The world's leading e-retailers and environmental sustainability

Peter Jones, Robin Bown, Daphne Comfort and David Hillier

'Technology will make shopping more personalised, connected and accessible but will it improve environmental impact?' (P. Madden 2012, webpage)

Abstract

The aims of this paper are twofold, namely to offer an exploratory review of the environmental sustainability commitments and achievements being publicly reported by the world's leading e-retailers and to offer some wider reflections on the way these e-retailers are addressing and pursuing sustainability agendas.The paper begins with brief outlines of how the internet is transforming consumer behaviour and retail operations and of the possible environmental impacts of e-retailing and a short discussion of environmental sustainability. The paper draws its empirical material from the most recent information on environmental sustainability posted on the world's leading e-retailers' corporate web sites. The findings reveal that the majority of the world's leading e-retailers publicly report or provide some information on their commitment to environmental sustainability which embraces climate change and greenhouse gas emissions, energy efficiency, waste management, water management, bio-diversity and nature conservation. However the authors argue that these commitments can be interpreted as being constructed around the search for operational efficiencies and cost reductions and being driven by business imperatives more than any genuine commitment to environmental sustainability. More critically the authors argue that these commitments are driven more by the search for efficiency gains, that they are couched within existing business models centred on continuing growth and that as such the world's leading e-retailers are, at best, currently pursuing a 'weak' rather than a 'strong' model of sustainability.

Keywords-Sustainability; e-retailers; sustainable consumption; economic growth; external assurance.

Introduction

There is a general consensus that the internet is revolutionising the ways companies do business in nearly all sectors of the economy and nowhere is this more apparent than in the retail sector. Vize et. al. (2013, p.909) for example have argued that *'the Internet's commercial influence is highly visible in the retail industry'* while Ernst and Young (2012, p.2) has suggested that the Internet, and increasingly widespread mobile access to it, are *'reshaping the retail environment faster than ever, causing retailers and brands to rethink how they currently do business.'* More specifically Doherty and Ellis-Chadwick (2012, p.945) suggest that *'the Internet's capacity to provide information; facilitate two-way communication with customers; collect market research data; promote goods and services and ultimately to support the online ordering of merchandise provides retailers with an extremely rich and flexible new channel.'* Doherty and Ellis-Chadwick (2012, p.944) further argue that '*in so doing the Internet gives retailers a mechanism for; broadening target markets; improving customer communication; extending product lines , improving cost efficiency, enhancing customer relationships' and delivering customised offers.'* The academic and commercial business literature abounds with reviews and forecasts of how the internet is and will continue to transform consumer behaviour and retail operations, suggesting that shopping will become more efficient and more informed and that it could effectively be 'dematerialised' with fewer journeys to shops and stores as ever more people buy online. At the same time while people are certainly being presented with seemingly ever more opportunities to consume, less research has been undertaken on the environmental consequences of e-retailing.

More generally, writing over a decade ago Fichter(2003, p.37) reported that *'research on the environmental effects of e-commerce is still in its infancy'* but suggested that there are *'three developing approaches to the development of sustainable e-commerce solutions'* namely *'the extension of environmental performance measurement and management to e-commerce activities, the use of new cooperative forms of innovation management, and the provision of customer choice'* (Fichter 2003, p.33) At the same time Sui and Rejeski (2002, p.156) in reviewing the *'environmental impacts of the emerging digital economy'* enquired *'do the demands for the development of a sustainable economy compete or coincide with the new reality of the digital economy?'* More specifically Sui and Rejeski (2012, p.156) posed the questions *'Is e-commerce a truly clean, environmentally benign economy which will simply lead to the substitution of information for physical resource flows along energy and transportation networks?'* or *'alternatively does e-commerce encourage new movements by generating new demands for material and energy that will further deteriorate the fragile environment?'* Since then research into the environmental impacts of e-commerce (and Internet retailing) has gathered momentum (e.g. Yi and Thomas 2007; Edwards, McKinnon and Cullinane 2011: Tiwari and Singh 2011; and Bull and Kozak 2014) but the ways in which individual e-retailers are addressing the environmental impact of their business operations has, to date, received little or no attention in the literature. With this in mind the aims of this paper are twofold, namely to offer an exploratory review of the environmental sustainability commitments and achievements being publicly reported by the world's leading e-retailers and to offer some wider reflections on the way these e-retailers are addressing and pursuing sustainability agendas. As such the paper contributes to the more general growing body of research on how retailers, who hold pivotal positions in the supply chain between primary producers and manufacturers on the one hand and consumers on the other, are responding to the increasingly importance challenges of environmental sustainability.

