecting Sustainability Decisions in Retail?

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## ABSTRACT

This paper begins by addressing the business case that a firm, in the retail context, must make to develop sustainability practices. The paper then discusses the strategic factors that shape sustainability decisions regarding the sustainability business case. These decisions are made by firms in the retail industry, with outcomes improving sustainability in processes that allow for innovation and advancements. It discusses internal and external factors, as well as background and driving information such as Stakeholder Theory and information on the retail industry itself. This paper details how data helps a firm transform their corporate strategies. The paper then explores the importance of the data types which inform the aforementioned strategic factors, as well as metrics contributing to the awareness of firms. This creates evidence for a firm's sustainability business case, detailing how this data helps a firm transform their corporate strategy, contrived from the strategic factors, into action items, which the majority of managers report on struggling with. This paper brings a new perspective by integrating strategic factors in sustainability, and data in retail on sustainability. This provides a clearer picture to firms on how to allocate their resources most effectively when deciding to, or attempting to, improve sustainability practices. Firms can use data to inform strategic decision making about and implementation of sustainable practices, including for resource allocation and supply chain analysis.

## **Introduction**

Sustainability is widely recognized as one of the most prevalent and important current focus points in various sectors and industries. Extreme statistics, such as climate change being irreversible by 2030 or more than 1 million species facing extinction (UN 2019), can alienate the topic to entities considering themselves too small to make a change. However, a large push toward a more sustainable future is through business, integrating the optimization of sustainability into business objectives and plans.

To incorporate sustainability into business, there are certain integral strategic factors that a business needs to consider. This paper will discuss them and evaluate their relevance and importance in context of business decisions referring to sustainability. This paper also finds that data is truly the backbone of these strategic factors, both in their implementation, and in their conceptualization and accessibility for businesses. Thus, this paper will detail the types of data affecting these strategic factors.

There is an extensive existent body of literature regarding sustainability and ESG related data (Harker and Holm 2022; Tripathy 2021; Harweck 2021; Gomes et al. 2019), strategic and informative factors (Haessler 2020; Schaltegger 2012), and business decisions regarding sustainability, including improvement and innovation (Angharad Porteous and Sonali Rammohan 2013). This is also present in the retail industry given the magnitude of the industry, as well as the prevalence, especially recently, of this industry in the sustainability context. However, there is a gap in the intersection of these elements, which this paper will address.

Retail is a large contributor to immediate effects of lack of sustainability, for example climate change (Anne Wiese et al. 2012), Retail is noted as a primary contributor to climate change as it can operationalize sustainable consumption (Lehner et al. 2015). Global financial leaders such as McKinsey and Company regard retail as crucial in determining the sustainability situation, evidencing retail's involvement with the fact that "In 2016, there were only a small handful of major retailers—including Walmart—with a science-based target to reduce carbon emissions. Just five years later, more than 65 global retailers set such targets, and the number is more than doubling each year." (McKinsey, about 'Climate Sustainability in Retail'). There is a highly positive impact of GRO's (Green retail operations) adoption on firms' financial performance in the retail industry (Ailie K.Y Tang and Kee-hung Lai et al. 2016). This demonstrates that not only does the retail industry hold transformative power on a large scale in the context of global sustainability; it also rewards companies financially for sustainable practices.

This links directly to an important aspect and backbone of this paper - the business case. This is defined as the company needing to voluntarily - or mainly voluntarily - carry out an action with the intention of contributing to solving social or environmental problems. The actions cannot solely be driven by legislation or regulations. There is government failure in regulating contributors to climate change, so if impactful progress is to be made, firms have to make these changes. The activity must also create a positive economic effect for the business, for example increasing sales revenue by enabling an increase in price or a decrease in costs. A clear and compelling argument must exist that the management activity has or will lead to the intended effects (Schaltegger et al. 2012). In the context of sustainability in retail, a business case includes an action creating economic success as well as sustainable improvements for example reducing the carbon emissions of a supply chain or in a production line.

As will be exemplified by Nike, the idea of a business case is integral to incentivizing a company to make sustainably positive decisions, due to the financial justification that, decades ago, was too little to motivate enough firms. This is one of the largest incentives - or strategic factors - of developing sustainability practices for a retail company. The paper will discuss in large detail more of these factors, the goal being to outline the different aspects of a firm's considerations.

