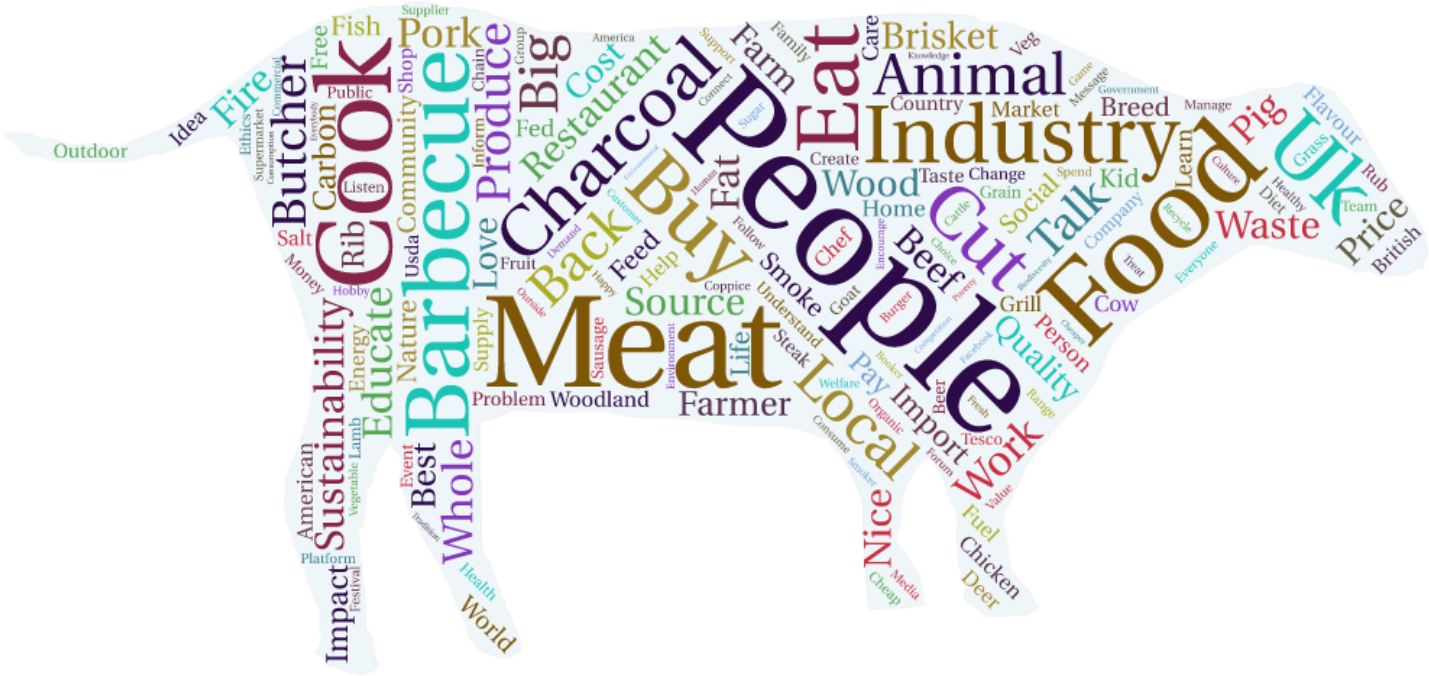
Sustainability in the UK Barbecue Food Industry



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Declaration of Academic Integrity

I declare that the presented paper is entirely my own work without additional resources other than the ones indicated. This paper has not been previously submitted to another institution nor has it been published.

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Table of Contents

Abstract

The human food system as it stands today threatens the very purpose of its existence, to provide us and subsequent generations with safe and nutritious food (Baldwin, 2015, p.2 and 8). It is therefore incumbent on the food industry, consumers and society to be aware on the issues that jeopardise the sustainability of our food system. This paper takes sustainability issues and examines them in the framework of the 'triple bottom line', that includes environmental, social and economic aspects of sustainability. This understanding of sustainability is then applied in the context of a rising trend in the UK for barbecue food. The growth of this industry and the importance of sustainability makes this an important area for study, if the industry is to ensure its growth is on a sustainable footing.

The research explores the sustainability challenges facing the UK barbecue food industry, how the industry is addressing these challenges and the contribution of the industry to a more sustainable food system. Taking an inductive, exploratory approach due to the lack of existing literature on the subject, semi-structured interviews were conducted with members of the UK barbecue community providing a source of qualitative data. The themes that emerge from the data indicate the main sustainability issues in the industry are livestock production, biodiversity, brisket, local food and short food supply chains (SFSCs), sourcing and provenance, butchers, charcoal, social and socio-economic, food loss and waste and health, nutrition and food poverty.

Thematic analysis of the data reveals the UK barbecue industry is currently making a polarised contribution to sustainability; however, a net measurement overall is unable to be ascertained. On most issues the industry is no better or worse than other areas of the food industry. However, on issues unique to the barbecue industry such as emphasis on meat and the use of charcoal, there is evidence of practices both significantly better and significantly worse than the other areas of the food industry. The very nature of barbecue food has this polarisation built in.

The conclusion is that the UK barbecue industry has the potential to be a positive contributor to sustainability; however, the barbecue trend in the UK at present needs adjusting to realise this potential. This has implications for those in the barbecue industry, the wider barbecue community and the indeed the wider food industry. The extent to which the results can be generalised is limited by this being an exploratory study. However, it allows future research to take the template provided by this study and take a more deductive approach, with scope for more quantitative analysis on certain issues.

The nature of sustainability, if one takes a holistic approach, is that there is no single answer to solve the problem of food sustainability. Indeed, by attempting to solve one aspect there is usually a second order effect that makes the situation worse elsewhere. Whilst this research does not purport to providing the answer to all, or any one of the sustainability issues faced by the UK barbecue food industry, it does contribute to the debate. It is only through shared awareness of the issues that they can start to be understood and then be accordingly addressed.

Introduction

Our food system is one of the most environmentally destructive processes on the planet, yet we need food to survive; this presents a dilemma in that the very system that keeps us nourished threatens the ability of future generations to survive (Aiking and de Boer, 2004, p.359). Predicted growth in the human population will exacerbate this unless we make our food system more sustainable.

Whilst the globalisation of the food system has been successful in increasing food supply to meet the demands of population growth and energy-rich diets of developed countries, the rise in food production has not been equal. The globalisation of our food system has also resulted in food being commoditised, less culturally and geographically significant, with changes to people's behaviours and attitudes towards food (O'Kane, 2012, p.269).

Why sustainability?

Based on the widely quoted UN definition of sustainable development, a sustainable food system "delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised" (HLPE, 2014, p.12). Ethical and moral issues are one driver for a more sustainable food system, which in the business arena comes under the banner of Corporate Social Responsibility (CSR), but there are also economic benefits. These include a reduction in operating costs, a reduction in risks associated with supply and reputation, meeting customer demands and enabling growth, and improved business operations and corporate relationships (Baldwin, 2015, p.10).

What is barbecue food?

American barbecue is considered to originate from the native Caribbean style of cooking encountered by the Spanish explorers that later developed in the southern states of North America (Lovegren, 2003). Although barbecue food is "one of the most intensely debated topics in American popular culture" there is general agreement that it involves

cooking food (predominantly meat), over a live heat source, usually in the presence of smoke, at low temperature, for long periods of time ('low' n' slow') (Lovegren, 2003). However, this very Americanised definition neglects very similar forms of cooking present in other cultures and countries such as South African *braai*, New Zealand *hangi*, Indian *tandoori*, Southeast Asian *satay*, Japanese *Yakinuku*, South American *asado*, Brazilian *churrasco*, Hawaiian *imu*, Greek *gyros* or *Arni Kleftiko*, Mexican *barbacoa*, Middle Eastern *schwarma* and Turkish *doner*. Fundamentalists of American barbecue would argue that many of these styles and methods are simply 'grilling'. So, whilst the trend in the UK is dominated by American barbecue (discussed in more detail below) it is important to recognise that there are many other styles of barbecue.

This paper takes a broad perspective on 'barbecue food' and defines it as "food that has been cooked over a live fire (charcoal[1] or wood[2]) or on a device that is referred to as a barbecue[3]." In a business context, the 'UK barbecue food industry' is defined as "enterprises that have barbecue food (as described above) as a central element of their business model. Primary industries include barbecue food restaurants[4], barbecue food service outlets (e.g. street food and pop ups) and events such as festivals and competitions where barbecue food is a prominent feature. Secondary industries include livestock farmers, abattoirs, butchers, barbecue-specific sundry suppliers,[5] charcoal and fuel suppliers, barbecue manufacturers, food wholesalers and supermarkets".

Why the UK barbecue food industry?

Existing literature, mostly in industry publications, on the casual dining out industry indicates American-style barbecue is a growing trend. Since 2008 the number of North American, burger and barbecue or steak restaurants has grown by 80%, 71% and 52% respectively (Savills, 2016, p.5). This has seen the emergence of new 'smokehouse' chains

[1] This includes natural lumpwood, artificial briquettes and other natural or artificial combustible items (such as coconut shell) formed into solid fuel for the production of heat by combustion for the purpose of cooking food.
[2] This also includes pellet grills and smokers, which use an auger to force wooden pellets into a live 'fire box', where they burn at a rate determined by the speed of the auger, and electric smokers that produce smoke using a heated electrical element to burn wooden pellets or sawdust. Whilst these might be better referred to as 'electric', the source of the heat that cooks the food is still the smoke as the electric element of the device does itself not produce enough heat to cook the food.
[3] This includes gas barbecues.
[4] This can include fine dining venues such as Jamie Oliver's Barbecoa, and fast-casual dining brands such as Red's True Barbecue and Grillstock.
[5] For the provision of rubs, sauces, brines, injections and marinades as well as wood, sawdust and pellets for smoking.

as well as existing outlets diversifying into the use of 'barbecue pits' and menu items that feature barbecue cuts of meat such as brisket, ribs and pork butt (Horizons, 2016 and QuickBite, 2016, p44). There has also been an increase in the use of "Pit smoked terminology (rubs, marinades, curing, smoke time) and 'micro-regionality' communicated through dish naming (Tennessee, Caroline, Louisiana)" (Horizons, 2016).

Whilst the lack of peer review on these sources means their reliability is less assured, their *raison d'être* is the provision of accurate market information, so in their benefit to provide accuracy. Recent growth, however, does not predict future growth, and there is no evidence that this style of cuisine will continue a high growth path, but there is reason for optimism. The small market share, gap between barbecue food served in the UK and that served in the US, as well as other styles of barbecue, provides potential for the UK market to mature and further diversify. Trends in barbecue food outside the dining sector that add weight to the argument of predicted growth include the televising of a UK barbecue competition in 2015 ('BBQ Champ') and growth in the number of barbecue competitions, from two in 2010 to eight in 2017. The largest, Grillstock, had 3,000 visitors in 2010 which grew to 17,000 in 2014, spreading to three cities across the UK by 2015 (Festival Guide, 2015). The evident growth in the popularity of barbecue food in the UK, from several measures, in the last few years is therefore worthy of study.