Corporate Social Responsibility and Environmental Sustainability

The growing interest in environmental sustainability within the business world is a part of a wider commitment to Corporate Social Responsibility (CSR). Cheng et. al. (2014), for example, suggest that *'in recent decades, a growing number of academics as well as top executives have been allocating a considerable amount of time and resources to corporate social responsibility strategies- i.e. the voluntary integration of social and environmental concerns in their companies' operations and in their interactions with stakeholders.'* A variety of factors are cited as being important in building the current corporate momentum behind CSR. Porter and Kramer (2006), for example, argue that there are *'four prevailing justifications for CSR'* namely *'moral obligation, sustainability, license to operate and reputation.'* The moral argument is that companies have a duty to be good citizens while the notion of license to operate recognizes the fact that companies require explicit or at least tacit approval from various stakeholders in order to operate. A focus on reputation is rooted in the conviction that CSR commitments and achievements will help to improve a company's image and strengthen its brand (s) while sustainability looks to emphasise its environmental and community stewardship. Marketing is also providing a major impetus for the increasing interest in CSR. Girod and Michael (2003), for example, have argued that CSR is *'a key tool to create, develop and sustain differential brand names'*, Middlemiss (2003) has suggested that *'CSR is taking centre stage to provide more sustainable, long term brand value'* and Piercy and Lane (2009) have argued that *'CSR is increasingly recognised as a source of competitive advantage.'*

The business case for CSR is seen to focus on a wide range of potential benefits. These include improved financial performance and profitability; reduced operating costs; long-term sustainability for companies and their employees; increased staff commitment and involvement; enhanced capacity to innovate; good relations with governments and communities; better risk and crisis management; enhanced reputation and brand value; and the development of closer links with customers and ; greater public and shareholder awareness of the importance of socially conscious financial investments; the need to comply with a growing volume of environmental legislation and regulation; concerns about the cost and scarcity of natural resources; more general changes in social attitudes and values within modern capitalist societies: the growing media coverage of the activities of a wide range of anti-corporate pressure groups; the growing media coverage of the activities of a wide range of anti-corporate pressure groups.

At the same time there are those who would champion the case against companies integrating CSR into their core business. Such arguments might follow Friedmann (1982) in affirming that *'there is one and only one social responsibility of business-to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say engages in open and free competition without deception or fraud.'* Henderson (2001) has argued that growing business commitment to CSR is *'deeply flawed'* in that *'it rests on a mistaken view of issues and events and its general adoption by business would reduce welfare and undermine the market economy.'* More generally Kitchin (2003) argues that CSR is *'too narrow to engage management attention, too broad and unquantifiable to be taken seriously by the financial community and just woolly enough to be exploited by charlatans and opportunists.'*

More specifically the concept of sustainability can be traced back as far as the thirteenth century but in more recent times it re-appeared in the environmental literature in the 1970's (Kamara et. al. 2006) and since then it has attracted increasingly widespread attention. However there is little consensus in providing a definition of sustainability. On the one hand there are definitions that look to include ambitious social and economic, as well as environmental goals and to meet human needs in an equitable manner. For the United States Environment Protection Agency (2014, webpage), for example, *'sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony , that permits fulfilling the social, economic and other requirements of present and future generations.'* On the other hand there are sets of definitions that acknowledge that all human beings live on one planet with finite quantities of natural resources and fragile ecosystems on which all human life ultimately depends. Goodland (1995, p.10), for example, defined environmental sustainability as *'the maintenance of natural capital'* arguing that it *'seeks to improve human welfare by preserving the sources of raw materials used for human needs and ensuring that the sinks for human waste are not exceeded in order to prevent harm to humans.'*

More critically Hudson (2005, p. 241) argued that definitions of sustainability range from *'pallid blue green to dark deep green.'* The former definition,Hudson (2005, p.241) suggests, centre on *'technological fixes within current relations of production, essentially trading off economic against environmental objectives, with the market as the prime resource allocation mechanism'* while for the latter *'prioritizing the preservation of nature is pre-eminent'* (Hudson 2005, p.241). Hudson (2005, p.241) also suggests that the dominant view of sustainability *'is grounded in a blue-green discourse of ecological modernization'* and *'claims that capital accumulation, profitable production and ecological sustainability are compatible goals.'* Further he contrasts this view with the *'deep green'* perspective which *'would require significant reductions in living standards and radical changes in the dominant social relations of production'* (Hudson 2005, p.241). In a similar vein a distinction is often made, for example, between 'weak' and 'strong' sustainability and Roper (2012,p.72) suggests that *'weak sustainability prioritizes economic development, while strong sustainability subordinates economies to the natural environment and society, acknowledging ecological limits to growth.'*

As interest in sustainability has grown so a number of attempts have been made to conceptualise sustainability and to theorize about the connections between the natural world and society. At simple level Todorov and Marinova (2009) argued that a simple model centred on environmental, social and economic dimensions and represented as either three pillars or in a simple Venn diagram as three overlapping circles, provides an accessible picture of the concept. A number of authors (e. G. Barter2011; Garvare and Johansson 2010) have employed stakeholder theory to conceptualise sustainability arguing that companies should be sensitive to the interests not just of their shareholders but also those of a wider variety of stakeholders including suppliers, customers, governments and society at large. More critically Amsler (2009, p.123-125) has argued that *'the contested politics and ambiguities of sustainability discourses'* can be embraced to develop a *'critical theory of sustainability.' S*he further argues that current debates should be located '*within a broader tradition of social criticism'* and that *'competing interpretations of sustainability'* should be viewed as '*invitations to explore the complex processes through which competing visions of just futures are produced, resisted and realized.'* Castro (2004) has sought to lay the foundations for a more radical theory of sustainability by questioning the very possibility of sustainable development under capitalism and arguing that economic growth relies upon the continuing and inevitable exploitation of both natural and social capital.