Firms' competitive strategy depends on internal and external factors. These factors are influenced by different stakeholders, such as employees, investors, and customers. This paper will begin with Stakeholder Theory, which will aid in breaking down the complex matter into stakeholder objectives and business aims. Another important group of factors is the competitive environment, which provides much-needed background information to the rest of the factors. This is because within this group is market information, modeled around Porter's Five Forces. It is important to note that while legislation is a large part of this group, as well as a large factor in and of itself, it will not be within the scope of this paper due to the magnitude of literature surrounding legislation and the associated politics. The paper will then highlight the financial factors, the most discussed in the available literature due to finances having the closest link with traditional economic models and theories. These factors are interlinked with all the other factors due to healthy finances being both the backbone and motivation for a firm. Therefore, it is important that these factors are few of the first to be discussed as they provide important context to the rest. This paper will then discuss top management factors, with owners (managers) being integral stakeholders, and pivotal in the approach of a firm. Closely linked is the next group of factors - internal dynamics. This is highly affected by top management but stands as its own group due to the other internal factors at play. Finally, the last factor is the supply chain which different papers have viewed as a factor or a consequence respectively. However, this paper believes it to be both, thus the supply chain will be talked about holistically.

The paper will then thoroughly examine each factor, its impact on sustainability decisions regarding innovation and optimization, and its connection to the aforementioned stakeholders. These factors will exemplify the holistic approach firms must consider, which is one of the main goals of the paper, as this paper aims to be useful to all stakeholders, including those internal to the retail firm. This will maximize the impact the firm can make.

This paper will also focus on how firms can execute on the theoretical plans created by the identified strategic factors. This will link to data, which the paper identifies as the crucial backbone of every decision and factor. Many researchers and firms alike have come to the conclusion that impact lies in optimizing the data available and

identifying gaps in available data and theorize how to fill those gaps. A notable example is Nike, a case study which this paper will be referencing for examples throughout (Angharad Porteous and Sonali Rammohan 2013), one of the earliest major companies to have acted upon this. The act of identifying, analyzing, and optimizing the necessary data creates internal motivation, as well as informing the necessary factors to make a collective impact as an entire industry. Therefore, this paper will cover how these strategic factors must be informed by different kinds of data, from ESG metrics such as the commonly known UNSDGs, to quantitative and qualitative market research with firms' primary surveys and questionnaires, as well as analysis of secondary research, to the utilization of AI to create regression models and pattern recognition models to maximize the financial justification for the sustainability business case (Haessler 2020). An example of this is using AI to model future trends based on past information, a necessity in the retail industry, and an important tool to maximize utility from sustainable decisions (Schaltegger et al. 2012).

## Strategic Factors Shaping Sustainability Decisions

### Stakeholder Theory

Stakeholder Theory argues that a business should create values for all stakeholders, rather than just for shareholders. Using this to prioritize is vital for a firm, given the scarcity of resources.

While there are different views on the importance and ranking of the stakeholders, the main stakeholders in question remain to be: investors; managers; and owners, who are generally primarily considered in every industry and firm due to the financial implications and power; customers; competition, relating to the competitive environment, another key influential factor that will be discussed, which is especially key to retail due to the hyperfocus on sustainability in the industry in the last decade; and government and society. There is merit to a business understanding and identifying their key stakeholders, which is a standardized part of the business procedure, but more importantly to making a sustainability business case, putting this 'ranking' of stakeholders in perspective of what that means for sustainability practices and business aims. Different parts of the organization can have different views on stakeholders. For example, in retail, a supply chain manager may consider the government a more important stakeholder than someone in finances, because of the exposure the person has. Similarly, in the marketing of a company, society is an important stakeholder, as well as consumers and competition. Organizations will only integrate practices - sustainability or otherwise - which do not decrease profitability, catering to the important stakeholders of investors and owners, and that are aligned with their Stakeholder mindset (Varenova et al. 2013).

It is argued that it is mainly due to stakeholder demands that firms adopt practices detailing sustainability or other ESG related practices (Buysse and Verbeke 2003, Garcés Ayerbe et al. 2012). Definition and ranking is the first subtopic (Haessler 2020) because companies define stakeholders differently (Sharma and Henriques 2005). For example, in certain industries, society may be more important than others. In the retail industry, society is an integral and demanding stakeholder. Organizations are now looking at stakeholders not traditionally considered, for example NGOs. This shift in the perception of what parties, organizations, or people, are counted as stakeholders lead to different sustainability goals. In retail, this means a general push on sustainability given the modern trends and education. In addition, the views on stakeholders from *within* the organization contribute to sustainability goals - a study found that managers still tend to have a managerial/narrow view of the firm, giving priority to stakeholder groups directly involved with the firm, especially financially. Whilst this study was not focused on retail, it was conducted by obtaining interview and survey data from 647 managers in four MNCs (multinational companies). This was conducted in 2011 so it is possible that a change has taken place in terms of managerial perceptions of stakeholders.