Research Aims.

The aim of the research is to establish what food sustainability issues are most prevalent to the UK barbecue food industry and examine how the industry is recognising and addressing sustainability issues. This breaks down into the following research questions:

1. What are the sustainability challenges facing the UK barbecue food industry?

2. How is the UK barbecue food industry addressing these challenges?

3. What contribution is the UK barbecue food industry making towards a more sustainable food system?

As no existing literature covers the research questions, the literature review chapter examines wider sustainability issues and mitigation strategies. These are focussed on those most relevant, but not specific to, the UK barbecue food industry. The methodology chapter then explains the research philosophy and design that led to the collection of qualitative data using semi-structured interviews. Results are presented in a combined chapter alongside the output of the thematic analysis. This chapter compares and contrasts the results, in relation to each other and against the existing literature. In the final chapter, conclusions along theoretical and managerial lines follow a discussion of the results and analysis, finishing with limitations and ideas for future research.

Literature Review

Overview and Scope.

There is a raft of literature on food sustainability as well as specific aspects of sustainability such as food waste and livestock production, a lot of which is outside the scope of this research. The literature reviewed is not a holistic summary of all global sustainability challenges, food or otherwise, and this is intentional. However, as the UK food industry, and the barbecue food industry as a subset, is part of a globalised food system, relevant global issues are inevitably covered. The sub-sections cover sustainability literature relevant to the UK barbecue food industry as opposed to directly covering the barbecue food industry as a separate entity. To address this the final sub-section brings together the wider sustainability literature into the context of the barbecue food industry.

A definition of food sustainability has already been given but more detail is required on the overarching themes that underpin food sustainability, namely the environmental, social and economic aspects; the 'triple bottom line'.

The triple bottom line.

The 'triple bottom line' is a framework that categorises sustainability issues along environmental, social and economic lines. It is particularly relevant to this research as the term has its origins in the Corporate Social Responsibility (CSR) literature (Elkington, 1999). The triple bottom line is also a useful framework as it considers sustainability in its broader context, not just one aspect in isolation. The triple bottom line generally applies to the food industry in the following ways:

Environmental. Our food system has a wide ranging and detrimental impact on the environment including climate change, deforestation, pollution, water use, depletion of natural resources and over-fishing (Baldwin, 2015, p.2).

Social. Social aspects of food sustainability stem from a "globalised food system that promotes competitiveness, devalues personal relationships, discourages connections with

nature and with food producers", where the environmental cost is passed on to future generations rather than the consumer (O'Kane, 2012, p.271).

Economic. Most of the world's farmers are smallholders who rely on livestock for income and diversifying arable farming revenue streams to spread financial risk (Reynolds *et al.*, 2015, p.1378). By-products such as manure as a fertiliser and animal hides also provide a diversified income stream.

If it can be conceived that the triple bottom line is a vertical representation of food sustainability challenges, then horizontally cross-cutting these are thematic issues such as food waste, local food systems, short food supply chains, nutrition, health, food security, cooking methods, fuel sources, agriculture and food production. The following sub-sections examine the existing literature on each of the thematic issues, starting with agriculture and food production.

Agriculture and Food Production

Agriculture is assessed to contribute 10-12% of all human generated GHG emissions (Smith *et al.*, 2007, p.63). However, additional energy required to transport, process, package, store, distribute, prepare, consume and dispose of food takes food supply chain GHG emissions to 17-32% of all GHG emissions (Bellarby *et al.*, 2008, p.5). Energy demands from fossil fuels, their emissions, further exacerbated by deforestation to make way for additional agricultural land, all exacerbate this effect. The GHG impact from livestock production is more significant as methane is 25 times more potent as a GHG than carbon dioxide, with nitrous oxide (from the fertiliser used to grow crops to feed both humans and livestock) 298 times more potent (Solomon *et al.*, 2007, p.33).

A regularly cited UN study published in 2006 (titled 'Livestock's Long Shadow) estimates that livestock alone contribute up to 18% of the earth's GHG emissions (Steinfeld *et al.*, 2006, p.112); however, other studies estimate the contribution to be much lower at around 3% (Pitesky *et al.*, 2009, p.2). The higher end figure puts it at odds with other figures of GHG emissions; however, despite this variation livestock are considered a resource demanding and environmentally damaging aspect of the food chain for the following

reasons: energy input for livestock production is twelve times that of plant production; livestock account for large amounts of GHG emissions;[6] livestock use 78% of agricultural land, which is then unavailable for arable farming; making land suitable for grazing usually involves the destruction of non-agricultural habitats (such as rainforests); livestock have a detrimental effect on soil quality (meaning more land is required to be cleared); and finally, water pollution from livestock manure is three time the level contributed by humans and high in environmentally damaging compounds (Baldwin, 2015, p50-53). The impact is primarily from ruminants[7] farmed for meat and dairy products, with pig and poultry less damaging to the environment. The environmental cost of livestock production is further exacerbated by the additional costs of arable farming required to produce animal feed (fertiliser use, antibiotics, carbon footprint). The use of feedlots, where many of the issues surrounding livestock's negative impact on sustainability emanate, is more prevalent in the US, where 97% of beef is finished on a feedlot (Lin, 2016). There is no available data on feedlot use in the UK, if in use at all. However, the response from pressure groups to the discovery of a feedlot-style farm in Lincolnshire in 2013, suggests the practice is not common or existent in the UK (Compassion, 2013).

Despite the environmental impact of livestock there are many reasons why livestock production is beneficial to other aspects of sustainability. Moderate quantities of quality animal protein is beneficial to our health (Eisler *et al.*, 2014, p.32), ruminant grazing plays an important role in sustaining prairie and grasslands[8] (Reynolds *et al.*, 2015, p.1378) and the use of manure reduces the requirement for chemical fertiliser (EBLEX, 2009, p.19). The livestock industry also plays a key role in rural communities around the world, in the UK it employs a quarter of the agricultural workforce (around 100,000 people) and generates £3bn of revenue (EBLEX, 2009, p.19).

Strategies that reduce the impact of livestock include: increasing animal feed not digestible by humans; regionally and culturally appropriate livestock; animal husbandry;

[6] Baldwin (2015, p50-53) states livestock are responsible for 14.5% of all our GHG emissions and 60% of all our methane emissions, although is seen with the figures for overall GHG emissions, they are open for debate.
[7] Animals with four stomachs such as cows, sheep, deer, goats and bison.
[8] The grazing and release of manure on grasslands and prairies unsuitable for arable farming helps promote health and biodiversity in ecosystems that cover more than 25% of the earth's service and act as a significant carbon sink where their grazing.

animal feeds that increase digestive microbial activity; eating smaller amounts of better quality meat; taking a life cycle approach to measuring costs and benefits; manure management (e.g. anaerobic digestion which reduces GHG emissions and recovers energy); land management[9]; making stock breed longer; making stock more fertile and making livestock more efficient at producing meat (Eisler *et al.*, 2014, p.32-34, Baldwin, 2015, p.52 and EBLEX, 2009, p.18-19 and p.33). Strategies that focus on the animal must, however, consider second order effects as a result of selective breeding. The selective breeding of livestock for economic reasons (although in the context of this study could include sustainability reasons) has had a negative effect on biodiversity. This is evident in intra-species diversity (the 'gene pool' within a species) and inter-species diversity (the number of different species) where 90% of meat consumed globally is derived from fourteen species of animal whose individual genetic make-up is becoming narrower (Steinfeld *et al.*, 2006, p.184 and p.208). Biodiversity loss has seen genetic traits that provide resiliency against environmental changes and disease bred out in favour of traits that make animals and plants more economically productive, this makes our food chain vulnerable.

Fuel Sources

Fuels used to cook barbecue food include charcoal (lumpwood[10] and briquette[11]), wood, Liquid Petroleum Gas (LPG) and the less prevalent pellet cookers that use wood pellets and electricity. Each fuel has its own sustainability considerations, LPG is a non-renewable fossil fuel and wood from less well-regulated areas can lead to deforestation[12] and biodiversity loss (Njenga *et al.*, 2013, p.360). The focus for this study is lumpwood charcoal as it is the fuel most unique to barbecue and despite it potentially being a renewable energy source, it is fraught with sustainability issues.

Charcoal is formed from the carbonisation of biomass, primarily wood, where it chemically decomposes rather than burning to ash in an open fire (FAO, 1983). During thermal decomposition GHGs and other harmful gasses are produced such as methane,

[9] In the UK, only 40% of agricultural land is suitable for arable farming, with the remaining 60% grassland available for livestock production.
[10] Charcoal that resembles the wood is was made from.
[11] Pillow shaped, press formed lumps of charcoal with binders and other materials added.
[12] Up to 12.98% in some areas of Somali forest areas in five years (Odouri *et al.*, 2011, p.1178)

carbon dioxide, carbon monoxide, Volatile Organic Compounds (VOCs) and non-methane hyrdrocarbons (Antal and Grønli, 2003, p.1621 and Adam, 2009, p.1924). Increasing the length and temperature of the process (in excess of 500°C) leads to more emissions but leaves a higher fixed carbon content in the charcoal, making it a more efficient fuel (Kabir *et al.* 2010, p.498).

The environmental impact of charcoal production can be significantly reduced by using sustainably managed forestry and efficient equipment such as a 'retort kiln' that burns off the harmful gases (reducing air pollution by 75%) and uses the heat generated to fuel the kiln, reducing overall energy input (Adam, 2009, p.1923). In the UK 80% of charcoal is imported from developing countries such as Kenya, where over 75% of charcoal production is deemed unsustainable and 13% is produced illegally, usually in earth kilns that release harmful emissions into the atmosphere (Johnson, 2009, p.371, Njenga *et al.*, 2013, p.363 and Adam, 2009, p.1923).

In addition to the environmental impact, economic and social sustainability aspects of sustainability also feature. Charcoal production is an important livelihood in some poor, rural communities, for example Kenya where charcoal is the fourth largest source of GDP and supports two million people,[13] and Tanzania where revenue generates five times the revenue of coffee and tea combined (Neufeldt *et al.*, 2015, p.2). On social aspects of sustainability, good examples include empowering marginalised sectors of society in charcoal producing communities (Njenga *et al.*, 2014, p.360). This, however, contrasts with other areas where women are marginalised, producers are disempowered, officials use the trade as a source of bribes which fuels corruption and inequality, and agricultural male labourers are misemployed from primary employment (Neufeldt *et al.*, 2015, p.5). This is before one considers that illegal charcoal production in Somalia funds the militant Islamist group, al-Shabaab, that resulted in a UN ban on exports of Somali charcoal (Rembold *et al.*, 2013 and Oduori *et al.*, 2011).