Methodology

In an attempt to obtain a preliminary picture of the extent to which the world's leading e-retailers are reporting on their environmental sustainability commitments and agendas within the public realm, the world's top ten e-retailers (Table 1), ranked by e-commerce sales, in the report *'Global Powers of Retailing2014'* (Deloitte) were selected for study. As the leading players in this rapidly growing element within the retail sector of the economy the selected e-retailers might be seen to reflect contemporary approaches to environmental sustainability and to be keen to publicise their environmental commitments and achievements to a wider audience. The country of origin of these e-retailers varies, though 5 of them are based in the US, but their trading activities are potentially global and the percentage of revenue derived from e-commerce as a percentage of total revenue varies from 1.6% to 100%. Wal-Mart, the world's largest retailer, is ranked as the world's third largest e-retailer though its online turnover accounts for less than 2% of the company's total turnover, and while Tesco and the Casino Group (ranked 2nd and 20th respectively generate the vast majority of their turnover from conventional store operations they are major e-retailers. Four companies, Amazon, Beijing Jingdong, Dell and Jia, trade exclusively on line. The Otto Group, a German company founded in 1949, trades via conventional stores, catalogues and online and its e-retailing, which is run via 60 individual companies including bonprix, SportScheck and Witt, is now the Group's most important sales channel accounting for some 57% of total revenue.

Companies use a wide variety of platforms to communicate and report on their environmental commitments and programmes and the European Commission Directorate-General for Enterprise lists a number of methods that businesses currently utilise including '*product labels, packaging, press/media relations, newsletters, issue related events, reports, posters, flyers, leaflets, brochures, websites, advertisements , information packs and word-of mouth'* (European Commission Directorate-General for Enterprise undated). That said the vast majority of large companies increasingly use online communications to report on their environmental sustainability strategies, commitments and achievements. With this in mind the authors adopted a simple two stage approach using Google as the search engine in February 2014. Firstly an internet search was undertaken with the key words being e-retailers' names (e. g. Amazon) and 'sustainability' and the aim here was to discover if the selected e-retailers publicly communicated their commitments to sustainability on their corporate websites. Secondly each of the e-retailers' home pages was reviewed with the aim of discovering if, and how, the selected e-retailers communicated environmental sustainability messages to online customers at the point of sale.

The information revealed by these two basic procedures provided the empirical material for this paper. However the selected e-retailers' websites all have their own house style and they vary in style, content and layout and thus it was not possible to follow a consistent systematic search procedures and the precise details of website navigation varied from one e-retailer to another. The initial search for Amazon, for example, provided access to a corporate webpage entitled *'Amazon and Our Planet'* which provided details of how the company was *'looking to further review our environmental impact.'* The corresponding search of the Tesco corporate website retrieved the *'Tesco and Society Report 2013'* which included a sub-section entitled *'Reducing Our Impact on the Environment.'* While content analysis has sometimes been employed to interrogate websites (e.g. Holcomb et. al. 2007) in this essentially exploratory paper the authors grounded their exploratory analysis on the environmental commitments and achievements the selected e-retailers wished to publicly communicate. The specific examples and selected quotations from the selected e- retailers' websites within this paper are used primarily for illustrative rather than comparative purposes, with the focus being on conducting an exploratory examination of the sustainability commitments and programmes being pursued by the leading e-retailers rather than on attempting to provide a systematic analysis and comparative evaluation of these programmes.

The authors recognise that this approach has its limitations in that there are issues in the extent to which a company's public statements realistically, and in detail, reflect strategic corporate thinking and whether or not such pronouncements are little more than thoughtfully constructed public relations exercises. However given the need to drive forward exploratory research such as this and to begin to understand the extent to which leading e-retailers are addressing environmental sustainability the authors believe that the Internet based analysis adopted in this paper offers an appropriate entry point for analysis and a readily accessible pool of data to underpin the current study. As such the authors believe that their approach is not only fit for purpose but that it also provides a platform from which future research agendas might be constructed.

Findings

The first stage search revealed considerable variations in the volume and detail the selected e-retailers provided on their environmental sustainability commitments and achievements. Five of the selected e-retailers, namely Wal-Mart, Otto, Tesco, Dell and Casino, provided sustainability/corporate social responsibility reports, a further two, namely Amazon and Apple, provided some limited information on their approach to environmental sustainability while the authors found no information on sustainability on the remaining three e-retailers' corporate web sites. The majority of the leading e-retailers explicitly recognise that their businesses activities have an impact on the environment but there are variations in their corporate commitment to sustainability strategies designed to address these impacts. In Wal-Mart's 2013 *'Global Responsibility Report'* , for example, Mike Duke, the company's President and Chief Executive Officer claimed '*going forward you can expect even deeper integration of our responsibility initiatives into our business'* and that the company looks *'to put sustainability right at the heart of what we do as a retailer'* (Walmart 2013). Apple claims to take *'a comprehensive approach to environmental responsibility'* and Otto recognises that the consumption of resources associated with its business activities *'causes considerable stresses on the environment'* and reports that *'pursuing sustainable business practices is a fundamental principle.'* Amazon offered arguably more limited commitment arguing that while *'online shopping is inherently more environmentally friendly than traditional retailing'* the company claims to be *'constantly looking for ways to further reduce our environmental impact.'* In a similar vein, Dell claims to be 'building *a strong foundation for sustainability'* namely *'one that allows us to succeed as a business while encouraging positive change and reducing our own environmental impact.'*