This is the backbone of this paper and to every incentive a business has (Haessler 2020). Before regarding Stakeholder Theory as a central motivation, it is important to address that it is not a universally accepted theory. For example, funds and endowments may divest from fossil fuel companies, but others are buying their stocks at a discount, in turn increasing the price. This contradicts Stakeholder Theory. However, this paper interprets stakeholder

value in its long-term benefits. While shareholder value was initially conceived as being long-term oriented, firms' management is often short-term focused (Rappaport 2006). For example, instead of making high-cost investments in research and development for potentially higher future earnings, executives may choose to temporarily meet short term earnings benchmarks set by Wall Street analysts (Graham, Harvey, and Rajgopal 2005). This paper, while acknowledging the extreme importance of the short-term health of a firm, will be regarding Stakeholder Theory as pivotal, because of its part in long-term sustainability goals, and its infusion into a healthy firm's business plan.

## Competitive Environment

The competitive environment is especially important in the retail industry, given the heightened aspect of temporary fluctuations in demand such as trends. This affects the price elasticity of the products in the industry, as well as the volatility of the environment. This makes it even more important for firms to pay attention to the competitive environment. Switching to sustainable processes is costly for a business - it may save money in the long term, but initially it is always costly in comparison to the status quo. One type of these are transactional costs, for example costs associated with finding a sustainable supplier and contacting them. There are also conversion costs for example finding out exactly how to convert to a different type of production, and the time and money spent in doing so.

A popular framework detailing the competitive environment is Porter's Five Forces: Competition, the threat/potential of new entrants, the threat of existing substitutes, the power of customers, and the power of suppliers.

The first aspect is competition in the industry. This calls into question whether the retail industry is considered a monopoly or if there is variety in the industry. Retail is generally not considered monopolistic. While there are market giants, because the consumer demand is so varied and vast, there is always room for more competitors and firms, albeit with a smaller market share. This incentivizes retail businesses, in theory, to prioritize their stakeholders in the market - namely consumers, occasionally investors, and rarely the government. This is because with a lack of monopoly, it evens out the playing field but also makes it harder to stand out. Brand loyalty is naturally decreased as customers aim to maximize utility with the vast competition. This means sustainable practices, which tend to be aims of more affluent consumers, are more likely to be considered. However, in niches such as luxury, brand loyalty is prominent, with sustainability goals often being a driver for brand loyalty when substitutes (sustainable firms in the niche) are hard to find. It could also be argued that because retail is such a diverse market, and only the more affluent and conscious consumers will prioritize ESG targets, that businesses can forgo prioritizing this. However, studies done by large companies such as Forbes show that more and more customers who have higher bargaining power are prioritizing sustainability given their accessibility to ample choice. This incentivizes businesses to transfer their resources into more sustainable processes, reducing the singularity of cost-saving/reductions (of transactional and conversion costs) being the only goal. From societal pressure, as well as, perhaps, internal motivation, investors have also begun prioritizing sustainability more in the last decade. Given the last competition, this is reflected in the retail industry as seen by leaders like Nike. Nike viewed investors and consumers so importantly that they devised infrastructure such as a manufacturing index, with a rating system from red to gold based on quantifiable metrics, creating sanctions and incentives. (Angharad Porteous and Sonali Rammohan 2013). Governments have also been promoting sustainability, and while this ties into legislation more than other factors, it is still important to note that the competition in the retail industry gives the government more power to individual firms.

This links to the next of Porter's Five Forces - potential for new entrants. Retail is said to have quite a low barrier of entry, further explaining the lack of a monopoly, as well as suggesting that there is high potential for new entrants. Because the idea of trends is also large in retail, this is even more prominent; firms which capitalize on a trend early are likely to do well in the short term and have a good base in the market, given the herd mentality when lifestyle products such as retail are called into question. An example of a recent trend throughout every industry is the shift to digital and online means. Initially, it could be argued that this was a temporary shift due to Covid-19. However, it has become clearer that the shift began much earlier than Covid-19, and has effects much beyond Covid-19's time frame.

Digital innovation has become a permanent fixture in nearly every industry, with retail heralding this. An example of a retail business that benefited from this online revolution was Target. This is a well-known company, ranked #32 in the Fortune 300 with profits increasing by 59% in 2021 (Fortune n.d.). The reason they thrived was because of the online infrastructure they had been building their digital infrastructure long before it became a necessity in terms of Covid. Even new firms which base their entire business on a fleeting trend have a good chance of getting into the market; larger, adaptable firms are in a better, more stable position, but retail is such that reputation generally is less of a factor than trends and fashions, showing the power of trends. This is also true because retail products are generally not considered 'big ticket' items and are economically not a large percentage of income for the majority of the target audiences of retail firms. This is a statement regarding the majority of firms catering to the mass market, rather than luxury retail firms. These theories again demonstrate the importance of sustainability in retail with trends being so prevalent and price elasticity being so large. This shows the importance of firms being agile and willing to prioritize shifting to sustainable processes with note of the costs involved.