[13] The incomes streams in Kenya above charcoal include tourism, horticulture and tea, the latter of which charcoal is almost on a par with (Njenga *et al.*, 2013, p.361).

In most cases charcoal is having a negative impact on the environment and mixed impacts on social and economic aspects of sustainability. However, the World Agroforestry Centre[14] states that "Charcoal is more often seen as a problem rather than being part of a solution to addressing energy-related and economic challenges facing developing countries", and that "if managed properly charcoal can provide a low-cost and locally available energy source that has the potential to become sustainable and contribute significantly to poverty alleviation" (Neufeldt *et al.*, 2015, p.v and p.10). The implication for the UK barbecue food industry, where charcoal is a key component, is that there are really sustainable and really unsustainable methods of producing charcoal.

Barbecue as a cooking method.

Cooking food, particularly meat, is used to make it suitable for human consumption by killing bacteria and improving its aesthetic appeal. The Maillard Reaction[15] that occurs during cooking makes barbecue an extremely popular method of cooking meat due to the effect it has in transforming the flavour. Whilst this increases the aesthetic appeal of food there is evidence that grilling as a cooking processes can lead to the production of carcinogens such as acrylamide (Stadler *et al.*, 2002, p.449), heterocyclic aromatic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs) (Viegas *et al.*, 2012). Despite this evidence circulating in the media (Kirby, 2017) Jägerstad and Skog (2005, p.156) argue that there is insufficient evidence that these compounds directly cause cancer in humans through dietary intake, as most studies used concentrations well in excess of a human diet and used tobacco smoke and environmental exposure as data sources, not cooked food. Despite the lack of conclusive evidence, the issue becomes relevant to barbecue as studies have found that grilled barbecue meat is susceptible to higher levels of HCAs and PAHs, due to the combustion of rendered fat being re-absorbed into the food (Oz and Yuzer, 2016, p.59, Aaslyng *et al.*, 2013, p.85 and Rose *et al.*, 2015, p.1). Methods of reducing levels of PAHs and HCAs in barbecue food include decreasing the cooking period, reducing the distance of food from the heat source, removing the ability of fat to drop onto the heat source and the use of clean burning hardwood or coconut shell charcoal (Rose *et al.*, 2015,

[14] A science-based non-profit research organisation.
[15] A chemical reaction between amino acids and sugar usually requiring heat, that gives each food its unique flavour and distinctive brown appearance (Hodge, 1953).

p.9, Oz and Yuzer, 2016, p.65, Jägerstad and Skog, 2005, p.167-168 and Viegas *et al.,* 2012, p.2128). The level of HCAs and PAHs is also reduced by the addition of ingredients, usually as a marinade, containing any of the following: garlic, onion powder, lemon juice, beer, red wine, virgin olive oil, apple, lemongrass oil, clove bud oil, rosemary and chilli pepper (Gibis, 2007, p.10240, Melo *et al*., 2008, p.10625, Persson *et al*., 2003, p.1587, Rounds *et al*., 2012, p.3792, Puangsombat and Smith, 2010, p.40, and Oz and Kaya, 2011, p.806). In addition to these ingredients already being used for culinary purposes in barbecue food, American barbecue is characterised by low and slow, indirect methods of cooking, the use of rubs containing antioxidants (as above) and when grilling is done most have a preference for less well done grilled red meat and the use of marinades containing the antioxidants listed above. So, whilst a sustainability consideration from a health point of view, methods that to some extent mitigate sources of HCAs and PAHs are already being used.

In addition to HCAs and PAHs, other compounds harmful to health such as VOCs[16] and carbonyls[17] have been found in foods cooked over charcoal (Kabir *et al.*, 2010, p.492). However, in this study there was only one compound in one sample (out of a total of sixteen) that exceeded permissible levels.[18] It also did not specify the source country, manufacturing method or raw material, all of which determine the VOC content, the latter of which the study acknowledges can contain "furniture or flooring materials containing various pollutants…coated with paint…as a source of VOCs when combusted" (Kabir *et al.*, 2010, p.498). A good quality charcoal with a high fixed carbon content does not release any VOCs on combustion.

Nutrition, Health and Food Security

It is argued that "the fundamental purpose of our food supply is to provide safe and nutritious food" and that the goal of a sustainable food system is to "produce and consume food in a way that supports the well-being of generations" (Baldwin, 2015, p.2 and 8); however, our current food system threatens to undermine this.

[16] Including benzene and tolulene.
[17] Such as formaldehyde.
[18] This was formaldehyde, which marginally exceeded the Permissible Exposure Limit (PEL), set by the US Occupational Safety and Health Administration (OSHA), by 0.008ppm (sample contained 2.008ppm, where the OSHA PEL is 2.000ppm).

It is estimated that there are 795 million people in the world at threat from starvation (World Hunger, 2016). Even in the UK an estimated half a million people are reliant on food banks, with 4.7 million people living in food poverty (Purdam *et al*., 2016, p.1073). Yet there are almost as many obese (600 million) as there are starving, and another 2 billion overweight (WHO, 2016). This is down to increasing amounts of sugar and fat in our diet from processed, fast food and consumer tastes, including red meat in the developed and developing world (O'Kane, 2012, p.270).

There is strong evidence since the 1980s that link high intakes of red meat with increased rates of cancer, diabetes and cardiovascular disease. However, there is evidence that moderate quantities of lean red meat play an important role in a healthy diet due to the essential minerals and vitamins present. Earlier studies are criticised for their lack of evidence on the causality between red meat intake and chronic diseases (Williamson *et al*., 2005, p.323 and Wyness *et al*., 2011, p.71). Concern has shifted onto other aspects of red meat, such as the environmental impact of livestock discussed earlier, and the rise in antibiotic resistance. Antibiotic use in livestock accounts for 70% of all antibiotic use in the US, driven by the requirement to protect animals from infection in the cramped, unsanitary conditions found in large animal production facilities (Forini *et al.*, 2005, p.1). This feature of our food system means "urban dwellers have become physically and socially separated from farmers and disconnected from nature, with little knowledge of the way that food is produced", which has weakened "personal relationships between farmers, and between farmers and food processors and retailers, because of its competitive nature" (O'Kane, 2012, p.270). Local food and Short Food Supply Chains represent mechanisms that increase the social sustainability of our food system.

Local Food and Short Food Supply Chains (SFSCs)

Local food systems are defined as "A collaborative effort to build more locally based, self-reliant food economies – one in which sustainable food production, processing, distribution and consumption is integrated to enhance the economic, environmental and social health of a particular place" (Feenstra, 2002, p.100). Local food systems "aim to adapt local food production and markets to suit the environmental and health priorities of a community" where "local ecology, culture, trusting relationships and access to healthy food

thrive" (O'Kane, 2012, p.271). Although the concept of 'food miles' has become popular, its use is deemed by many as an oversimplification that fails to account for the efficiency of the transport system, use of pesticides and fertilisers and carbon footprint of the food producer (Van Passel, 2013, p.13). This is before the social and economic aspects of sustainability are considered, with consumers associating locally sourced food with freshness, maintenance of the local economy and taste (Van Passel, 2013, p.3). Short Food Supply Chains (SFSCs) take this notion a step further.

SFSCs describe food supply chains that are 'short' in either physical distance (that food has travelled) or social distance (interaction between producer and consumer); the key to SFSCs is the ability to exchange information on the "origin, production method and sustainability of the product" (Galli and Brunori, 2013, p.1). Examples of SFSCs include box delivery schemes, farm gate sales, famers' markets, food festivals, direct sales (e.g. via the internet) and community gardening. Whilst SFSCs are not always by definition 'local' they aim to emulate the benefits of local food. The level at which people are connected to their food also has an impact on food waste.

Food Waste

Food waste includes that which is thrown away and edible food items lost as part of the production and processing stages (HLPE, 2014, p.11). Globally this accounts for 1.3bn tonnes, or a third of all food produced, with economic, environmental and social implications (Gustavsson *et al.*, 2011, p.4). The majority of food's environmental impact and energy input occurs during production, which makes the issue food waste more prevalent as the loss occurs after the majority of the environmental damage and resource consumption (water, fertiliser, land use) has already occurred.

Food wastage prevention strategies prioritise reducing the amount of food produced (to prevent over-supply), reusing food for human consumption (food banks, redistribution and repurposing), using the food for animal consumption, and finally recycling, which in the case of food involves composting or anaerobic digestion (Mourad, 2016, p.461). Food waste has an environmental impact in terms of wasted resources and unnecessary release of greenhouse gases (during production and landfill), economic impact from losses and lack of

return on investments, and limitations on social equity and progression (HLPE, 2014, p.12). Businesses seen to be reducing waste are seen by consumers as making a more valuable contribution to sustainability, which positively contributes to their reputation (Baldwin, 2015, p.10). Consumer behaviours and attitudes also play a significant role.

Culture, socio-economic status and attitudes towards food are related to food waste: people waste more when food is a smaller proportion of income, usually associated with those in the developed world where the food system is more industrialised and proportionally cheaper; cultures, such as France, who place a greater emphasis on what food parts are edible and what is discarded waste less than countries such as the US which places less value on food; the less role a person has played in the production of the food consumed, the more likely they are to waste; and finally, increases in portion size are also linked to increases in food waste, not to mention obesity (Thyberg and Tonjes, 2016, p.115, 117 and 118). In the UK food service sector, it is estimated that food waste costs £2.5bn a year, of which 75% was edible and only 12% was recycled (WRAP, 2013, p.3).

The Barbecue Food Industry and Sustainability

The barbecue food industry is subject to the same sustainability issues as the rest of the UK food industry and the global food system. However, some are more relevant than others. This section aims to, in the absence of specific literature on the barbecue industry, consider the application of the generic sustainability issues to barbecue food.

American barbecue food is characterised by the consumption of large quantities of meat, primarily beef, pork and to a lesser extent chicken, with lamb, goat and fish more of a feature in other styles of barbecue. It is likely then, that the barbecue industry is having a disproportionate effect on the environment from livestock production due to the increased amount of meat consumed per portion than other cuisines. As the barbecue food industry is considered fairly niche, the overall effect is probably small (despite being disproportionately high per portion); however, if the industry is growing, as the evidence suggests, then there will be an ever-increasing environmental impact. That is, unless there are no interventions, such as changes to agricultural practices, reducing the amount of meat per portion or eating less environmentally damaging meats (for example chicken rather than

beef). The negative health effects surrounding the consumption of meat, particularly red meat, is an issue intensified in the barbecue industry due to the quantity in which it is served.