The e-retailers look to evidence their general environmental commitments across a range of issues including climate change and greenhouse gas emissions; energy efficiency and conservation; waste management and recycling; water management; environmentally friendly packaging; eco-friendly building design; bio-diversity and nature conservation; and helping customers to adopt more sustainable patterns of consumption as summarised in Table 2. In identifying *'climate protection'* as one of its *'Fields of Action'* Otto, for example, reports aiming to reduce carbon dioxide emissions from transport, facilities and business trips by 50% (against the 2006/2007 base level) by 2020 and in achieving this target the company's focus in on an increase in energy efficiency. In recognising that *'climate change is the biggest environmental threat the world faces.'* Tesco reports a number of commitments designed to enable the company to become a *'zero carbon business by 2050.'* More specifically Tesco outlines its approach to reducing emissions from its property portfolio, which focuses on energy efficiency, reducing hydro-fluorocarbon leakage from refrigeration systems and using renewable energy wherever possible and from distribution and reports on its *'energy management system'* which monitors energy usage across all the company's UK stores.

Dell claims to *'use resources responsibly avoiding waste in all its forms, and to work with our supply chain to do the same'* and that the company's *'easy localized recycling programs help keep more electronics out of landfills and personal stockpiles.'* The company emphasises its goal is *'to offer safe, responsible recycling solutions to all our customers globally'* and reports, for example, on the provision of free mail-back recycling of Dell branded electronic equipment in 79 countries and on printer supplies recycling in 51 countries. Dell also reports on its use of recycled plastics to create the plastic housing of desktops and backing for monitors and progress in improving packaging recyclability. Apple reports on its initiatives to reduce packaging waste including software programmes developed to determine the *'right sized box',* based on an item's weight and dimensions, for any given item being shipped to a customer. Tesco recognises that *'whilst we need water to run our own business, nearly 30 times as much water is used to grow, process and manufacture the products we sell.'* With this in mind Tesco reports both on the measures it is taking to measure its direct water footprint and to increase the efficiency of its water usage and on its efforts to address water usage throughout its supply chain including to *'support water management and efficiency projects in areas where we have high sourcing demands and where water is scarce.'*

'Environmental protection and conservation' is one of the *'priorities'* within Otto's *'corporate responsibility strategy'* and this is evidenced in the company's *'durable goods strategy.'* Here Otto reports that only Forestry Stewardship Council certified timber is used in furniture and in pursuing this strategy the company is demonstrating its commitment to *'protecting forests through responsible felling and the associated conservation of biodiversity.'* More generally Otto's guidelines on *'sustainability in procurement'* include provisions on wildlife and species conservation and a ban on the sale of goods that contain real fur. Casino reports on the development of *'ecofriendly stores'* which meet 'Leadership in Energy and Environmental Design ' standards in the use of natural materials, energy and water efficiency, air quality and recycling. Dell reports on its initiatives in *'helping customers reduce environmental impact'* particularly in terms of greater energy efficiency and reduced energy use. Such initiatives include the delivery of a new data centre for Amerijet, a Florida based cargo shipping company, which dramatically reduced operating costs and produced major improvements in their computer network management capacities.

The second stage search revealed that none of the selected e-retailers online shopping home pages contained any headline information on environmental sustainability for potential customers. The focus was almost exclusively on sales promotion and enticements to consume rather than on any attempt to encourage shoppers to consider the environmental impact of their buying behaviour or the adoption of more sustainable patterns of consumption. This was reflected in messages on both product range and product information; price comparisons and price reductions; sales; seasonal events; and promotions targeting items proving to be popular with other customers. Tesco, for example, advertises its Dyson vacuum cleaners with a *'Save £50'* banner with the price being reduced from £249 to £199 while a number of televisions are advertised for sale with *'triple clubcard points.'* bonprix (one of the companies within the Otto Group), for example, describes its fashion range as offering *'remarkable clothing that you can't find anywhere else on the high street, at prices that are simply irresistible'* and the company's website offers a wide range of men's and women's fashion and flexible payment options. The online home page of Backcountry.com, one of the companies within the Liberty Interactive Corporation, carries the banner *'up to 50% off'* in *its 'semi-annual sale'* to advertise its range of *'clothing and outdoor gear. '*discount, one of the trading companies within the Casino Group, prominently advertises a range of household and electrical goods, home furnishings, and wines and spirits with discounts of between 11% and 73% on its online homepage. At the time the website search was conducted, seasonal events included Valentine's Day, the Chinese New Year and Presidents Day. Dell, for example, advertised the *'Presidents Day Presale: Members save up to 42% on select PCs and electronics'* while Amazon was offering *'free one day shipping on jewellery, watches and more'* as part of its *'Amazon Fashion Last minute Valentine's '* promotion.

