Article

Beyond the Pale (Ale): An Exploration of the Sustainability Priorities and Innovative Measures in the Craft Beer Sector

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Abstract: The aim of the research presented in this exploratory paper is to present the sustainability priorities and measures focused on by craft beer SMEs and to highlight a number of innovative measures pursued by brewers to promote sustainability. The materials and methods for the study included an Internet survey of craft breweries with a sustainability profile, followed by an in-depth analysis of 70 shortlisted craft beer websites. The research finds that, as a whole, craft brewers have a broad interpretation of sustainability, encompassing environmental and socioeconomic parameters. Areas strongly profiled by brewers include energy & climate, water efficiency & conservation, spent grain reuse, and community involvement in its many forms. A strong focus on the "local", including both environmental and socioeconomic aspects, by this group points to unique sustainability priorities of SMEs. The findings also reveal that these priorities are often differentiated on company websites by environmental sustainability and community engagement activities. Furthermore, among he breweries analyzed, more specific discoveries also showed that the age of the brewing operation, in general, impacts how much emphasis is placed on company sustainability efforts, with breweries established in the 1980s and 1990s highlighting their sustainability efforts more profoundly. Despite the general broad interpretations of sustainability, numerous individual breweries profiled only a limited number of sustainability priorities. To broaden perspectives, it is suggested that active measures be taken in the industry promote more robust understandings of what sustainability is and how processes to promote sustainability in an integrated manner can be more concretely operationalized among this group of SMEs.

1. Introduction

There has been increased attention over past decades on fostering more sustainable production systems. It is a result of, among other factors, the implementation of environmental management systems (e.g., ISO 14000, Eco-Management and Audit Scheme) by companies, strengthened government regulation, and augmented pressure from consumers. This has driven advancements in internal organizational decision-support processes including product environmental assessment such as cost–benefit analysis, life cycle thinking and assessment [1–3], and a cleaner production mindset through, for example, designing for sustainability [4]. It has also come as a result of broader, society-facing sustainability approaches such as corporate social responsibility [5–7], employing methods including triple bottom line accounting [8,9]. This area continues to evolve—both in business practice and as a comprehensive field of scholarship.

Many of the prominent efforts to create more sustainable modes of production have been developed and operationalized by multinational corporations (MNCs). This is because this group has

a reputation to maintain with both shareholders and the general public; furthermore, MNCs often have the financial and institutional means to carry out such actions. Despite the advancements by MNCs, it is small and medium-sized enterprises (SMEs) that make up the vast majority of businesses around the globe. It is also in these independent business arrangements and production chains that new, dynamic, and often thrifty sustainability-focused ideas, conventions, and experiments emerge [10–13]. This is supported by SMEs' ability to capitalize on innovative and sustainable practices, their general malleability and the ability to act to fill local and regional niche markets [14].

One collection of SMEs that has been commended for creativity and innovativeness is craft beer [15–17]. It is a dynamic sector that has bourgeoned in many places around the globe, especially over the past decade. The craft beer sector has likewise been promoted for its focus on sustainability [18–20] where many breweries and brewpubs have implemented measures to promote sustainability in their operations. Despite the focus in nonacademic literature, little scholarly attention has been devoted to craft beer sustainability where the research that does exist has mainly focused on efficiency improvements in the brewing process [21–23] or consumer preferences for sustainably produced beer [24]. There still a substantial gap in the research in better understanding the complex interpretations of sustainability as it relates to the sector [19]. What are the important sustainability priorities of actors in the craft beer sector; what innovative actions do they take to promote and increase sustainability? Finally, what do the priorities and actions in the craft beer sector tell us about contemporary interpretations of sustainability among SMEs?

The research presented here takes a first step in filling this gap by examining the different understandings of sustainability by craft beer SMEs. It is carried out by surveying the sustainability priorities deemed important to breweries, and by illuminating specific, innovative sustainability actions that are pursued by actors in the sector. Since there are no similar academic studies on this topic, the research is largely exploratory. The empirical work is based on a general Internet survey and analysis of craft brewery websites and the nonacademic literature, followed by a more detailed assessment of 70 shortlisted craft breweries that were deemed to profile sustainability. From this assessment, sustainability priorities were narrowed to 12 targeted sustainability areas, and again divided into three broad categories. The analysis concentrated on both the number of breweries promoting specific measures, and examples pursued by individual craft breweries that were deemed innovative by the author.