Barbecue, if being used to grill meat, is more prone to the effects of PAHs and HCAs as the rendered fat combusting on the coals and being reabsorbed into the food is not a feature of other cooking methods. There is also the release of HCAs and PAHs into the food from charcoal during combustion (if it has a low fixed carbon content). The manufacture and use of charcoal brings with it environmental, social and economic issues, positive and negative; although if properly sourced and manged charcoal can be a sustainable, renewable energy source.

In summary, existing literature does not indicate any specific research into the sustainability of barbecue food. There are some sustainability issues where the contribution to sustainability from the barbecue food industry can be inferred in the absence of specific literature, but some issues are likely to be no better or worse than the rest of the food industry. The rest of the paper will explain how, using this background information on food sustainability and the triple bottom line as a framework, a methodology was designed to gather data on the contribution of the UK barbecue industry to sustainability, then what analysis of the results indicates and finally what theoretical and managerial implications there are for the industry.

Methodology

Research Philosophy and Approach.

It is not possible to get a quantitative metric of sustainability from a system perspective that incorporates environmental, social and economic factors, to measure one in isolation would be misleading and unreliable (Gerbens-Leenes *et al*., 2003, p.233). Therefore, a quantitative approach is not appropriate for this research.

As there is no literature specifically on sustainability in the barbecue food industry, any model or hypothesis would have to be based on extrapolating the wider sustainability issues and inferring how they can (or cannot) be applied to the barbecue food industry. This means an inductive, emergent approach is required in lieu of the ability to form a hypothesis on sustainability in the barbecue food industry (Saunders *et al.,* 2016, p.168). The literature on sustainability in the wider food industry meant a deductive approach could have been used; however, the lack of literature specific to the barbecue food industry meant this was impractical and would have lacked intellectual rigour. The research philosophy is, using the generic sustainability literature to shape the data collection, take an inductive approach to exploring sustainability specific to the barbecue food industry. This gives freedoms in the absence of an existing model or hypothesis, but allows the research to have a basis in existing literature and the triple bottom line framework.

The inductive approach also has secondary benefits. The vast array of sustainability issues in the literature means there needs to be a focus on the food sustainability issues most prevalent to the barbecue food industry, discounting others with less relevance. The literature review also broadens its scope beyond food sustainability, to include aspects such as charcoal, a sustainability issue unique to the barbecue food industry. A deductive approach may have missed this critical element of sustainability. The negative side of the inductive approach is that by narrowing the sustainability issues considered in the literature, an issue could be overlooked during data collection. An inductive approach means this risk is partially mitigated as participants are not restricted on the issues they can raise during the

interviews. This also provides an opportunity for participants to talk about issues discounted too early, missed during the paper sift, or not present in the literature at all.

Research Strategy and Design.

There is no specific research strategy which suits the purpose of the research aim, so it is a combination of grounded theory, case study and action research. The lack of a hypothesis means grounded theory is appropriate, and allows the sample to evolve as data is gathered (Bell, 2014, p.26). Using 'the UK barbecue food industry' as a case study means semi-structured interviews allow the generation of in-depth insights on the behaviours, attitudes and activities at each stage of the food chain (Saunders *et al*., 2016, p.185). Finally, action research means it was more beneficial and relevant if recommendations can be made on how behaviours, attitudes and activities in the barbecue food industry compare with the literature on food sustainability (Bell, 2014, p.17).

Data Collection Method.

Saunders *et al*. (2016, p.392) point out, "You will find it helpful to conduct exploratory, qualitative interviews where your research design adopts an inductive approach". As the research uses an exploratory, inductive approach it means the use of semi-structured interviews as the method for gathering primary data is well-justified. The semi-structured interview as a data gathering method is also beneficial as it allows flexibility to deviate and widen the topic based on the issues to be explored, but allows for the lack of a well-defined hypothesis (Denscombe, 2014, p.175).

Time Horizon.

Although time constraints mean a cross-sectional study is the only viable horizon, it is ideally suited by providing a snapshot of ideologies and behaviours in the UK barbecue food industry. This is relevant because although currently quite small, the literature indicates growth in the UK barbecue food industry. This growth means the impact on sustainability will grow in proportion to the growth of the industry. The use of a cross-section is also beneficial as this study can be compared with barbecue food industries in other countries, regions and cultures, or a future cross-section of the UK barbecue industry.

Participants and Sample.

Purposive sampling was used, with the sample consisting of eleven hand-picked individuals who play a recognisable role in the UK barbecue food industry (Denscombe, 2014, p.34).[19] The sample represents a cross-section of the industry from producers (farmers, charcoal manufacturers), to food service outlets (chefs, restaurant owners) and consumers. Participants in the latter category are involved in some way as observers or commentators on the industry, primarily on social media, where they have their own, unique, barbecue-related social media profile and following. The sample includes a farmer, two charcoal producers, five chefs or food outlet representatives, and three industry commentators/ observers. The participants were approached by the interviewer either via email, phone call or social media. There were no ethical issues surrounding the research, either in methodology, conduct of the research or topics covered.

A total of 25 participants were approached with eleven interviewed. The lack of participant availability due to their commitments (all of whom are in the barbecue industry) is noteworthy as it supports the literature on the rising trend of barbecue food in the UK, especially among the smaller scale enterprises and family run businesses. The interviews were conducted from June to July 2017, an understandably busy time for the UK barbecue food industry.

The sample is all white Caucasian, all over the age of 30 and includes two females and nine males. The sample is suitable enough to get a cross section of the industry based on the background of the participants; however, the lack of butchers in the sample is a notable gap. Participants are not expected or required to have specific knowledge of sustainability issues (although many of them do) as their value as participants is their knowledge, experience and personal insight into the UK barbecue food industry. If required, a short overview of the sustainability issue was provided to participants.

[19] This was recognisable both by the author on conducting the sampling process, but confirmed by the participants who self-described their role within the UK barbecue food industry when asked.

Procedures.

All of the interviews were audio recorded, with participants' permission, on an iPad using the 'Voice Recorder' application by Studio Zebra. The interview audio recordings were then manually transcribed into Microsoft Word by replaying the recording at 0.5 playback speed. The interviews were semi-structured and based on the topics in the literature review and lasted around an hour. Six of the interviews were conducted face-to-face, three over video conferencing (using the FaceTime application) and two over the phone.

Data Analysis.

It was planned to use free, web-based machine audio transcription software, VoiceBase,[20] to facilitate the transcription. However, it was more efficient to transcribe manually. This transcription method, although lengthy and demanding, allowed the data to be interpreted as it was being transcribed. This was consistent with grounded theory as the theory could evolve and emerge from the data as it was being collected.

Thematic analysis was used as it was best suited to the qualitative data gathered from the semi-structured interviews and complemented the inductive approach (Saunders *et al*., 2016, p.579-586). It also meant analytical time was better used to ensure a thorough analysis of the data rather than ensuring it was coherent with a more strictly defined analytical method or approach. The data was coded based on the categories that emerged from the transcripts, consistent with the approach in grounded theory. Although most of the coding was '*a priori*' novel categories not considered in the literature added an '*in vivo*' element. The coded data was collated for each category across all participants and propositions formed, with negative and alternative explanations sought in the data to better understand what the data was revealing.

Word Cloud.

The use of word clouds, are recognised as a valid qualitative analytical method (Saunders *et al*., 2016, p.613). A word cloud was produced using the software on WordArt.com from the 74,034 words in the combined interview transcripts. Common

[20] https://www.voicebase.com/

words not deemed to contribute to the analysis were removed (for example 'I', 'we', 'the'), similar words were combined (for example 'sustainable' and 'sustainability' were combined under 'sustainability') and the top 150 relevant words were selected. Whilst this process removes words the importance of the word cloud is that the size of the word denotes its frequency in the interviews. The word cloud was also used to act as a cross-check for the *in vivo* coding and as part of the thematic analysis to inform the discussion chapter.

Challenges.

The largest challenge, identified from the outset, was attaining the required sample size and gaining a balance of participants throughout the food chain. To mitigate the risk of having too small a sample size, twice the number of participants were approached than were required. Participants were approached and interviews scheduled until 10-12 were arranged, this iterative process went on until enough interviews were conducted. The other challenge was to ensure balance across the food chain and not focus on a specific area at the expense of others. No interviews were able to be conducted with any butchers, and had to be accepted as a limitation and factored into any subsequent results, discussion and analysis.

Key Findings and Discussion

This chapter describes the findings that emerged from the semi-structured interviews, coding and thematic analysis. One finding of note before the main thematic analysis is the distinction participant's make between the 'barbecue industry' and 'barbecue community'. The barbecue community goes beyond the definition of the 'barbecue industry' from the introduction to include those who barbecue at home or not as a business. They are of course consumers in the barbecue industry but their activities, behaviours and motivations are distinct from profit making organisations.

Livestock Production.

Participants' understanding of the environmental issues surrounding livestock is high and consistent with the literature on aspects such as GHG emissions, pollution and energy input. The trend in barbecue for large amounts of meat is also well acknowledged, evident in that: "meat is what people want, meat is what people associate with barbecues" and "barbecue is about meat and specific pieces of the animal, your ribs, spare ribs, baby backs, Boston Butts, cheeks, brisket, Jacobs's ladder, short ribs, long ribs". Participants, therefore, recognise the negative impact that the barbecue food industry could be having on the environment, compared with other areas of the food industry ("it doesn't bear thinking about, the volume of cattle that are needed just to keep the barbecue business going").

UK livestock farming is considered by participants as more sustainable than the US and rest of Europe, with participants more inclined to purchase British meat as it has higher standards of animal welfare, is less intensively reared and is more appropriately fed (i.e. predominantly grazed and not corn-fed). The evidence on UK versus US farming techniques, and the impact on sustainability, resonates with the literature, and a positive aspect for sustainability in the UK barbecue food industry as long as British beef is sourced. Despite the overwhelming preference for British beef in the UK barbecue food industry there is one exception, brisket, the cut of beef synonymous with the American style of barbecue. With many participants having a stronger preference for US-sourced brisket, covered in more detail later.

However, participants' responses also indicate that in other areas the barbecue industry is having a more positive impact. Many participants highlight that traditional barbecue is characterised by, and is a well-suited cooking method for, meat usually regarded as less appealing. This viewpoint is consistent with the description on the origins of barbecue in the introduction. Whilst this is true for the tougher, stringier cuts[21] from animals in their prime, it also applies to cuts from animals not considered in their prime, where participants believe there is a rising trend, albeit still niche, for ex-dairy cows, mutton, wild game (deer and boar), veal and kid goat in the UK barbecue food industry.