Tied to this is the third aspect, the threat of existing substitutes. This affects the potential of new entrants because it creates more of a barrier to entry. More importantly, however, it creates more regulation in the market in terms of pricing and practices as consumers have more choice, so standardization of the market is quite common, meaning business' USPs are reduced to their individual brand activities rather than market forces. This is especially true in retail due to the high volume of choice consumers have.

This directly correlates to another of Porter's Five Forces, the bargaining power of customers. This also heavily depends on the competition in the industry, the first force discussed. As mentioned previously, retail is a competition-dense industry, increasing the bargaining power of consumers in general, when it comes to negotiating for sustainability practices. This makes consumers an even more important stakeholder, making firms in the retail industry more sensitive to their demands. In recent years, consumers have been increasingly demanding on the sustainability and ESG targets, thus resulting in a higher likelihood of firms incorporating this into the fabric of their objectives. In contrast, however, it could be argued that because there is the lack of anything close to a monopsony in the retail industry, given the high volume of consumers, customers do not have as much bargaining power. This is especially true if prices increase due to action taken on previous customer pressure, thus decreasing competition (for consumers who want sustainable retail), as well as decreasing the ability to afford to switch for the customers (especially in a price elastic niche/ with price sensitive customers). Retail as a whole is not considered a niche, and much of the segmentation still creates a large customer base. For select niches, such as luxury goods, it is true that customers have more bargaining power. Regardless of whether niche or mass retail is being addressed, because sustainability has been such a large trend with the majority of customers rather than just one type, the point still stands that retail firms have had to adapt to this and conceptualize the prioritization of their stakeholders in the context of consumers. This therefore shifts the business' factors of production into minimizing conversion and transactional costs but doing enough to appease stakeholders. Although customers are integral, if they do not prioritize sustainability, there is still a push from other stakeholders such as the government or investors, but given the high bargaining power of customers, they remain a primary stakeholder to appease.

Finally, the last aspect of the framework is the bargaining power of suppliers. This factor is not as concrete, as there are varying levels of bargaining power. While there is not a single supplier controlling supply, it is not as densely populated as the retail industry itself. Additionally, because there is so much variance in the industry itself, in terms of business size and age, there are too many factors to consider to conclusively state the bargaining power. However, for the majority of the firms being discussed, catering to a segment of the mass market that is slightly more affluent and thus can afford to somewhat prioritize sustainability, suppliers generally do not have as much bargaining power. The majority of these firms are large enough to benefit from purchasing economies of scale and have enough reputation that they can switch suppliers. This factor is considered less important in terms of sustainability given the gray area it is in when it comes to retail. Another factor that affects this greatly is the supply chain - with different types of supply chain come different supplier expectations and demands. Despite this variance, this point is still important to note, especially in specific examples such as Nike where their suppliers would be unlikely to have too much

bargaining power. Suppliers would have more bargaining power to not be sustainable if they are very specialized with little substitutability, for example customization. Similarly, if a pre-existing specialized supplier decides to be sustainable, more of that burden (cost) can fall/be passed on to the customer (the firm). This is also true if there is excess demand. However, if buyers want sustainable suppliers, they may be pressured to do so if the buyers can substitute away from these suppliers and if the buyers (firms) are monopsonistic. This is especially true if the situation is a culmination of other forces allowing suppliers to switch to firms wanting a sustainable supply chain. Generally, this is the case when the push comes from consumers who want sustainable sourcing, again highlighting the importance of the aforementioned bargaining power of customers. The bargaining power of suppliers is the factor most associated with cost saving, namely the aforementioned transactional and conversion costs associated with a business adopting sustainable practices.

The competitive environment is an integral and impactful factor that drives sustainability related decisions in retail businesses, as exemplified by the analysis of Porter's Five Forces. While these factors influence sustainability decisions greatly, they also provide background to the factors discussed in the rest of the paper as retail is a unique industry in its mechanisms.

## Financial Factors

For the sustainability business case to be justified, the financial information of a business must not only support the more sustainable path, but clearly outline it to be the best course of action.

There are a few factors discussed within this main factor. The one that sets the base for the rest is the financial situation of the company (Haessler 2020). This changes how sustainability can be applied; whether it is in the supply chain, such as Nike, who were in a high-standing financial position, or in managerial or other ways. Investments in sustainable technology are generally very costly with, usually, little to no financial benefits in the short term. This links to the Stakeholder vs Shareholder theories mentioned before; companies majorly concerned about their shareholders rather than stakeholders, which tends to happen for businesses in a less established financial position, are much more likely to look at the short term exclusively. 2 studies (Margolis et al. 2011 and Artiach et al. 2010) found a positive correlation between the profitability of a company and CS performance (Haessler 2020). This seems quite intuitive, but the degree to which the financial position is considered varies. Retail is a competitive industry, as explored in the previous section, meaning businesses must look at surviving in the short term over anything else, increasing the impact of the current financial position of the company. Conversely, it could be argued that because retail is a generally saturated market, when viewing the mass market and not niches, smaller businesses can afford to take risks with the probability that due to the large customer base, it will satisfy someone's needs (rather than market production). While this may be too volatile for larger firms to consider, to establish a USP, small firms can afford to take these risks regardless of financial position. Considering this, however, due to the saturation and relatively low barriers to entry in retail, there is variance in financial positions of companies in retail, and this does tend to affect sustainability decisions more than in industries with a high supply elasticity.