Four of the selected e-retailers, namely Amazon, Wal-Mart, Tesco and Dell provided either direct or indirect links to their corporate reports or information on environmental sustainability. Amazon, for example, provides a direct link to the *'Amazon and Our Planet'* site under the *'Get to Know Us'* banner at the bottom of the company's online home page but it is just one of twenty such links, the majority of which are sales promotion related. Wal-Mart also provided a direct link to its 2013 *'Global Responsibility Report'* mentioned earlier while Dell's online home page included a link to the company's 2013 *'Corporate Responsibility'* report. The Tesco link to its most recent '*Tesco and Society'* report, which includes material on how the company is *'reducing our impact on the environment,* is indirect in that shoppers first have to access the *'Tesco PLC'* link at the bottom of the company's online home page and this link then offers access to the report mentioned above. Apple also provides a direct link to its *'Reuse and Recycling'* service which gives details of *'The Apple Recycling Program'* which *'offers free and environmentally friendly disposal of your IPod and any manufacturer's mobile phone.'* A further link outlines how items sent for recycling are disassembled, so that key components, such as glass and metal, that can be recycled are removed and reprocessed for use in new products, and the company claims to be able to achieve up to a 90% recovery rate, by weight, of the original product.

Discussion

In the light of these exploratory findings a number of issues merit discussion and reflection. Firstly the findings reveal considerable variation in the extent to which the leading e-retailers look to address issues of environmental sustainability. Seven of the selected e-retailers explicitly recognised that their business activities have an impact on the natural environment and provided reports and/or some information on their environmental commitments and achievements on their corporate websites. The other three selected e-retailers publicly provided no information on environmental sustainability. Two of these e-retailers are based in China, where many companies currently might feel less pressure to address the environmental impact within the public arena. While the seven e-retailers who do provide information on environmental sustainability have a varying product range there is no evidence, albeit across a small number of e-retailers, of varying approaches to environmental sustainability in different sectors. That said there was some variation in the extent to which the seven e-retailers claimed to be committed to integrating environmental initiatives and programmes into their corporate strategies and business models. At the same time such environmental commitments and initiatives can be interpreted as being constructed around business efficiency and the search for competitive advantage and as such they can be interpreted as being driven as much by business imperatives as by any concern for environmental sustainability. Thus many of the environmental initiatives to increase energy efficiency and to reduce water consumption, packaging and waste generation also reduces the e-retailers' costs. More generally Banerjee (2008) argued that *'despite their emancipatory rhetoric, discourses of corporate citizenship, social responsibility and sustainability are defined by narrow business interests and serve to curtail the interests of external stakeholders.'*

In reporting, and posting information, on their environmental agendas and sustainability these seven e-retailers have predominantly provided a narrative of their commitments and achievements often illustrated with simple statistics and micro case studies with associated pictures and simple diagrams being used to illustrate general themes. While some of the -retailers, which publicly provided sustainability /corporate social responsibility reports, sought to comply with the Global Reporting Initiative (GBI) others adopted their own idiosyncratic house style. Overall the lack of common and agreed frameworks and standards and the use of simple case studies make it difficult to make any meaningful comparisons between one e-retailer and another or to chart collective progress on environmental programmes over time.

At the same time there is only limited evidence of the independent external assurance of the information provided on environmental achievements. While Otto and Tesco, for example, undertake an element of independent external assurance, others do not. Tesco claims that it is *'committed to ensuring that each piece of information and data contained in this report is supported by robust evidence'* its focus on assurance in the 2013 report was restricted to measuring and reporting its greenhouse gas emissions at a group level and in a representative sample of markets namely in China, Poland, Thailand and the UK. In a similar vein Otto commissioned PricewaterhouseCoopers to undertake external assurance to the quantity of sustainable cotton, the number of products including sustainable cotton and carbon dioxide emissions and energy consumption at the group's head office and within three of the group's trading companies. This exercise concluded that nothing came to the auditor's attention that led them to believe that the selected environmental information had not been prepared within the GBI guidelines. However PricewaterhouseCoopers recommended *'systematically expanding corporate responsibility management and reporting to include further German and international group companies'* and *'formalising and documenting the internal controls to ensure data quality at group-company level.'*

The general absence of more comprehensive independent external assurance can be seen to undermine the transparency, reliability and integrity of the information on environmental impacts and commitments posted by the leading e-retailers. That said it is important to remember that the leading e-retailers are large, complex and dynamic organisations. Otto, for example, reports that *'many of the factories of suppliers and licensed brands are located in countries where only weak legal and control systems exist to ensure compliance'* but claims to be *'committed to improving social, and increasingly, environmental standards in the production process.'* Capturing and storing comprehensive information and data across a diverse range of business activities throughout the supply chain in a variety of geographical locations and then providing access to allow external assurance is a challenging and a potentially costly venture and one which the majority of selected e-retailers currently demonstrably choose not to publicly pursue. Thus while data on carbon emissions from a e-retailer's head office and its own distribution fleet may be systematically collected, collated and audited as part of the company's environmental commitments similar information throughout both the supply chain and the product life cycle is much more difficult to access, measure, collate, interpret and assure.