The article is structured as follows. First, a background to the craft beer sector is provided in Section 2, including differing definitions and a discussion about the growth of the sector in different parts of the world. Next, the materials and methods used in the study are described in further detail including the priority areas that emerged in the process. This is followed by a results section presenting (1) the analysis of the 12 sustainability priority areas and (2) examples of the notable sustainability actions taken by some of the 70 breweries. The subsequent discussion (Section 5) returns to the initial questions posed for this research and discusses some of the individual findings from the analysis, as well as other insights that emerged from the research, concluding with the limitations of the study.

2. Study Basis

What is craft beer? As with the word sustainability, there are differing—and sometimes contested—interpretations of craft beer or the craft brewery. The Craft Brewer's Association [25], an interest organization based in the U.S., defines craft beer as "small, independent, and traditional." It is where annual production is six million barrels of beer or less, and where the beer production is attributed to the rules of alternating proprietorships, where less than 25 percent of the craft brewery is owned or controlled by an industry member that is not itself a craft brewer. It is also where a majority of the total beverage alcohol volume whose flavor derives from traditional or innovative brewing ingredients and their fermentation. However, craft beer definitions differ in Europe. According to a prominent brewer originally based in Scotland [26], craft beer is based on four principles: the brewery produces less than 500,000 hl/year (426,084 barrels/year); it is authentic (e.g., does not use ingredients

or additives to reduce flavor or costs); it is honest (there is transparency about the ingredients used and where the beer is brewed), and is independent (ownership is not greater than 20% of a brewery that is not a craft brewery).

Craft beer has proliferated, both in overall production quantities and the number of breweries. There has been significant growth in the U.S., with particular strong growth in Colorado, Oregon, and California [27]. The growth has now spread to other regions around the globe. It is a trend where brewers and consumers alike have come to prioritize beer taste and style variety while often promulgating a green image in their operations [28]. Craft beer can be produced in brewpubs, at microbreweries, or at regional craft breweries tied to taprooms; conversely, operations can include full-fledged restaurants. Craft beer production and consumption is swelling—nurtured by myriad developments as brewery and taprooms in large cities down to smaller craft beer establishments on main streets. Activities promoting craft beer can include large craft beer expos to small beer tasting events, and even other occasions such as community "beer runs" and craft beer tourism [29].

Craft beer growth trends differ by country; three examples are provided to create an overview. In 2017, the Craft Brewer's Association listed 6266 craft breweries (made up of regional craft breweries, microbreweries, and brewpubs) operating in the U.S.; it now represents 99% of all breweries in the country [30]. Craft beer sales as a portion of total beer sales were also positive where overall U.S. beer sales (by volume) decreased by 1% in 2017; however, craft beer sales continued to grow at a rate of 5%, reaching 12.7% of the U.S. beer market [30]. The number of craft breweries in the U.K. breweries has risen to over 2000 with expeditious growth of 18% over 2015 [31]. The U.K. has also seen a steady rise in production amounts in recent years; however, it must also be noted that there are threats to the growth due to a weak pound and an exit from the European Union [32]. In New Zealand in 2016, trends were similar where 126 craft breweries contributed to a 35% increase in craft beer sales over the previous year [33].

3. Materials and Methods

The research method consisted of multiple steps. First, a general Internet keyword search was performed in spring 2017, in English, to determine the craft breweries that stressed sustainability. Multiple searches were carried out using different keyword combinations, including, and not limited to, "craft beer and sustainability," "green craft beer", and "environment and beer". For each search word combination, the first approximate 100 "hits" were used to identify the breweries with what could be perceived, in a broad sense, as a sustainability priority. Individual brewery websites were then identified directly through the keywords, or indirectly through other nonacademic articles that highlighted the sustainability efforts of craft beer producers. The macrobreweries that appeared were disqualified from the study. All applicable breweries were then recorded on a spreadsheet; any duplicates were merged. Seventy craft breweries were then identified from the searches; 53 of the breweries were located in the U.S., with the remaining dispersed throughout Canada, Australia, the U.K., South Africa, and New Zealand.