The economy also has a large impact on the financial position of the company, and thus the sustainability decisions made by a firm. Phases of economic downturn can negatively affect organizations - and therefore sustainability - as the business objectives devolve to survival (Placier 2011). Government policies also have a large impact on the financial position of a business. These are usually more predictable (specific taxes, ad valorem taxes, etc). This therefore affects the financial position, but to a smaller extent than an external shock might. However, things like subsidies may be harder to predict given the 'trends' needed in terms of industry, for governments to believe in the profitability of the business. Again, while this paper recognizes the government as an integral stakeholder, legislation is too large of a topic to discuss at length.

The next sub-factor is profit maximization. Firms and managers generally follow the logic of the theory of profit maximization, because not doing so can cause 'avoidable harm' (Alexander 2007). Organizations have limited resources, and sustainability initiatives may face competition for resources from other projects. Managers have to

decide how these resources will be allocated - usually choosing between sustainability and short-term profitability (Teng et al. 2014). They also have to perceive the opportunity costs (Haffar and Searcy 2017). This shows the complexity and importance of top management, which will be discussed in coming sections. This also demonstrates the importance of profit maximization to a firm, creating the 'tradeoff'. This paper investigates ways to navigate this 'tradeoff' so it feels more like an obvious choice to be sustainable.

## Top Management

Top management engagement and attitudes is necessary for a substantial effect, especially within traditionally non-advantageous initiatives such as sustainability (Engert et al. 2016). This is especially true because top managers are key decision makers who set the goals of the organization, directly impacting the sustainability business case. Top management commitment also aids in the establishment of social and environmental reporting (Fifka 2013), as well as the general internal push towards sustainability. It is much more likely firms will make a large impact if their managers truly believe in the cause and incentivize their workers to as well (Haessler 2020). A study analyzing the effects of TMT composition found a positive correlation between functional diversity within a TMT and CSP (Henry et al. 2019). This goes to highlight the importance of functional diversity in top management, and top management in general. This is also illustrated by the fact that having a long-term strategic view is necessary for top management in the context of making a positive sustainable impact. Conflictingly, firms generally prioritize the short term, as seen by a study analyzing 400 companies which found that managers readily forgo long-term improvements for short term targets (Graham, Harvey, and Rajgopal 2005). These short-term targets are largely financially motivated.

Top management is also important in the context of risk, a relevant concept in the more volatile field of sustainability. Business' fallback options and responsiveness when it comes to sustainability as a long-term goal leads to a high level of uncertainty (Wu and Pagell 2011). These risks and uncertainties range from having to allocate capital to searching for new suppliers, to having to account for the difference between "intent" and "reality". For example, customers may sound more willing and able to demand sustainable products (that may be more expensive) than they are actually going to demand. Decision making theory demonstrates how economic agents can decide to sacrifice rather than optimize under uncertainty, due to bounded rationality (Simon 2000). While making decisions, managers and workers are influenced by biases or use of heuristics due to cognitive limitations limiting rationality (Tversky and Kahneman 1974). Scholars also found that managers act under bounded rationality whilst managing sustainable supply chains (Walker et al. 2014). Given this information, it is clear that sustainability decision making is associated with high levels of uncertainty and risk, influenced by non-quantifiable and unpredictable factors such as personal attitudes, biases, experiences, and cognitive limitations (accentuated in times of uncertainty). This pays into top management because decisions made under the uncertainty of sustainability are impacted by the skillset and commitment of management. Conversely, uncertainties also influence managers when it comes to making these decisions. In order for sustainability to be prioritized, it is important to have functional diversity to maximize decision making.

## Internal Dynamics

While this factor is extremely closely linked to top management due to the influence top managers have on internal dynamics, there are two main subtopics in this factor (Haessler 2020). The first one is path dependence (early integration), in the context of sustainability practices. How early or quickly sustainability practices or ideas are implemented into the firm plays a large role in how much employees truly buy into it, which is extremely important given that organizational change is extremely difficult, with various reasons of failure from communication to leadership (Lorenzi and Riley 2003). Sustainability practices also need to be integrated at the beginning of projects to maximize proactivity in targeting opportunities (Gibson 2006), as well as to overcome stasis as organizational change is extremely difficult and time-consuming. This is influenced by top management, as they herald the implementation of sustainability practices. However, this stands on its own as, while path dependence is one of the many decisions

managers make, it sets the tone for the project. For example, Nike chose to maximize their supply chain's sustainability early on, allowing them to acclimatize to this, and be allocatively productive.