The majority of the leading e-retailers publicly provide reports and information on their corporate websites but there is no attempt to provide customers with any information on environmental sustainability at the point of sale on their online homepage. The dominant thrust of messages on the e-retailers' homepages is product range and price reductions and thus on actively encouraging customers to consume rather than on fostering consumer awareness of the impact of consumption on the natural environment or on promoting more sustainable patterns of consumption. While a wide and complex set of factors influence buying behaviour, price is always likely to be an important factor especially so for e-retailers in that there is a widespread perception that prices are generally lower online than in stores. However if e-retailers, are strategically committed to environmental sustainability, they can enhance such commitments by providing information on products produced in a sustainable manner and on life cycle impacts at the point of sale. In reality the messages on their online homepage can be seen to undermine, rather than to enhance, such commitments. As such e-retailers would currently seem to mirror operational practice in traditional retail outlets where evidence from the UK's major food retailers, for example, revealed that the dominant thrust of marketing messages within stores was designed to promote consumption rather than to foster more sustainable patterns of consumption (Jones et. al. 2011).

Finally and more fundamentally there are implications arising from the tensions between commitments to promoting environmental sustainability, and ultimately, more sustainable patterns of consumption. There are issues about the tension between the efficacy of promoting more sustainable consumption, on the one hand and continuing economic and business growth and resource consumption on the other. In some ways the general position throughout the retail sector was epitomized by Sir Terry Leahy, the then Chief Executive Officer of Tesco, one of the world's leading retailers, in his *'Foresight'* contribution at the start of The Global Coca Cola Retailing Research Council Forum's report

(2009 p.16). He argued that, at that time, Tesco was *'seeking to create a movement which shows that it is possible to consume, to be green and to grow'.* By way of a challenge to this position Forum for the Future (2010, p.62) a UK charity committed to sustainable development, suggested that *'Tesco's next big challenge is to address how it can continue to grow whilst respecting environmental limits'* and argued *'in the long term new retail business models are essential to meet the needs of customers and communities while respecting environmental limits.'* This reflects Jackson's (2006, p.1) belief that *'the consumption patterns that characterize modern Western Society are unsustainable. They rely too heavily on finite resources and they generate unacceptable environmental impacts.'* Jackson (2009, p.57) has also argued that *'it is entirely fanciful to suppose that deep emission and resource cuts can be achieved without confronting the structure of market economies.'* More radically Castro (2004) has questioned the very possibility of sustainable development under capitalism arguing that economic growth fundamentally relies upon the continuing and inevitable exploitation of both natural and social capital.

Earlier in the paper the authors outlined a number of definitions of sustainability but as this is an exploratory paper they choose not to commit to any particular one, rather they offer the distinction between 'weak and 'strong' as a yardstick against which the leading e-retailers' current approach to environmental sustainability might collectively be assessed. Looking to the future a number of academic research agendas can be identified. Research is required, for example, to improve understanding of consumers' awareness of the environmental impacts generated by e-retailers and of how this affects consumers' attitudes and purchasing intentions. At the corporate level the environmental sustainability commitments of a much wider range of e-retailers merits attention as does some detailed case study research of how environmental sustainability strategies and programmes are being pursued within individual companies. Such research could be profitably complemented by investigations into the factors influencing, and the challenges facing, those e-retailers which have, to date, made limited or no public commitments to environmental sustainability. Research might also focus on how environmental sustainability issues are perceived and managed within the e-retailers' supply chain and on the locus of power within supply chain relationships. Research into the development of information systems designed to facilitate improvements in data monitoring and collection processes could play a valuable role in enhancing environmental sustainability e-retailers' public reporting on environmental sustainability .such improvements would, in turn, help to improve the reliability, integrity and credibility of such reporting. Finally there is a need to investigate if more open and transparent commitment to environmental sustainability is reflected in profit margins and share value. In pursuing such agendas researchers may also look to employ …

Conclusion

While the dynamic world of e-retailing is transforming retail operations and consumer behaviour it is also presenting ever more opportunities to consume and this potentially has implications for the consumption of environmental resources and for environmental sustainability. This exploratory paper reveals that the majority of the world's leading e-retailers publicly report or provide some information on their commitment to environmental sustainability which embraces climate change and greenhouse gas emissions, energy efficiency, waste management, water management, bio-diversity and nature conservation. However these commitments can be interpreted as being constructed around the search for operational efficiencies and cost reductions and being driven by business imperatives as by any genuine commitment to environmental sustainability. Further there is only limited evidence of any independent external assurance of the reports and information the e-retailers provided on their environmental achievements. At the same time the e-retailers' public commitment to environmental sustainability is consistently being undermined at the online point of sale by the dominant thrust of their marketing messages where the accent is on price reductions and product ranges and which are unambiguously designed to encourage consumption rather than to promote more environmentally sustainable shopping behaviour. As such the major findings of this paper suggest that the leading e-retailers are, at best, pursuing a 'weak 'model of environmental sustainability which reflects the dominant business model currently being pursued by traditional retailers and arguably more critically by ever more price sensitive consumers.