These animals are also less environmentally damaging, being by-products of existing industries (ex-dairy cattle and kid goat) or have been less intensively reared. In the case of deer and boar, it is because they are wild and with veal and kid goat it is because they are young, have had less energy input and produced less GHG emissions than older animals. Whilst the literature does not specifically include this as sustainability strategy there is a rationale behind it that warrants further investigation, although at present it is likely to be too niche to be able to make a meaningful contribution. As this trend involves using a wider range of animals for meat it is related to the issue of biodiversity loss.

Biodiversity.

Many participants believe that there is a growing popularity for meat sourced from rare breed livestock in the UK barbecue industry with "longhorn or shorthorn cattle very popular at barbecue" and "there's a couple of old English breeds that have come back into prominence". One barbecue outlet even states they use "white Cross Lops as our Boston Butts…Cornish Blacks for our bacon…the brisket we use is Angus Blacks". Despite this, many participants concede that the use of rare breeds is "absolutely about the flavour and the quality rather than a genuine concern for sustainability".

A few participants, however, are less convinced there is genuinely a trend for rare breed that is actually making a difference on biodiversity as "you're still going to be feeding

[21] This includes brisket, ribs and pork butts (shoulder), which to make palatable take a lot of cooking over a low temperature.

it in the way you feed any commercial pig", so whilst increasing biodiversity and having a positive impact, the use of plant-based feed has a negative impact. One participant sums up the situation in the belief that "it's quite dangerous if we dress something up to look like we're doing something about biodiversity if we're actually not, people feeling they are contributing to a good thing when they're not is probably worse than knowing they're not". The results are not able to give an accurate measure of the impact that using rare breeds has on sustainability. What is clear is that the driver appears to be quality with, sustainability an afterthought. The literature on biodiversity does not make a specific reference to rare breeds. However, the evidence from participants indicates that those opting for rare breeds are doing so in the knowledge that they are less economically productive than a commercially reared animal. Whilst this might prevent biodiversity loss, the incentive to keep rare breeds is predominantly for the qualities they bring specific meat products above and beyond a commercially bred animal, and not for qualities that necessarily make them more resistant to disease or other threats.

Brisket

Participants readily acknowledge the negative impact on sustainability from US-imported meat, being grain-fed, intensively reared in cramped conditions and transported thousands of miles under energy demanding refrigerated conditions. However, many are firmly in the belief that US brisket is better quality than British, with the latter unviable for food service operations due to its inconsistency. This view is shared by participants from all backgrounds including food service, competition teams and home barbecuing. However, some participants disagree, "to me personally there is equally as good UK grass-fed brisket as any piece of USDA[22], I believe that exists over here". All participants who prefer US brisket say that it is one of the few, if not the only, concession they make when it comes to sourcing British meat. To mitigate this, one food service outlet owner agrees that US brisket is better, but instead of going against their principles they create similar dishes using British chuck instead.

[22] The United States Department of Agriculture (USDA) grades beef into Prime, Choice and Select based on its quality and level of fat marbling. As a result 'USDA' is seen by many in the barbecue community as badge of quality and consistency.

The issue of brisket is one of the most polarising issues among participants, who note that this divisiveness is regularly played out on social media. It may seem odd that a specific cut of meat, from a specific animal, is so divisive; however, due to its iconic status as an American barbecue menu item and the lack of it available in sufficient quality and quantity in the UK, it is hugely popular with a cult-like following.[23] Even more peculiarly, on the rest of the cuts from the cow almost all participants prefer grass-fed British beef rather than grain-fed US beef. There is no specific reference to brisket in the literature, but it links into several issues including the US versus UK beef debate, the local food and sourcing issue and all the issues surrounding livestock production. In this instance the issues in the literature are well understood, but it is the quality that becomes the predominant feature for some, above that of sustainability.

The issue of US brisket in the UK is symptomatic of the UK sector being so influenced by the American style. However, despite brisket being seen as a negative aspect of sustainability, a reason it is so divisive is because those who buy US brisket do so purely for its quality, despite not being comfortable with its wider sustainability impact and the fact that it is not locally produced.

Local Food and Short Food Supply Chains (SFSCs)

The most common sustainability priority among participants is the use of local food systems. The evidence from participants indicates that locally sourced food, specifically meat, is seen as better quality with those in the barbecue community considered to be more caring "about the meat they put on their barbecue which means they look more local". It is likely, however, that the predominant driving factor for use of local food is quality, rather than sustainability; this is supported in the literature as local produce is regarded as better quality and fresher.

Good practices in the barbecue community include the use of farmers markets, food box delivery companies, local butchers and greengrocers, which are in use among

[23] It is also a very large cut of meat, sometimes in excess of 7kg, which takes a long time to cook (20hrs is not uncommon) and is renowned for being a difficult and unforgiving cut of meat to cook well. This all makes it less prevalent and less accessible, resulting in its cult-like status.

consumers in the barbecue community, all of which are positive features of local food systems highlighted in the literature. Participants also say that the barbecue community does a good job of showcasing this behaviour on social media, indicating a level of pride on the contribution to sustainability made. These practices are consistent with those in the literature, but at odds with other evidence that suggested social media was predominantly used to 'boast' about how much meat people were buying at a discounted rate, with no consideration for sustainability or locality.

Outside of local food, the concept of SFSCs is well understood in the barbecue industry, although the specific term was not used, with one food service outlet owner describing it as "buy local, but buy someone else's local". This concept is associated with supporting smaller producers and keeping the "margin with the producer and not give it to everyone else along the way", evidence of how importance the use of local food is seen in the industry for economic sustainability.

An area where locality is difficult is ancillaries and sundries; the sauces, rubs, herbs and spices. Many of these ingredients cannot be grown or bought locally; however, it is common for those in the industry to make their own rubs and sauces or use a local company (who source the raw ingredients elsewhere). This issue also raises further questions on fair trade, as many of the ingredients for rubs derive from areas known to have issues with abuse of workers, unfair working conditions and inequality between business owners and workers. However, no solutions are evident due to the opacity of the herb and spice trade against, for example coffee and chocolate which have many sources labelled as fair trade. This means that even if the industry wanted to assure its sources of herbs and spices it is difficult if not impossible.

The use of local supply chains does not just include food. On charcoal, one participant, a charcoal producer, only sells charcoal direct to the consumer, to local shops within 10 miles of a 'hub' for local producers (of food and other items). Further evidence of this being used positively is one company that ensures all its barbecue equipment is produced by a local craftsman.

Sourcing and Provenance

Sourcing and provenance is an important consideration, with many in the industry and community "more interested in traceability, transparency and locality than organic". Transparency and sourcing is seen as more characteristic of the barbecue food industry than other areas of the food industry where "some barbecue restaurants are shouting about where [their meat] is coming from" and "if we haven't seen it alive we don't buy it". However, there is evidence almost contrary to this in that "the UK barbecue industry doesn't know its farmers, it pretends it does but it doesn't", further evidenced by a view that using reputable butchers does not automatically provide knowledge on the source of the meat. As this view was only given by one participant it is hard to ascertain its veracity; however, it is possible that some participants may have wanted to give the impression that they, and the industry, is more knowledgeable and focussed on sourcing than it really is, or that it misconstrues the source of the meat being the butcher rather than the producer. In addition to the commercial sector, consumers also have a part to play.

The evidence indicates a lot of consumers are not concerned about the source of their food, based on posts that participants see on social media and the lack of interest participants witness first hand: "at a lot of the gigs I've done so far no one has asked me where's that meat from? or is it local? I cooked on Sunday for fifty people and not one of them asked me where the meat was from". There is contrary evidence with one participant responding, "the biggest question I get asked, when it comes to the food side is, where do you get your meat from?".

There is very little in the literature on sourcing and provenance, possibly because it is a consumer or intermediary function, with sustainability determined by the producer. However, it is a theme clear in the data and a role that consumers and intermediaries can play in creating demand for information on the source and provenance of their food. It is difficult to get an accurate measure from the evidence on the closeness of the relationship between producer to consumer, but future work could better quantify this. To further the analysis on intermediaries, evidence suggests butchers play a significant role in shaping sustainable behaviours up and down the food chain.

Butchers

There is evidence that butchers play a key role in sustainability within the barbecue industry, both positive and negative. Butchers are viewed as having a positive impact on sourcing and provenance as they create demand with the producer, add value to products, shape consumer behaviours and "love to showcase where they get their meat from". However, this view is not universal, with evidence that some local butchers offer little more than a supermarket: "give me a reason to buy from the local butcher, give me something of value".

Another area where butchers are seen to positively contribute to sustainability is the ability to "shake hands with the butcher and ask him exactly about the meat" in terms of its quality, provenance, age of the animal, which field it lived in, its breed, the dry aging of the meat and detail on the various cuts. This is an interesting factor as it has implications for the social aspect of sustainability in terms of people being better connected to their food but also on the transparency of the supply chain. However, this is only a contribution to sustainability if consumers ask for the information, the butchers have the information, the butchers are sourcing sustainable meat and the consumer is making sustainability-orientated decisions. This is not always the case as "I bet if you asked those guys [certain butchers] about sustainability they wouldn't have an answer". Participants also linked to the brisket issue, as the demand for US-sourced brisket is catered for by certain UK butchers, providing a service for consumer demands with sustainability less of a feature.

Although the evidence on butchers' contribution to sustainability is mixed, there is agreement that they play a key role in sustainability as a middleman, able to better inform consumers and promote sustainability, even if by accident. The lack of literature on butchers' contribution to sustainability is, as with the analysis of sourcing and provenance, that it is not butchers' activity that specifically contributes to sustainability, it is them being a part of the food system and the influence they have on producers and consumers. A limitation of the research is the lack of butchers in the sample, who may have had a different perception. As there are no butchers who specifically cater for the barbecue industry the findings are not unique to barbecue food; however, the focus on meat means it

is more relevant than it would be for other areas of the food industry. An issue that is unique to the barbecue industry, however, is the use of charcoal.

Charcoal

The evidence suggests that a small, but growing, number in the industry and wider community have adopted sustainable charcoal. The biggest driver for adoption, as with other issues discussed so far, is that sustainable charcoal is seen as better quality, resulting in a better food that has been cooked over it. There are other significant drivers too including health concerns over additives in imported charcoal, support for UK businesses and the environmental impact of charcoal production surrounding deforestation, carbon footprint and emissions. These drivers provide evidence that participants have a good understanding of the sustainability issues surrounding charcoal. It is therefore of note that these secondary drivers all have a link to sustainability across the triple bottom line highlighted in the literature, indicating that on the issue of charcoal sustainability is a significant consideration alongside quality. There is even evidence that the use of sustainable products such as charcoal was seen as cool and trendy in the barbecue community, in the same way that it is fashionable to know your butcher and advertise where your meat is from, where some in the industry use sustainable charcoal "as a badge of honour". As the evidence indicates the level of adoption is still low there must be blocks to its wider adoption.