A detailed investigation of the 70 websites of the breweries and/or the articles written on specific craft beer sustainability initiatives was then performed. The spreadsheet listing each brewery was fortified where information existed. This included basic information about the brewery (e.g., year of establishment, location(s), and web address). Furthermore, information on the different sustainability-relevant initiatives contained in the article or on the company website was analyzed and recorded in the spreadsheet. From this analysis, brewer sustainability priority areas emerged. These could then be categorized under broader sustainability themes. As an additional step, breweries that promoted initiatives that were deemed especially innovative or noteworthy were highlighted in a special column on the spreadsheet. Names of individual breweries were eliminated to keep this article from becoming promotional.

The areas largely fell into 12 targeted topics (e.g., water, community, and energy/climate). From these, they were then sorted under three broader sustainability themes: institutional/strategic,

environmental, and socioeconomic. Table 1 shows each of the areas as well as a guiding question that was created to further define each of the specific areas. The broad categories that evolved included institutional aspects (e.g., the existence of formalized sustainability monitoring and display to the public), environmental aspects, and socioeconomic parameters.

Table 1. Broad sustainability categories and more specific areas that emerged from the initial survey with leading question to base the categorization.

Area	Guiding Question
Institutional/Strategic	
Sustainability tab	Does the brewery website contain a separate section for sustainability (or similar)?
Sustainability report	Has the brewery produced at least one sustainability report?
Certified B Corporation	Is the brewery a certified B corporation?
Environmental	
Water conservation	What measures does the brewery take to improve water use efficiency or promote water conservation?
Energy/climate	What measures does the brewery employ to decrease energy use or use renewable energy?
Spent grain reuse	Does the brewery promote the of use spent brewing grains for other purposes?
Other Solid Wastes	Does the brewery place emphasis on solid waste handling or belong to a solid waste program?
Containers/packaging	What measures has the brewery used to decrease the impacts of beer packaging?
Ingredients	What measures are used to for more sustainable ingredient use, including both beer & restaurant activities?
Socioeconomic	
Employees	What schemes are employed to improve the working conditions of employees?
Gender & equality	Does the brewery explicitly partake in measures to seek a gender balance and promote equality at the brewery?
Community measures	What actions does the brewery carry out to support and engage itself in the community?

The sustainability website section (tab) is a simple determination if the brewery has the desire to profile their sustainability and environment and/or community involvement actions to the public. The sections could either be main features on the website or "sub-tabs" situated within other website theme areas, such as information about the brewery. The inclusion of an annual sustainability report moves a step beyond information on the website and demonstrates the brewery's commitment to an ongoing assessment and (hopeful) improvement actions of key sustainability priority areas. Each website was scanned for such a report. Another similar area that emerged and was placed in this category was the brewery's commitment to partake in an organizational certification system. In all cases, this was through becoming a B Corporation [34]. B Corporation certification is a private certification issued to companies by a global nonprofit organization that was founded in 2006. The certification is a 3rd-party standard that requires companies to meet both social sustainability and environmental performance standards, accountability standards, and to be transparent to the public. To obtain and maintain certification, a company must earn a minimum score of 80 out of a total of 200 points.

There were six areas that were categorized under environmental parameters: water conservation, energy and climate, spent grain reuse, solid wastes (other than spent grains), containers & packaging, and beer ingredients. The brewing process is water-intensive, often using many units of water for each unit of beer produced. Measures to increase water efficiency, or to promote local or regional water quality also were often disseminated. The brewing process is also energy-intensive because of processes such as boiling wort (unfermented beer), wort cooling, bottling/canning, and beer transport, among others: this often leads to climate impacts. Therefore, it was apparent that the different measures

carried out to increase energy efficiency in the brewing process—or the brewery's efforts to turn to renewable energy systems—was viewed as important to brewers.

The brewing process also creates vast quantities of solid wastes, especially spent grains [35]. Spent grains are the most abundant byproduct generated from the beer-brewing process, representing ~85% of the total solid byproducts obtained [36]. Spent grain reuse was delineated because of the different nature of the waste (or resource), and because of the rather strong emphasis breweries placed on this aspect. Other solid wastes in the next area included byproducts both from the brewing (e.g., grain bags and office paper) and also from wastes of restaurant operations, which are often important parts of the larger craft beer production picture.