Table 1: The World's Top Ten E-Retailers 2012		
Name of Company	*Country of Origin*	*E-Commerce Sales US $ millions*
Amazon	U.S.	51,733
Apple	U.S.	8,600
Walmart	U.S.	7,500
Otto	Germany	7,410
Beyjing Jingdong	China	6,663
Tesco	U.K.	4,761
Liberty Interactive	U.S.	4,397
Dell	U.S.	4,370
Casino	France	3,422
Jia	China	3,204
Source: Adapted from Deloitte (2014) 'Global Powers of Retailing 2014'		

Table 2: Summary of Environmental Issues							
E-Retailers							
Issues	*Amazon*	*Apple*	*Walmart*	*Otto*	*Tesco*	*Dell*	*Casino*
Climate Change and Carbon Emmissions		✓	✓	✓	✓	✓	✓
Energy Efficiency	✓	✓	✓	✓	✓	✓	✓
Waste Management	✓	✓	✓	✓	✓	✓	✓
Water Management	✓	✓	✓		✓	✓	✓
Environmentally Friendly Packaging	✓	✓	✓	✓	✓	✓	✓
Eco-Friendly Building Design	✓	✓	✓		✓		
Biodiversity and Nature Conservancy			✓	✓		✓	✓
Helping Consumers Reduce Environmental Impact			✓		✓	✓	✓

REFERENCES

Amsler, S. S. (2009) 'Embracing the Politics of Ambiguity: Towards a Normative Theory of Sustainability', Capitalism, Nature and Socialism, Vol.20, No. 2, pp.111-125.

Banerjee, S. B. (2008) 'Corporate Social Responsibility: The Good, the Bad and the Ugly', Critical Sociology, Vol. 34, No. 1 pp. 51-79

Barter, N. (2011) 'Stakeholder theory: Pictures, the environment and sustainable development- do we have a good enough picture in our heads or do we need something different?', Asia Pacific Work in Progress Research Paper series, http://www.griffith.edu.au/__data/assets/pdf_file/0009/378693/APWIPPs_Issue-4.pdf last accessed 13/11/2013

Bull. G. and Kozak, R.A. (2014) 'Comparative life cycle assessments: The case of paper and digital media', Environmental Impact Assessment Review', Vol. 45, February, pp. 10-18.

Castro, C. (2004) 'Sustainable Development: Mainstream and Critical Perspectives', Organisation and Environment, Vol. 17, No.2, pp. 195-225.

Cheng, B., Joannou, I. and Serafeim, G. (2014) 'Corporate Social Responsibility and Access to Finance', Strategic Management Journal, vol. 35, No. 1, pp. 1-23

Deloitte (2014) 'Global Powers of Retailing 2014', http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/dttl_CB_Global-Powers-of-Retailing-2014.pdff last accessed 19/02/2014

Doherty, N. F. and Ellis-Chadwick, F. (2012) 'Internet retailing: the past, the present and the future', International Journal of Retail and Distribution Management, Vol. 38, No. 11/12. pp. 943-965

Edwards, J., McKinnon, A.C. and Cullinane, S. L. (2011) 'Comparative analysis of the carbon footprints of conventional and online retailing: A "last mile" perspective', International Journal of Physical Distribution and Logistics Management, Vol. 40, No. 1/2, pp. 103-123

Ernst & Young (2012) 'Digital Retail', http://www.ey.com/Publication/vwLUAssets/Digital_retail:_analyzing_the_effect_on_retailers/$FILE/Retail_thought_leadership_Digital_Retail.pdf last accessed 31/02/2014

European Commission Directorate-General for Enterprise (undated) 'A Guide to Communicating about CSR', http://ec.europa.eu/enterprise/policies/sustainable-business/files/csr-sme/communication_guide_en.pdf last accessed 19/02/2014

Fitcher, K. (2003) 'E-Commerce: Sorting Out the Environmental Consequences', Journal of Industrial Ecology, Vol. 6, No2, pp.25-41

Friedmann, M. (1982) 'Capitalism and Freedom', University of Chicago Press, Chicago, Ill.

Forum for the Future (2010) 'A view from Forum for the Future', in Tesco (2011) Corporate Social Responsibility Report, p. 62 http://www.tescoplc.com/files/pdf/reports/tesco_cr_review_2010.pdf last accessed 12/09/2102

Garvare, R. and Johansson, P. (2010) 'Management for sustainability – A stakeholder theory', Total Quality Management, Vol. 21, No. 7, pp. 737-744.