The primary block to the wider adoption of sustainable charcoal is a lack of understanding on the benefits of sustainable charcoal and the negative impact of imported charcoal. This is evidenced by the many participants who claim that it was this knowledge that prompted them to adopt sustainable charcoal. They also acknowledge the secondary block to wider adoption, its price, with sustainable charcoal more expensive than imported. Understanding of the sustainability issues surrounding charcoal is not enough in itself for people to switch to sustainable charcoal, further evidenced by activity on social media by people well aware of the sustainability impact of imported charcoal but choosing to buy it anyway, and share with others how good a deal they got on it. Whilst the ratio of sustainable versus cheap charcoal posts on social media could be evidence that the industry is not making as much of a positive contribution, another way of viewing it is that at least

the debate is taking place and people who are promoting cheap charcoal are being challenged on it.

The impact on sustainability of charcoal use in the industry cannot be measured as there are too many variables. However, a measure of sustainability could be the extent to which sustainable charcoal has been adopted by the industry. Based on this, it is assessed that the industry's contribution to adopting sustainable is currently small as "the masses are using a lot more charcoal than the few". This could be quantitatively measured in future research using sales data. The evidence suggests that although still small, sustainable charcoal use is growing, and as a result a way in which the industry and community is making an increasingly positive impact.

Social and socio-economic

The social aspects of sustainability are enshrined in the triple bottom line, and the evidence indicates that barbecue is considered by many to be a particularly good platform for people to connect with their food and each other: "one of the things that strikes me about barbecue is that it's pretty socially sustainable". This is further qualified in the view that "barbecuing is very good as a from scratch way of cooking", the implication being that as more preparation is done with barbecue food people spend more time and effort preparing it and better understand what raw ingredients are used.

There is also a logic chain that emerges from the data in that barbecue involves larger cuts of meat, which allows people to more readily identify which part of the animal it is from (for example brisket, pork butt, ribs, and steaks such as flank, skirt and ribeye) and as such are more connected to their food because it is not an unrecognisable, non-descript piece of meat. This is deemed to be more unique to barbecue than other areas of the food industry. The next element of the logic trail is that as it is less common to find barbecue cuts of meat in the supermarket, it means having to go to the butcher, where the meat is more likely (but not guaranteed) to be more local, with the social interaction with the butcher bringing you closer to the source of your food by closing the relationship between producer and consumer. The live fire cooking aspect is evidenced as a positive contributor to the social aspect of barbecue as it represents our "most humble roots as a society". The

social element also extends into the commercial aspect of barbecue where one barbecue restaurant owner states that "it's just like having a barbecue at your house every day, but just a few more people come round".

The less positive effect that the social aspect of barbecue was having on sustainability surrounded activity on social media, usually involving promoting the consumption of large quantities of meat, the ridiculing of vegetarianism as well as other topics such as cheap meat and cheap imported charcoal. However, despite the negative side of social media in encouraging unsustainable behaviours there are many positive examples. It acts as a medium for the debates to take place and information exchanged on what it good and bad practice. Importantly, the evidence indicates that the main contributors on the forums with large followings set a good example in terms of sustainable practices and views.

The balance of evidence indicates that from a social perspective, barbecue makes a positive contribution to sustainability. However, this is based on participants' responses with little evidence in the literature to directly support it apart from a general reconnection of people with their food. It appears the UK barbecue industry shows signs that it can counter the negative effects of our globalised food system highlighted in the quote by O'Kane (2012, p.271) in the social sub-section of the paragraph on the triple bottom line. Further research is therefore required to prove any causal relationship between people who regularly barbecue and the level to which they are connected to their food, compared with those who do not barbecue or are involved in other styles of cooking.

Food loss and waste.

The evidence suggests a belief among the barbecue industry that, based on its origins, barbecue has a positive impact on food waste as it uses "the odd cuts, the lower grade cuts". This is perfectly summarised in one participant's response that with barbecue "you're generally thinking about cuts of an animal which would have been the throw away bits…and we've got this great lump of muscle that is unappealing, stringy and tough. It turns out that if you cook it with smoke for eighteen hours it turns into something that the gods would fight you for." Other participants add that "barbecue has allowed me a lot more

to open up to the lesser cuts and allows me to move towards whole carcass eating" and that if we "move away from steak onto more challenging meats, that way lies sustainability, that way lies the whole use of animals, that way lies tougher cuts, which is the spirit of barbecue, the 'fifth quarter' ".[24]

Other examples of nose-to-tail cooking are evident in food service operations where "we use every bit of every animal we get and if we haven't seen it alive we don't buy it". Another participant even went into the detail of how he uses each part of the animal in inventive and appealing ways, but added that taste among consumers for lesser cuts and offal was not universal and "some people aren't quite there yet".

The use of more of the animal as a feature of sustainability is consistent with the literature in that cultures that value more of the animal tend to waste less. The evidence indicates that there is a great deal of this taking place in the barbecue industry already and that it is a gateway for people getting into nose-to-tail cooking, perhaps due to barbecuing being a particularly appealing method for cooking lesser valued cuts.

In addition to using more of the animal, another food waste mitigation strategy evidenced is cooking only what is needed. Approaches varied from "when we run out, we're out" and "when I sell out I'm happy, it might be mid-afternoon, I bought with me what I thought I needed, why be greedy?". One chef describes the detailed considerations he uses to predict what he needs from his "sales mix", including the weather and "what else is happening in the city". However, there is evidence to the contrary in that "the waste here is huge, but all our food waste goes to biomass". In terms of the area where most food is wasted, it is "by people at the table who are just greedy". To offset this they "encourage people to take doggy bags home and we provide a free wrapping service". Outside the food service sector, there are also abundant examples of using leftovers from barbecue in other dishes such as "barbecue beans, Brunswick stews and chilli." However, despite a generally

[24] The Fifth Quarter, or *Quinto Quarto*, refers to the mathematically impossible term given by the Romans to offal, the elements of the animal that were left (for the proletariat) after it had been quartered (De Vita, 2013, p.xi).

positive contribution to waste from the barbecue community and industry, there is evidence that suggests the competition scene makes much less of a contribution.

The nature of competition barbecue means larger quantities of meat are cooked than required for the judges, to ensure the best food items can be hand-picked. Competitors may end up cooking "three briskets to make seven slices to give to the judges" or "thirty chicken thighs to put six in a box to give to a judge". There is evidence of efforts made to reduce waste in competitions where "a lot of the teams try and use the trimmings in burgers, rib trimmings in beans" as well as giving it out to the public. However, especially in competitions not open to the public one participant comments that "do all those teams lug those back with them? They probably go in the bin unfortunately".

In terms of overall contribution to food loss and waste there is evidence of positive contributions to food loss (by considering more of the animal to be edible) and to some extent waste, with competition barbecue being the main exception. The waste reduction approaches are consistent with the ones outlined in the literature, starting with better planning what is being cooked in the first place, followed by various methods of ensuring it is used for human consumption or worst case sent for the energy to be recovered. Food waste is an aspect of sustainability that can be quantitatively measured, with many studies having done this already, so a possible area for future research in the barbecue industry.

Health, Nutrition and Food Poverty

Initial responses from participants gave indicated the barbecue food industry is not making a positive contribution to sustainability in the areas of health and nutrition. Evidence included food safety concerns from poor quality charcoal and nutritional related evidence on the consumption of large amounts of red meat and high sugar and salt intake from rubs and sauces. This is set against a lack of vegetables, fish and other healthier alternatives. However, this perception was largely limited to the commercial side of barbecue food, with more evidence of a varied approach from people in the community that "I cook as many vegetables as I do meat, it's often a misnomer about barbecue, because it involves both" and "I could happily cook every meal we eat outdoors and they would be balanced meals". There were examples of a more balanced approach in the

commercial setting with an outdoor food chef using a lot of fish and vegetables. What the evidence did prove consistent on was that the negative health impact stems from the influence of American barbecue, where examples of other cultures' style of barbecue are evidently much healthier. The literature is clear in that the nutrition problem is two-sided, starvation and obesity in almost equal measures; barbecue as a cooking method can provide a solution to both, it is how the industry chooses to apply the method. The global issues of obesity and starvation in the literature are, to some extent beyond the scale of the UK barbecue industry, rightly argued by some participants.

Despite the mixed evidence on the contribution of barbecue to a balanced diet, there was a third argument that barbecue does not need to be healthy because it "is about a treat, it doesn't matter if it's not particularly healthy because I'm not asking people to live on it. It has to be something you want on a special day out" and "the sort of meal to murder maybe once a year". This is further evidenced by a barbecue food outlet owner who states "they come to us for a treat, they come to escape from their normal daily lives to reward themselves for whatever reason". Barbecue food service outlets are well aware of the nutrition issues and many offer healthier choices consistent with the barbecue style, including planked salmon and grilled chicken. However, the healthier choices are much less popular.

On barbecue and nutrition, the evidence suggests that a lot of barbecue served in the industry is not particularly healthy, but that this is not representative of all barbecue cooked across the community, with the negative contribution a function of American barbecue leading the trend. There is also the argument that barbecue in the food service sector does not have to be healthy as it is an occasional treat. The consumer is therefore responsible for the decision of how important nutrition is to them. The industry is not ignorant of this and if it was then it risks losing out on potential customers, but it recognises that when most people go out to eat out barbecue food health is less of a priority.

Whilst there is much evidence, albeit mixed, on barbecue's contribution to nutrition, there is almost no evidence either way on the potential health effects of cooking over charcoal. The evidence indicates there is very little awareness in the UK barbecue industry

on the formation of PAHs and HCAs during grilling. Even when a quick summary of the literature[25] is provided there is still a lack of concern on the issue. Participants state their lack of concern is due the danger of a 'knee-jerk' reaction to one of many health issues that appear in the media, based on inconclusive evidence. Only one participant was aware of "studies that say beer and herb bastes offset the impact", which although is consistent with the literature on the types of marinades and ingredients proven to reduce HCA and PAH levels, shows there is even less understanding on the methods that mitigate the effects of harmful compounds.

The evidence indicates a lack of concern for any health impacts of using charcoal as a fuel or barbecue as a cooking method. This is not a surprise as there is no conclusive evidence that levels in barbecue food are enough to increase the chance of forming cancer. The mitigation by using certain marinades means the barbecue industry is already inadvertently reducing the risk of cancer from HCAs and PAHs. An increased awareness of the positive effect these compounds can have, documented very well in existing research and literature, could be beneficial to the industry.