The other important factor under internal dynamics is the competition for resources. Again, this ties into top management, as they direct this allocation. Projects incur opportunity costs (the decrease in amount of resources that can be allocated to a project due to the allocation of resources in another project) to firms (Haffar and Searcy 2017). This is especially true given the importance of responsiveness and proactivity in retail due to high competition. This causes competition for resources. These resources could be funding based or material based, and require, again, top management commitment and decision making. They also play into the financial position of the company; if there is little working capital, it is unlikely there will be anything close to perfect factor substitutability. This plays into sustainability decisions immensely as firms will once again have to evaluate their different projects in accordance to their business objectives, recognizing whether resources can be allocated to more sustainable means given the opportunity cost.

## Supply Chain

Finally, an important factor in sustainability decisions is the supply chain. This, along with Porter's Five Forces, was not included in a main reference for this paper, Haessler 2020. However, this paper recognizes its importance given the effect that different types of supply chains have on sustainability. In the simplest manner, the more direct a supply chain is, the more cost-efficient implementing sustainability into it will be. Supply chains, as illustrated by Nike, is one of the most effective ways for a firm to meet ESG targets, given the large carbon emissions generated with the majority of the supply chains in the world, most notably retail, given the high transportation necessities, as well as bulk production quantities. How retailers can make their supply chain more sustainable is a highly researched question, with real-world studies such as in the UK, Denmark, and France being compared in terms of how green they could make their supply chains (Kotzab et al. 2011). This demonstrates how important supply chain is in sustainability, as it holds the most impact in a firm as it is generally regarded as the least sustainable department. The kind of supply chain, as well as factors contributing to the supply chain, which is beyond the scope of this paper, shifts decision making around sustainability largely as for many retail companies, the supply chain is the backbone of their organization.

## Data Informing the Strategic Factors

There are a variety of internal and external factors that affect the decisions firms make about sustainability goals and practices. Data is a key input shaping the discussions firms have on decision making processes regarding goals and practices, with different types of data affecting the quality of decisions made (Ghasemaghaei and Calic 2019). There is a lot of data firms can generate and gather internally and externally to guide these discussions and decisions.

## Stakeholder Theory

Majority of the data surrounding stakeholders is internal. This is extremely important, as it shapes the business' entire outlook. However, every firm generally should have a good grasp on their stakeholders and shareholders and be able to factor them in in terms of importance in decision making. However, stakeholder and shareholder come into data in a different way that can be discussed - externally. This means data is used to inform the stakeholders, rather than data just being a tool for the firm. With this data readily available to these influential parties, the push for sustainability can be justified. As examined previously, this external pressure is one of the largest influencers in sustainability decisions, so this data is integral. Data to inform these stakeholders range from the mandatory financial and base-level company data, to more in-depth business objective data and information shared at things like 10Ks and press releases.



## Competitive Environment

The main data associated with this is market entry and development. This is generally regarding secondary research, with a focus on firsthand studies. There is usually less use of AI here due to time sensitivity, given the volatile nature of retail. It is extremely important for firms to use the most effective and efficient kind of data in an incentivizing context such as sustainability. This data plays an integral role depending on circumstance and company strategy (e.g. Porter and van der Linde 1995b). This paper has found that the overall relevant data types in this are historical projections (quantitative), and primary data (qualitative, both original and nominal) analysis. This is generally less available information because companies need to go out of their way to find it, whereas information about their own businesses and costs are more readily affordable. Firms must have some market research, especially in a competition-heavy market like retail. However, whether it is in the context of sustainability is determined by the market itself. For example, retail is a volatile market, with lots of competition and trends. Due to this, as well as the push for sustainability in retail, companies - especially very large or very small and new companies - must pay attention to the sustainability information and data, using it efficiently and analyzing it as best as possible. This informs the competitive environment and requires a lot of discerning abilities from the firm as they need to sort through regular abundant market information, generally secondary, and find the most poignant and relevant sustainability information useful for them. This is a main cause for the creation of things like sustainability metrics, which is discussed at length in the other sections of the data aspect of this paper.