Girod, S. and Michael, B. (2003) 'Branding in European Retailing: A corporate social responsibility perspective', European Retail Digest, Vol. 38, pp. 1-6.

Goodland, R. (1995) 'The Concept of Environmental Sustainability', Annual Review of Ecology and Systematics, Vol. 26, pp. 1-24

Henderson, D. (2001), 'The Case Against Corporate social Responsibility', Policy, Vol.17 No.2, pp.28-32.

Holcomb, J. L., Upchurch, R. S. And Okumus, F. (2007) 'Corporate social responsibility: what are top hotel companies reporting', International Journal of Contemporary Hospitality Management, Vol. 19, N0. 6, pp. 461-475.

Huesemann, M. H. (2003) 'The limits of technological solutions to sustainable development', Clean Technology Environmental Policy, Vol. 5 pp.23-34.

Hudson, R. (2005) 'Towards sustainable economic practices, flows and spaces: or is the necessary impossible and the impossible necessary?', Sustainable Development, Vol. 13, No. 4, pp.239-252.

Jackson, T. (2006) 'Readings in Sustainable Consumption' in 'The Earthscan Reader in Sustainable Consumption', Editor. Jackson, T., Earthscan, London.

Jackson, T. (2009) 'Sustainability without Growth', Sustainable Development Commission, http://www.sd-commission.org.uk/data/files/publications/prosperity_without_growth_report.pdf last accessed 13/02/2014

Jones, P., Hillier, D. and Comfort, D. (2011) 'Shopping for tomorrow: promoting sustainable consumption within food stores', British Food Journal, Vol. 113, no. 7, pp. 935-948.

Kamara, M., Coff, C. and Wynne, B. (2006)'GMO's and Sustainability', http://www.cesagen.lancs.ac.uk/resources/docs/GMOs_and_Sustainability_August_2006.pdf last accessed 14/05/2012

Kitchin, T. (2003), 'Corporate social responsibility: A brand explanation', The Journal of Brand Management, Vol. 10 No.4-5, pp.312-326.

Madden, P. (2012) 'Digital retail: A sustainability opportunity', The Guardian, Thursday March 13, 2012, http://www.theguardian.com/sustainable-business/digital-retail-sustainability-opportunity-environment last accessed 22/01/2014

Middlemiss, N. (2003), 'Authentic not cosmetic: CSR as brand enhancement', *The Journal of Brand Management*, Vol. 10 No.4-5, pp.353-61.

Piercy, N. F. and Lane, N. (2009) 'Corporate social responsibility: impacts on strategic marketing and customer value', The Marketing Review, Vol. 8, no. 4, pp.335-360.

Porter, M. E. and Kramer, M. R. (2006), 'Strategy and Society: The Link Between Competitive Advantage and Social Responsibility'; Harvard Business Review, Vol.84 No.12, pp.78-92.

Roper, J. (2012) 'Environmental risk, sustainability discourses and public relations', Public Relations Inquiry, Vol. 1, No. 1, pp.69-87

SmallBizConnect (undated) 'Environmental Sustainability', http://toolkit.smallbiz.nsw.gov.au/part/17/86/371 last accessed 20/02/2104

Sui, D. Z. and Rejeski, D. W. (2002), 'Environmental Impacts of the Emerging Digital Economy: The E-for-Environment E –Commerce?', Environmental Management, Vo. 29. No. 2, pp.155-163

The Global Coca Cola Retailing Research Council Forum (2009) 'Sustainability in Retailing', http://www.cokesolutions.com/BusinessSolutions/CCRRC%20Related%20Items/Global_Report.pdf last accessed 15/02/2014

Tiwari, S. and Singh, P. (2011) 'Environmental Impacts of E-commerce', 2011 International Conference on Environmental Science and Engineering, IPCBEE Vol. 8 , IACSIT Press, Singapore, http://www.ipcbee.com/vol8/45-S10040.pdff last accessed 19/02/2014

Todorov, V. I. and Marinova, D. (2009) 'Models of Sustainability', presented at the World IMACS/MODSIM Congress, Cairns, Australia, http://www.mssanz.org.au/modsim09/D2/todorov_D2a.pdf last accessed 17/07/2013

United States Environment Protection Agency (2014) 'Sustainability', http://www.epa.gov/sustainability/basicinfo.htmm last accessed 07/05/2014

Vize, R., Coughlan, J., Kennedy, A. and Ellis-Chadwick, F. (20130 'Technology readiness in a B2B online retail context: An examination of antecedents and outcomes', Industrial Marketing Management, Vol. 42, No. 6, pp.909-918

Walmart (2013) 'Global Responsibility Report', http://corporate.walmart.com/microsites/global-responsibility-report-2013/pdf/Walmart_GRR.pdff last accessed 09/09/2104

Yi, L. and Thomas H. R. (2007) 'A review of research on the environmental impact of e-business and ICT', Environment International Vol. 33 No. 6,, pp.841-849

THE AUTHORS

Peter Jones, Robin Bown and Daphne Comfort work in the Business School at the University of Gloucestershire and David Hillier is an Emeritus Professor in the Centre for Police Sciences at the University of South Wales