One of the most environmentally-impactful parts of the sector are beer containers and packaging [37], an aspect emphasized by many of the brewers. Each brewery was then analyzed for the specific measures employed to create more sustainable packaging systems, including e.g., cans, lightweight bottles, the promotion of growlers (i.e., $\frac{1}{2}$-gallon returnable bottles), and other packaging used in the brewing or restaurant portion of the business. Another area highlighted by many brewers was ingredients (other than water). The analyses revealed that there is both a concern about local or regionally produced ingredients, GMO-free ingredients, and if organic ingredients were used in brewing or restaurant operations.

There were additional areas promoted beyond the institutional and environmental by craft beer SMEs. Many breweries also underlined a number of socioeconomic priorities within their operations. First, there was stress on measures taken by different breweries to create positive and fulfilling working conditions for employees (e.g., brewers, administration, tap room help, and cooks). Additionally, although becoming more balanced recent years, men dominate the craft beer world, both as beer consumers and brewers. Albeit limited, there was mention by brewers to create a better balance between the genders and efforts to create a more equitable sector. Finally, brewery involvement in the community was promoted as a significant aspect. The individual efforts by the breweries was further scrutinized to see which innovative actions in this area were being carried out. More detailed descriptions of some of the specific activities and measures and novel actions are presented in the results in the next section.

4. Results

4.1. Institutional Aspects

Results, including the number of mentions on the websites of the 70 breweries and innovative measure examples are highlighted in Table 2. Approximately 2/3 (43 of 70) of brewery sites had a special section (tab) on the website highlighting sustainability or other similar efforts. For some breweries, these were separated into different headings on the website, for example, environment, community, and/or partnerships. The variety and depth of the information greatly varied, from rudimentary information on brewery energy efficiency measures to extensive and detailed information on the SME's work in a multitude of sustainability-relevant areas. An example of this is a brewery with a tab devoted to sustainability, and within it five additional sustainability-relevant sub-tabs featuring the numerous measures carried out by the SMEs.

Ten of the 70 breweries examined had at least one sustainability report available to the public on the website. As with the sustainability tabs, the extent and depth of the reports greatly varied. A few of the reports were not more than one- or two-page documents concentrating on a limited number of sustainability priorities for a single year. Others, however, were more comprehensive (e.g., up to 30-page) "corporate" sustainability reports concentrating on in-depth presentations of 10 sustainability priority areas, devoting 1 to 2 pages in the report to each area for multiple years.

Eleven of the 70 craft breweries surveyed were B-Corporation certified, demonstrating a strong commitment to sustainability in brewery (and food) operations. While most breweries received their certification in very recent years, one brewery had been certified since 2010.

Table 2. Results summary including the number of mentions by each brewery analyzed for the particular area, and an example of an innovative sustainability measures for each area.

Area	Web Focus (of 70)	Innovative Sustainability Measure(s)
Institutional/Strategic		
Sustainability tab	43	Sustainability website tab with multiple levels and examples of company sustainability work
Sustainability report	10	30-page sustainability report
Certified B Corporation	11	B Corporation certified since 2010
Environmental		
Water conservation	32	Water recapture system for returnable bottle washing
Energy/climate	41	10,000-plus panel solar array to run brewery operations
Spent grain reuse	30	Business offshoots to produce dog biscuits and energy bars from spent grains
Other solid wastes	28	Construction material reclamation; no-waste certification
Containers/packaging	27	Wheat-based, 80% tree-free paper packaging
Ingredients	29	All beers 100% certified organic; on-site ingredient farming
Socioeconomic		
Employees	20	100% employee-owned company
Gender & equality	4	Main business mission to balance the gender representation in the industry
Community measures	43	Support of different cycling initiatives in the community

4.2. Environmental Parameters

4.2.1. Water Conservation

Approximately half the breweries (32 of 70) mentioned organizational emphasis on water efficiency or partaking in water conservation advocacy. These were either efficiency measures taken to decrease water use directly in the brewing process or restaurant operations, or other actions to promote local or regional water conservation. Actions varied significantly from the installation of modern equipment (e.g., clean-in-place system) in the brewery as well as other water reclamation systems to decrease water usage in the brewing process. Alternatively, other SMEs featured their installation of technologies including rooftop water harvesting systems and dry toilets in other parts of company operations. Several breweries also donated to, or were active partners in, different water conservation organizations, including the Oregon Brewshed Alliance, Trout Unlimited, or established its own conservation program. An innovative brewery process technology highlighted by one company was recapturing all of the water used to rinse the inside of bottles, filtering the water, and then reusing the same water to rinse the outside of bottles.