Similar to the issue of PAHs and HCAs, there is very little evidence from participants on the contribution of the industry to alleviating food poverty, if anything the effect is neutral. No evidence suggests it was exacerbating food poverty, but there is a general view that more could be done. In terms of the contribution that could be made, some participants highlight that the tradition of barbecue using cheaper cuts of meat could be a way of making meat, and the goodness it gives in terms of protein, vitamins and minerals, more affordable. The social nature of barbecue, bringing people together around food, is also a factor that participants agreed could make barbecue a good platform for charitable activities, particularly one that might alleviate food poverty.

[25] If the participants had no information on the issue then a quick verbal summary, along the lines of the balance in the literature review, was given.

The Nature of Barbecue and the British Barbecue Scene

This last section of the results and analysis examines the nature of barbecue itself and the characteristics of the UK barbecue scene, and whether this makes it well or ill-suited to improving sustainability.

On the nature of barbecue, one participant describes barbecue as being "stripped back and visual" and that as a result it is more evident what the food is and what it consists of. It is of course possible, and common, to add rubs, sauces and other ingredients, but what you see is generally what you get as the cuts of meat cannot hide significant amounts of other ingredients that processed food is able to. This has a positive sustainability implication, as if meat can be more readily identified then it starts more of a connection with it, which animal it was and which part of it is being cooked, and whilst not specifically linked to the literature, any reconnection with food is supported by the literature on social aspects of sustainability.

In the introduction, a distinction was made between the various styles of barbecue cooking, a theme that the evidence reinforces in that "when people say barbecue, the first thing that pops into mind is the American style". This indicates the American style is the predominant driver and reference point for the UK industry and as a result means it is possible that the evidence in the study is skewed towards the American style. This is useful in one sense, as it means the evidence is skewed in the direction of the current trend highlighted in the commercial literature. However, there may be implications from other styles of barbecue that could provide us with a more holistic overview of barbecue. For example the focus on large amounts of meat and ingredients high in salt and sugar, and the associated impact on sustainability, is a feature of American barbecue but not all styles of barbecue.

The prominence of the American style in the UK is relevant to sustainability because the evidence suggests this is "[worrying] when you look at the US barbecue industry and if you think we're going to replicate that here it could be horrific". This sentiment chimes with other evidence on the American style lacking in its approach to sustainability due to the "gluttony associated with barbecue" epitomised in dishes such as the 'pit boss platter',

which has “half a brisket sliced up, a massive amount of puled pork, three or four different kinds of smoked sausage, a bowl full of chicken wings, maybe a steak”.

Despite the dominance of the American style in the UK there is evidence of other styles becoming increasingly popular, but on a smaller scale and in niche areas. One participant’s catering enterprise is based around the South American style of barbecue that uses ‘*asado*’ crosses too cook the meat over a wood fire. In addition to this participant, others consider this to be a more sustainable form of barbecue for many reasons including the use of wood rather than charcoal, absence of sauces and rubs high in salt and sugar, and bigger emphasis on fish and vegetables. There is also evidence that American style was less popular in the more formal, higher end barbecue restaurants, where the dishes are influenced by European, Spanish, Italian and Scandinavian barbecue, characterised by more nose-to-tail cooking, sensible portion sizes, less of a focus on meat and the inclusion of fish and vegetables. This is a positive aspect of the UK barbecue industry, supported by the literature that highlights the environmental effects of livestock production and the health impact of too much meat, sugar and salt.

Additional evidence that reflects the recognition of the dominance of the American style of barbecue and ascendancy of other styles is that “the British barbecue scene isn’t bound by the rules, that’s the beauty of it” and that “we need to have the confidence that the UK barbecue scene can have its own, can start making its own history”. Evidence in support of this includes one barbecue restaurant that describes its style as “East Coast meets West Country”.

On summarising sustainability in the UK barbecue food industry one participant states quite simply that “the barbecue sector has the opportunity to be as sustainable as it wants to be, there’s nothing holding it back. In lots of ways it’s about simplicity, it’s about reconnection”.

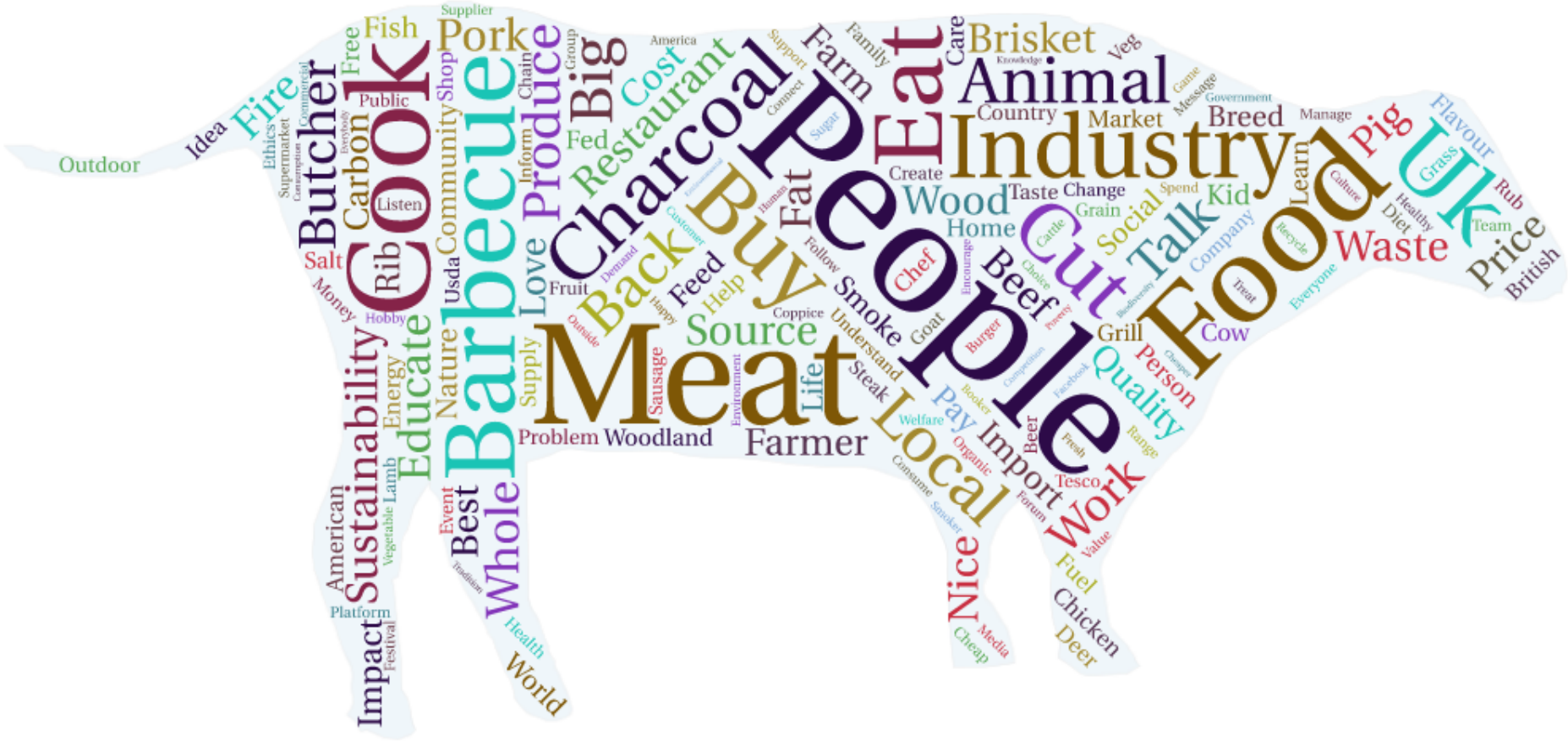

Figure 1 – Word Cloud based on the frequency of words in the interview transcripts. (Powered by WordArt.com).

Word Cloud Analysis.

The word cloud in Figure 1 below represents the frequency of 150 key words from the interview transcripts, where the bigger the word the more frequently it was used by participants. There is no recognised method for analysing a word cloud and there are limitations of them, such as all context is stripped from the words. However, there are some interesting findings to be analysed on the frequency of individual words and others related to them.

The most frequent word, as seen from its size in the word cloud, is 'people', with 671 references, well above the second most frequent word 'barbecue' with 502 references. This, along with the high frequency of the words 'talk', 'social', 'person' and 'community', indicates the importance of the social aspect of sustainability. Similarly, the combined frequency of 'nature', 'environment', 'environmental' and 'biodiversity' recognises the environmental aspects of sustainability, but less so than the references to social aspects. The inclusion of 'barbecue', 'food', 'industry' and 'sustainability' in the top ten, refer directly to the topic in question, and largely serve to confirm that the semi-structured interviews talk about the topic at hand.

What is of more interest are the words 'charcoal' and 'meat' that also figure in the top ten, and 'butcher' and 'local', both with above 100 references and in the top twenty. This confirms the centrality of meat and charcoal to barbecue food, the relevance of butchers and locality to the industry, and that these are all issues directly related to sustainability. There are also more references to butchers than farmers, despite not interviewing any butchers, which serves to reinforce the focal role butchers play in the industry.

The word 'brisket' features more times than any other cut, or descriptor of meat such as (in order of frequency) 'beef', 'chicken', 'pork' and 'pig'. In fact references to 'brisket' are more frequent than the combined references to 'beef' and 'cow', again indicating how big an issue this is to sustainability and confirm its inclusion as a separate

theme for analysis. The total of the references to 'American', 'America' and 'USDA' highlight the influence of their style of barbecue, and source of meat, to the UK barbecue industry.

Looking at a breakdown of the meats, 'Pork and 'pig' get almost equal references but combined they have more references than 'chicken' and the combination of references to 'beef' and 'cow'. This indicates pork is probably more of a feature of the UK barbecue food than the other meats, a plus for sustainability as the literature states pork is less environmentally damaging than beef. References to 'veg' and 'vegetable' combined do not feature as heavily as any reference to meats apart from 'fish' and 'lamb', the latter of which also gets less references than 'deer'. Whilst this might indicate that deer are more prominent in UK barbecue this is unlikely, what is more likely is that deer are seen as one way of increasing sustainability.

Whilst the word cloud provides an alternative method of analysis, its main value is ratifying the themes that emerge from the *in vivo* coding and thematic analysis. It highlights some interesting features that were spoken about by participants in the semi-structured interviews particularly when strong themes emerge from similarly related words. The analysis of the word cloud should, therefore, be seen as supporting evidence to the thematic analysis and not central to the discussion and conclusions.

Conclusion

The aim of the research was to establish what food sustainability issues are most prevalent to the UK barbecue food industry and examine how the industry is recognising and addressing sustainability issues. In the absence of existing literature on the topic an exploratory and inductive approach was taken. This approach worked, using wider sustainability literature as a framework and drawing implications for the UK barbecue food industry. The findings from the semi-structured interviews allowed a thematic analysis of the sustainability issues in the industry to be explored, and to a reasonable degree answered the three research questions below.