## Financial Factors

Data analysis is generally used the most in cost analysis and reduction (Christmann 2000, Epstein and Roy 1996). This is in regard to energy savings, leaner production, or material reduction, all culminating in supply chain changes. These are helpful to a firm as is, especially coupled with linear regression models, but can be great drivers of financial motivations for sustainability. This helps a firm establish their financial position to the point where improving sustainability becomes more viable to them. Or, at the minimum, knowing whether improving sustainability practices is feasible is a result of this. Having sound financial assessment tools and abilities, in terms of data analysis and collection, also reduces risk for the firm, which is discussed in the coming sections, making top management more open to implementing sustainability decisions, which tend to be higher cost. Clearly, the availability of financial data as well as analytics capabilities (Eisenhardt and Martin 2000) informs all strategic factors. This is also true in the aspect of profit maximization; a secure knowledge of cost allows a better idea of profit can be maximized and therefore creates a clearer path to justification of the sustainability business case.

There is also opportunity-oriented data, which is a combination of market and financial data. This is usually the most provided for in terms of data, as there is an abundance of models on the financials of a business with linear regression models. Financial data is easy to generate and analyze for most companies because it is integral to the business. Market data is also relatively accessible, especially in a well-established industry like retail. This data helps firms identify opportunities. Sales and profit margins (e.g. Porter and van der Linde 1996a, 1995b), or a company's reputation and brand value (e.g. Jones and Rubin 1999 or van Marrewijk 2012) are ideally maximized. These are opportunity based, and while informing the financial and competitive position of the company, this paper views this data as essential for profit maximization, a very powerful reasoning for sustainability. Linear regression models and historical data are primarily used for this for the majority of firms, especially in retail where acting quickly rather than spending an excess amount of time collating data is rewarded.

Similarly, data on the financial situation of the company itself is easily found, as it is internal data. Financial forecasting, quantitative data, and historical analysis are extremely common as companies usually specialize in this. The data is all present within the company, but the issue is whether they are able to analyze it in nonprofit formats, which majority of the biggest sustainability actors, including in retail, fall under. This can be expanded to note that the issue does not come from analyzing this financial information from the perspective of profit maximization or

understanding the position of the company alone, but rather to understand whether a sustainability reached or what steps can be made to make it attainable.

## Top Management and Internal Dynamics

Top management and internal dynamics are shaped by similar data types. Studies have found, as traditional economics would agree, that financial data - especially surrounding profit maximization - is a primary driver to managers being engaged and committed to sustainability (Haessler 2020). Data in the market using analysis techniques such as pattern recognition and linear regression modeling allow managers to compare the market today with how it used to and will be. This is extremely important given that the business case for shifting to sustainable practices is that long term profitability will follow high short-term costs. This links to profit maximization and will ultimately serve as an incentive to make an internal and powerful change.

Quantitative sustainability tools to assess the benefits of sustainability in specific contexts are needed, and are so far in existence, but not as effective as possible (Epstein and Roy 2001). Businesses find it difficult to turn their corporate strategies into action when it comes to slightly uncharted territory such as sustainability. Existing sustainability tools include WATER (The Water Assessment for Transportation Energy Resources), LEAF (Landscape Environmental Assessment Framework), GREET (Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation). These provide critical information to businesses, but firms being aware of this data is important. Therefore, how the data is presented is very important as it affects a firm's awareness. For example, if these metrics were presented as a market staple, a 'must-know' when initial market research is being conducted, their efficiency and impact would increase significantly. However, given how well-established the retail market is, one may argue that it is difficult to incorporate metrics such as these into the market norms. Conversely, one could also argue that given the volatility of the retail market, there is more room for change. This is also true as due to the volatility of the market, firms must be more sensitive to consumer and investor demand, which can cause change. Data such as this can aid businesses in creating actionable items to further their sustainability practices and aid with the business case.

Cognitive limitations of top management, as discussed in the top management factor, is also shaped by data extensively. As stated previously, under uncertainty (e.g. in making new decisions on sustainability that are foreign to a firm), decisions are more affected by cognitive limitations like heuristics and biases (Tversky and Kahneman 1974). Thus, a surplus of data is required, to bring the information as close to perfect as possible to mitigate the cognitive limitations in decision making. While the best type of data generally depends on the firm itself, depending on where the cognitive limitations inhibit decision making, it is generally information about sustainability itself, in the context of retail, that managers lack. Data is generally needed to confirm what is feasible and the most cost efficient, and while it is possible to figure this out without easy access to data, firms are less likely to allocate their resources into doing so.

Risk, also mentioned previously, plays a large part in top management and internal dynamics as it shapes decision making. Useful data for this ranges from regression models with  $A_i$ , to using pattern recognition to place market risks in the context of sustainability. Because risk management is a large field in and of itself, firms generally have quite detailed access to this, a commonly regarded driver is the reduction of technical, societal, and market risks (Schaltegger and Wagner 2006) as a result of good sustainability management.

Data can also work outwards, when it comes to the internal functions of a company. The engagement and commitment of the company can be placed by the way the company chooses to present itself - what aspects it highlights or glosses over, in terms of strategy and sustainability goals. Instances this can be used in are press releases or other news sources like 10Ks for publicly traded companies. This informs exterior shareholders and stakeholders.

## Supply Chain/Operations

While there are multitudes of data on how to implement sustainability into the operations of a retail business, it is the quantifiable metrics that are truly important and useful for a business in terms of implementation for its supply chain.

ESG frameworks are a set of guidelines that help companies manage their ESG commitments and targets, providing directions on how to create ESG reports. There are many ESG frameworks, and these direct firms on increasing the sustainability of their corporate strategy, especially in their supply chains. These reports help document and disclose ESG progress, important for the company itself as well as the stakeholders. The problem is that there are lots of discrepancies in ESG reporting; there is no one set of guidelines to follow, and the legal status of ESG reporting differs depending on industry, company type, and location. In the retail industry, there is still a large discrepancy because of the variety in the industry. Most institutions rely heavily on external providers of ESG data, but there is minimal correlation between ESG relations from alternate agencies. (Dimson et al. 2020).

ESG frameworks can include environmental metrics, for example waste produced and resource usage; social metrics like gender pay ratio and community investment; and governance metrics like fraud and compensation for executives. ESG frameworks are chosen by company types in retail; the regulatory environment, which is largely dependent on location; and whether the company decides to choose one or multiple metrics - generally the more the better, but often businesses cannot allocate ample resources to this.

ESG frameworks generally cater to three stakeholders - investors, the government, and management. There is a large range of frameworks, and detail about these are beyond the scope of this paper, but well-known metrics such as the UNSDGs (United Nations Sustainable Development Goals) streamline the process of a sustainable business case, and make it clearer for a business as to how to turn their corporate strategy into action. There are also agencies that specialize in helping with ESG reporting, showing the importance of sustainability to shareholders as well as the importance of metrics.

As referenced throughout the paper, Nike also has internal metrics for their supply chain specifically, and were one of the first to do so. They used point value scorecards, which were incentive based as organizations can track different aspects of sustainability throughout their operations and generate numerical scores using a point system. (Angharad Porteous and Sonali Rammohan 2013). As seen with Green Business Bureau's EcoPlanner, which informs businesses on the most effective ways to improve their processes, incentives can be categorized by business areas. Examples include in the office space, bathroom and break room, and within transportation processes. The point system provides an easy way to tackle initiatives individually and evaluate and compare different business areas. Green Business Bureau's certification program attributes three tiers of sustainability performance depending on how many points a member business achieves - aware, gold, and platinum. Platinum members elevate their reputation as sustainability leaders and exemplify their commitment through a real time EcoScore that can be accessed publicly. Nike followed a similar method. There are many other well-known methods like internal audits with popular global reporting processes like Triple Line Accounting. They examine a business' actual operating methods and compare them to pre-established best practices which organizations can integrate into their own internal auditing system. 62% of executives stated the biggest challenge is integrating sustainability throughout the entire organization so through observation, inquiry, and survey, an internal audit can help here. Benchmark setting is another large practice, which systematically evaluates business performance relative to a standard, which gives a reference point to help standardize the procedure. Benchmarking, in conjunction with the other methods, may also reduce costs and time when a firm is trying to increase sustainable practices, especially in the supply chain. This further demonstrates their importance. There are many other large processes, beyond the scope of this paper, but this illustrates the importance of data and metrics in making sustainability decisions in order for businesses to see a tangible path forward when it comes to sustainability actions.

Through this information, it is clear that data is the essential part that shapes the operations of a company, which is largely how sustainability decisions are made, especially for retail companies which rely heavily on their supply chains and operations.

## Conclusion

This paper discussed strategic factors that contribute to sustainable products and practices for retail firms, especially in their supply chain, and the types of data firms should generate to measure and implement the strategic factors. It went through the background factors like Stakeholder Theory and the Competitive Environment, progressing to the financial factors which could be considered both background information to contextualize the rest of the paper, and specific information. Then, top management and internal dynamics were discussed, finishing with the supply chain. The paper detailed how each of these factors contributed to sustainability decisions, especially given the unique environment of retail, using Nike as an example. The paper then drew the conclusion that data was extremely important in informing each of these factors, with different kinds of data and metrics necessary to present a holistic view of sustainability opportunities and costs to key stakeholders.

Metrics were discussed in slightly more depth, given the magnitude of literature. This means that for retail firms, having access to applicable data can guide corporate strategy into being as effective in sustainable impact as possible. This also increases efficiency, regarding the company's individual and community goals and pressures. Therefore, businesses that know to prioritize sustainability given the strategic factors should effectively allocate resources into obtaining this data, or analyzing this data, given its importance.

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