4.2.2. Energy

Unsurprisingly, many of the breweries focused on (41 of 70) highlighted measures to reduce energy use and/or to utilize renewable sources of energy in company operations. Actions in this realm were diverse, including the installation of efficient wort boilers, the use of natural light, or the installation of LED lighting systems, the construction of net-zero energy buildings, biodiesel-driven beer delivery vehicles, the purchase of renewable energy credits, and/or participation in renewable electricity procurement programs. The installation of rooftop solar arrays by 13 of the 70 breweries or brewpubs was an electricity procurement measure that go beyond rudimentary actions. One brewery proudly promoted their 2 MW, 10,000-plus panel solar installation backed up by a 1 MWh battery power storage system to run 100% of operations.

4.2.3. Spent Grains

Solid waste disposal can represent a significant cost for brewers. Roughly one-third (30 or 70) of the breweries stressed the reuse of spent grains by others from the brewing process. The vast majority

of these highlighted the spent grain reuse as animal feed for cattle, cows, pigs, or chickens. However, alternative uses were undertaken by a few of the breweries, including using grains as a medium for mushroom growing, as a ground mulch, or as an ingredient for restaurant operations, for instance, for bread and pizza dough. Even more innovative, two breweries highlighted the reuse (upcycling) of spent grains for use as an ingredient in dog biscuits, spawning the startup of a small local business in one case. Additionally, a San Francisco area company also upcycles spent grains from one brewery as a main ingredient for energy bars for human consumption.

4.2.4. Solid Wastes

The reuse (or recycling of) other wastes from brewing and restaurant operations was also featured prominently among breweries. Approximately one-third (28 of 70) of the breweries take part in some sort of solid waste handling and/or recycling program. As with many of the other assessment areas, the priorities and examples of brewery websites greatly varied. Many breweries noted adherence to different recycling programs, other solid waste diversion programs, or promotions of organic waste composting for restaurant activities. Notable efforts included the efforts of five breweries in becoming, or with ambitions to become, "no waste" certified businesses. Another brewery reclaimed many of the building materials from the building they took over for reuse in their new brewpub operations.

4.2.5. Containers/Packaging

Twenty-seven of the craft beer SMEs profiled more sustainable beer container or packaging systems for their products. The packaging systems were varied. Areas often touted by breweries included the switch from conventional bottles to lightweight bottles or cans; conversely, others emphasized their use of glass bottles made up of a large percentage of recycled glass. Numerous breweries also mentioned a strong priority on returnable and refillable growlers, while others promoted reusable bottles or keg systems, or recycled cardboard for 6-packs. In general, measures were not so creative where one of the more innovative measures was a packaging option that included the use of a wheat-based, 80% tree-free paper for 6-pack containers.

4.2.6. Ingredients

As stated, sustainable ingredients concentrated on three specific areas: locally produced, non-GMO, and organic. Twelve breweries profiled their local sourcing of ingredients for either beer or restaurant food operations. Three breweries made reference to their use of non-GMO ingredients. Finally, 14 breweries highlighted their use of certified organic (often USDA) ingredients either in their beer or in restaurant operations. More novel measures included on-site farming (e.g., hops, grains, or fruits) for brewing as well as other fruits and vegetables for use in restaurant operations. Another brewery boasted that all its beers were 100% certified organic, which is well-beyond industry norms.

4.3. Socioeconomic Aspects

4.3.1. Employees

In the category of socioeconomic aspects, twenty breweries mentioned their commitment to employees. There were a variety of measures listed by the craft breweries to support and foster the development of employees. A number of companies profiled their awards as being one of the top companies to work for in their respective regions. Additional measures pursued by the breweries, restaurants, and brewpubs to promote a safe and fulfilling workplace included employee volunteer programs where employees could devote a small number of their working hours each month to community volunteer work, "living wage" salaries, on-site nurses and doctors, employee wellness reimbursement including on-site yoga sessions, and hiring programs for the disadvantaged in the community. One craft brewery originating in Colorado has employee ownership awarded

after one year of employment, and an employee stock ownership program that purchased the balance of company shares in 2012, making the SME 100% employee-owned. The actions help to foster transparency and encouraging a community of trust and mutual responsibility among workers. Furthermore, several companies promote bicycling for their employees through bicycle bonus programs, on-site fix-it stations, and bike racks located next to the building.

4.3.2. Gender & Diversity

The vast majority of breweries did not mention gender and equality issues as a priority area despite that a few of the breweries had cofounders that were female. However, three of the 70 breweries did proudly profile their efforts to foster a more gender balanced and inclusive work environment. One company keeps track of the gender balance between employees (currently 71% men), and actively employs measures to achieve a more equal balance. Another brewery gives preference to working with suppliers who are majority owned by women, ethnic minorities, people with disabilities, or individuals living in low or moderate incomes. One craft alcohol company based in Australia, which includes beer, has the mission to bring a more equal balance to the entire industry. The SME was cofounded by two females, and the majority of the employees (except two), are female-identifying. The company also pushes the envelope by constantly seeking out female-led businesses from supply chains and corporate partnerships to videographers to bartenders.

4.3.3. Community

An impressive 43 of 70 breweries listed some sort of support to the community. Many efforts of the breweries were listed separately from other (environmental) sustainability efforts or company website tabs. As with many of the other areas, the efforts varied. At a minimum, numerous breweries listed beer and paraphernalia donation programs to different community events that do not involve children (from company parties to sports teams). Other efforts included monetary support to many different local environmental and social organizations. Donation programs varied from breweries that contribute portions of SME revenues or beer sales to strategically-targeted organizations, to more substantial support for national or international nonprofits. As for their focus on employees, one common theme among numerous of the breweries was the promotion of cycling initiatives through measures such as discounts on beers to those who bike to the location to hosting fundraisers for local bikers' organizations. The focus by the breweries is likely because of the multiple benefits of bicycling including health, climate, community, and as a measure to deter operating a motor vehicle while impaired.

5. Discussion

5.1. Analysis Reflections

The analysis shows that a wide array of sustainability priorities is important to craft beer producers. Unsurprisingly, there was generally a strong focus on environmental parameters (e.g., water, energy/climate change, and solid waste handing) by breweries. This demonstrates the heightened sense of awareness by this group about local to global environmental challenges. Furthermore, through the examples described, it shows that brewers are willing to participate in many tangible efforts to help address these challenges. Some of the measures taken and mentioned involve their enrollment in different sustainability programs (e.g., certified B-corporation, solid waste management, and green energy procurement), the use of organic and or non-GMO ingredients in beer and for restaurant operations, and/or the installation of large solar arrays on brewery rooftops.

The results also show that being positive and active member of the community was a strong priority for a majority of brewers. The activities greatly varied from company donations to different causes, active participation in many different organizations and endeavors in the community, payment

of living wages or employee ownership programs, to active support of local farmers supplying brewing and restaurant ingredients.

Despite strong efforts in this area, the assessment of brewery websites seemed to show that efforts to engage in the community were deemed important but that these efforts were often listed in many cases as a distinct section on company websites. Although not further analyzed, this points to craft brewers likely associating sustainability with "environmental" sustainability and priorities for employees, gender and equality, and community engagement being viewed as something different. If this is the case, efforts should be placed on these businesses seeing sustainability in a more holistic and integrated and interconnected perspectives, which include socioeconomic parameters.

Related to the above, the analyses of the 70 breweries revealed that there are sustainability "blind spots" that can exist among craft breweries. Only a few of the breweries surveyed highlighted their work with, gender and equity issues, despite it being an important sustainability topic (e.g., Sustainable Development Goals), and it being a particular challenge in this particular sector. Furthermore, an area that was not listed, but deemed important by the author, was alcohol overconsumption, another important social sustainability challenge. SME owners are busy and do not have the luxury to focus on everything. However, partaking in and opening up sustainability priority exploration processes to a wider group of perspectives and actors can help detect any sustainability blind spots and contribute to more robust sustainability priorities among this group.

5.2. Broader SME Sustainability Interpretations

What do the results say about brewers' views on the sustainability of SMEs? As confirmed and expressed in the previous subsection, there is a strong concentration on environmental sustainability aspects. This includes a focus on environmental challenges. Furthermore, craft beer SMEs place significant focus on the "local" community—in a diversity of ways—in which they operate, where 43 of 70 breweries profiled their work in this area. Although MNCs also often support and engage in the communities in which they operate, this seems to point to a feature that is prominent with SMEs, and has been highlighted in other literature and studies [15,38,39]. For craft breweries, since the existence of these organizations most often depend on local customers for beer sales, local employees to run operations, and the local environment for ingredients for beer and food production. Priorities will likely expand beyond the local as of some of the breweries increase the spatial reach, both nationally and internationally.

5.3. Other Insights

In addition to the above findings and reflections from the different analyses carried out in this study, the study has also revealed a broader, ulterior insight about those SMEs in the industry that prioritize sustainability. The craft beer renaissance is a relative new phenomenon with many of the breweries having stated over the past decade. However, the results reveal that 29 of the 45 breweries that listed an establishment year were grounded in the 1980s or 1990s. There are a number of questions that stem from this observation. First, does a brewery need to be well established before company management can focus on sustainability issues? Does it take decades to develop and operationalize a robust sustainability program? Is sustainability a "generational" thing in the craft beer industry? It is acknowledged that it can take significant time to develop sustainability priorities and create programs to support them. This seems to be counter to general observations by the author in Sweden that it is largely the younger generation of brewers that are eager to drive sustainability initiatives in the industry. Brewers are especially cognizant of their ingredients for beer quality and consistency purposes; however, many brewers may be less interested in organic ingredients as well as the host of other sustainability areas. Changes to promote energy efficiency, for example, can be driven by cost savings measures instead of for reasons of global climate change.

5.4. Limitations

The study has a number of limitations. First, the analyses only used data from Internet sources (namely nonacademic articles and websites). This assumes (1) that all sustainability initiatives and actions that the individual craft brewing company is involved with are communicated via the SME's homepage. Most of the craft breweries also were active on other forms of social media (e.g., Facebook, YouTube, Twitter, and Instagram) where other ongoing sustainability initiatives were also publicized. These forums were not assessed.

Furthermore, as mentioned, large "macrobreweries" were not included in the study. However, it should be stated that many of these breweries are also pursuing interesting sustainability initiatives such as brewing efficiency measures, organic beers, sustainability community engagement, responsible alcohol consumption activities, etc.

Another important limitation is that the study was limited to craft breweries in the English language, significantly in North America, and where only the first 100 hits were used in the analysis for each search word combination. The craft beer sector is not limited to English-speaking countries. There are a variety of other countries with movements including the Nordic countries (e.g., Denmark, Sweden, Iceland), Mexico, China, and to name just a few.

6. Concluding Remarks

The aim of this exploratory research has been to survey and analyze the sustainability priorities and measures focused on by craft beer SMEs. Furthermore, a number of innovative measures pursued by brewers to promote sustainability have been highlighted. The materials and methods for the study have included an Internet search of craft breweries with a sustainability profile, followed by an in-depth analysis of 70 shortlisted craft beer websites. The research found that, as a whole, craft brewers do have a broad interpretation of sustainability, encompassing environmental, and socioeconomic parameters. Areas strongly profiled by brewers included energy & climate, water efficiency & conservation, spent grain reuse, and community involvement. The stark focus on the "local" by craft brewers point to sustainability priority areas of SMEs in a broader perspective that can differentiate them from other types of firms and organizations. However, the findings also revealed that these priorities are often differentiated on company websites by environmental sustainability and community engagement activities. Furthermore, among the 70 breweries analyzed, results also exposed that the age of the brewing operation, in general, impacts how much emphasis is placed on company sustainability efforts, with breweries established decades ago highlighting their sustainability efforts more deeply. Despite the general broad interpretations of sustainability by this group of SMEs, numerous individual breweries of the 70 profiled only had a limited number of sustainability priorities. To broaden sustainability perspectives, it is suggested that active measures be taken in the industry promote more robust understandings of what sustainability is and how processes to promote sustainability can be more concretely carried out among this group.

Because this study was largely exploratory, there is significant room for additional research in this area. Suggestions for future studies can include a more robust analysis of the priorities that extend to other data sources including different forums and platforms. Furthermore, analyses can expand to incorporate websites in other languages beyond only English, bringing in additional perspectives from other parts of the world with craft beer production. Supplementary research can furthermore concentrate on more comprehensive analyses of creative efforts by individual breweries to address individual sustainability challenges, especially by breweries that did not highlight sustainability on their website. Finally, as stated, many macrobreweries are also active in different sustainability initiatives. A survey and comparison of these with craft breweries is also fruitful in order to discover and promote cross-learning in this sector.

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