1. What are the sustainability challenges facing the UK barbecue food industry?
2. How is the UK barbecue food industry addressing these challenges?
3. What contribution is the UK barbecue food industry making towards a more sustainable food system?

Theoretical Implications.

The literature examined the sustainability issues in the wider food industry and not the barbecue industry, whereas the research looked specifically at the barbecue food industry. This makes theoretical implications difficult as the research is unable to be directly applied to the literature, but instead used it as a framework in which to conduct inductive research into a field with no existing literature.

Despite this, the literature on wider sustainability easily applicable to the UK barbecue food industry. The triple bottom line framework is also hugely relevant to the barbecue food industry and applies fairly equally across the board to the environmental, social and economic aspects. This framework also allows the inclusion of non-food related issues such as charcoal, central to the barbecue food industry but not a foodstuff itself, allowing a more holistic system approach to sustainability in the barbecue food industry.

The research does not provide any additional evidence to sustainability in its wider context, what it does provide is insight to the sustainability issues specific to and relevant to the barbecue food industry. What the research identified is that on most sustainability issues the barbecue industry is most likely consistent with the rest of the food industry, and the literature. However, there are a few key issues where it differs, usually for better and worse where it is common to see a polarisation of issues. This feature of barbecue is considered more unique to the barbecue food industry although future research using a similar methodology would have to be conducted in other areas of the food industry. The issue of meat for example, the very worst examples are exemplified in the barbecue food industry, with high levels of meat consumed from livestock most damaging to the environment. However, despite this there are significant positive contributions to sustainability that are likely to be more unique to the barbecue industry including the prevalence of nose-to-tail cooking, use of less appealing cuts of meat (to great success), use of livestock that are by-products of other industries and the use of rare breeds. The more negative contributions of the industry to sustainability were associated with the American style of barbecue, with the findings supporting the commercial literature on the prominence of the American style in the UK.

Managerial Implications.

This research has application predominantly for those in the barbecue food industry and wider community. Whilst it provides evidence of where practices contribute positively or negatively to sustainability it is ultimately people's behaviours and choices that will determine the extent to which barbecue is a sustainable aspect of the food industry or not. Sustainability is one factor that can shape these behaviours, but usually this plays second fiddle to two other major factors, quality and price. Quality was usually more of a feature with producers and those in the industry, with cost more of a driver for consumers. Luckily, sustainability quite often correlates with quality; however, price, in most cases, usually correlates with a lack of sustainability. This highlights the role that intermediaries such as butchers and food outlets play, balancing the demands of the consumer for cost, and their own desire to have a product that is the best affordable quality.

The competing demands for cost, quality and sustainability have implications for marketing in the industry, an area that this research has not had the scope to consider. As barbecue food offers the best and worst when it comes to sustainability, picking the right mix of products, processes and place in the market is essential, although inevitably, as the findings suggest, there will have to be a compromise somewhere. The industry must decide where it makes these compromises and how they are either mitigated against or communicated to the customer. The customers in the community also have a vital role, ensuring that their demands are made to the industry, predominantly on the information and transparency of the products to make them well-informed customers. However, consumers too must accept there are compromises to be made, a highly sustainable, high quality and low cost product is rarely in existence, but that does not always mean a compromise on sustainability.

Barbecue food by its nature already has a number of features that positively contribute to sustainability; a heritage and identity that emphasises the use of a greater range of animals and their cuts, a healthy way of cooking that is traditionally low in fat and sugar, that use culinary techniques to mitigate the effects of harmful compounds, a form of cuisine synonymous with social occasions, and where the worst aspects of sustainability are encountered they are fiercely debated in the community. Barbecue as a 'platform' therefore offers the food industry something unique, and despite the well-acknowledged sustainability issues there are lessons for other areas of the food industry, based on the characteristics of barbecue food.

Food producers and food service outlets can also look at their existing products and processes and see where sustainability can, with small or no changes, be factored into business models. The accumulation of small changes can all make a difference, these include; a switch to sustainable charcoal, locally sourced meat, a reduction in waste and alternative menu items using different meats and cuts. If this is accompanied by effective communication through marketing, then consumers can make better informed decisions and a better contribution to sustainability in conjunction with businesses.

Limitations and Future Research.

The methodology focused on the collection of qualitative data only, which for this research was ideal. There are avenues in which future quantitative research could take place, but this should be seen as a supporting element, as getting a quantitative measure of sustainability anywhere is not possible and would likely be misleading. There are some individual measures such as levels of waste, proportion of US versus UK meat consumed or sentiment analysis of barbecue-related social media posts, but these are only likely to provide some quantitative evidence to support individual aspects of sustainability, not give an overall measure.

It is possible that that the sample, as members of the barbecue industry, could have been biased in portraying the barbecue food industry in a more positive light on sustainability than it really is. However, the initial responses on most aspects of sustainability (livestock production, charcoal use) was admission that barbecue was probably not good for sustainability. Through deeper discussion and drawing out examples of better practice a more nuanced and balanced picture emerged. The sample also focused on just those in the industry and did not include consumers, therefore insights on consumers are based on perspectives from those in the industry. Future research would likely benefit by looking at consumer behaviours and attitudes to sustainability.

The word cloud was done subsequent to the *in vivo* coding and thematic analysis, although with hindsight it would have been better to generate the word cloud prior the coding and analysis and use it as a way of informing it. However, in this instance the word cloud provided confirmation that the coding and analysis had been done accurately and thoroughly, as no new themes were identified after the word cloud was generated.

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Ethics Form

Northampton Business School Ethics Form

This document is to be initiated by all NBS students or staff undertaking research.

Students must present this form to their Dissertation/Research Supervisor at the first meeting and include a copy with their final submission.

Staff must present this form to the Head of Research/Research Mentor before the research commences.

Part A: Project Detail

1. Project title: Sustainability in the UK Barbecue Food Industry

2. Programme/Module: Business Research Project

3.

☒ I have read and agree to adhere to the NBS Research Ethics Procedure and the Guidance on Ethics for Researchers

PRINT NAME: Jason M Wood

STUDENT NUMBER (if applicable): 16443432

Signed: 

Date: 05 Jun 2017

4. Supervisor name (s):

Katharina Kils

5. Use of human participants: Tick one of the following:

☒ I am using human participants.

☐ I am using archival data where individuals are identifiable

☐ I am **not** using human participants or data where individuals are identifiable and therefore do **not** need to complete the remainder of this form.

6. Participants: Tick the box which most accurately describes your sample:

☐ Children under 16 years

☐ 16-18 year olds

☐ Adults over 65 years old

☒ Members of the public (general)

Northampton Business School Ethics Form

- ☐ NBS Students (please specify)
- ☐ Members of vulnerable groups (frail elderly, recently bereaved, members of support groups – describe here :……..)
- ☐ Other. If other, describe your sample here:

7. Issues for concern: Tick below any issue that relates to this research.

- ☐ Involves participants undertaking tasks they would not normally undertake
- ☐ Involves any activity that might be described as an 'invasion of privacy'
- ☐ Involves deception
- ☐ Involves a topic that would be considered 'sensitive'
- ☐ Involves the collection of data that is not anonymised (contains identifying information such as name and address)
- ☐ Other. If other, describe here:

8. Methodology: Tick the appropriate box. Full details of what you will do and where it will happen, should be provided in the accompanying Proposal.

- ☐ **Questionnaires**
- ☒ **Interviews**
- ☐ **Experiments**
- ☐ **Observations**
- ☐ **Archival**
- ☐ **Other.** If other, state here:

9. Recruitment Process. Tick the process that best describes how you plan to recruit participants. Full details of how you will recruit and where it will happen, should be provided in the accompanying Proposal.

- ☐ Via poster in a public place such as a library or community centre
- ☐ 'Packs' will be provided to named person in an organisation/group to be distributed on my behalf
- ☐ Asking personal contacts to pass my information packs to their contacts
- ☐ Will be asking friends/family
- ☒ Cold calling
- ☐ Other. If other, state here:

Northampton Business School Ethics Form

10. Recruitment material. Tick all the recruitment material you will be using. They **must not** be used until seen and approved by your supervisor.

- ☐ Recruitment poster
- ☐ Recruitment letter to named person in an organisation/group who will be distributing 'Packs' on your behalf
- ☒ Recruitment letter to potential participants
- ☐ Participant Information Sheet
- ☐ Consent form
- ☐ Other. If other, state here:

11. Risk assessment: Some projects will require risk assessment for participants and/or researchers. In other words, there is a possibility that participants and/or researchers will get hurt collecting data. If so, a risk assessment must be conducted. Tick the appropriate box below concerning your need for risk assessment.

- ☒ There is **no** risk of injury to participants and/or researchers, so **no** risk assessment will be conducted.
- ☐ There is a potential of injury to participants and/or researchers, so risk assessment has been (or will be) conducted.

12. Consent from the host Company:

I consent to the aforementioned named student carrying out research on Company premises or in relation to this Company.

Senior Manager Name: (N/A)_____

Senior Manager Signature: (N/A)_____

Host Company Name: (N/A)_____

13. Compliance with the Ethics Procedures of the Host Company.

I the student have read and complied with the ethics procedures of the host company.

Signed: (N/A)_____

I the Senior Manager confirm that the student has read and complied with the ethics procedures of our Company.

Signature: (N/A)_____

Please include an A4 sheet to explain what you hope to achieve from the data provided on acceptance of this project.

Northampton Business School Ethics Form

Part B: To be completed by dissertation/research supervisor/mentor.

In the case of a **student**, this section should be completed by your Dissertation/Research Supervisor.

In the case of a member of **staff**, this section should be completed by the Head of Research/Research Mentor.

Supervisor/Mentor Comments: Please comment on the extent to which this proposal meets the requirements of NBS Research Ethics Procedure and the Guidance on Ethics for Researchers.

Should this proposal be considered by the Ethics Committee? Yes [ ] No [x]

For **students**, referral to the Ethics Committee is at the supervisor's discretion.
For **staff**, all proposals should be considered by the Ethics Committee.

If **yes**, please copy this form to the Ethics Committee Secretary (Debbie Christopher)

If **no**, please retain a copy for your records.

Signed (supervisor/mentor): K. Kils

Print Name: Katharina Kils

Date: 14.06.2017

Northampton Business School Ethics Form

Part C: To be completed by Ethics Committee Secretary

Date considered by Ethics Committee:

Ethics Committee comments:

Action Required:

Date action required by:

Signed on behalf of Ethics Committee:

Print Name:

Date Copied to Research Supervisor/Mentor: