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Collaboration and the emerging craft brewing industry: An exploratory study

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Abstract

In adopting various elements associated with the theory of collaboration, this exploratory study investigates collaboration in the context of predominantly micro and small craft breweries. The findings revealed that collaboration within other brewers helped increase product quality, gain basic knowledge of new recipes, and enhance strategic knowledge about the industry. The applicability of the elements related to the theory of collaboration was confirmed. For instance, the element of 'stakeholders of a problem domain' was aligned with the notion that craft brewery operators' actions, including collaboration, can have significant impacts on the problem domain that brought them together.

Keywords: Collaboration, theory of collaboration, perceived benefits and challenges, micro and small commercial craft brewers, Australia.

INTRODUCTION

The academic literature proposes various definitions of collaboration. For example, Nunamaker et al. (2002) define collaboration as "making joint cognitive effort toward achieving an agreed upon goal" (p. 78). Similarly, Miles et al. (2006) view collaboration as a process involving at least two parties working closely with one another to attain mutually beneficial results. The establishment of collaborative alliances is perceived as a key strategy that organisations can use to address complexity and turbulence in their business environment (Gray and Wood, 1991). Moreover, collaboration can potentially contribute to solving organisational problems (Gray and Wood 1991), or achieving short and long-term objectives that would be unattainable when working independently (Gadja, 2004).

Researchers studying small and medium enterprises (SMEs) have also uncovered critical aspects, outcomes, and benefits from collaboration (e.g., Chan et al., 2012; Ciasullo and Troisi, 2013). For instance, Nieto and Santamaría (2010) found that collaboration had a significant impact on product innovation. Earlier research (Robson and Benett, 2001) revealed the positive relationships between SMEs collaborating with local suppliers, and growth in profitability. In contrast, there is also evidence of marginal benefits from collaboration. Indeed, earlier research (Bougrain and Haudeville, 2002) noticed that the level of success in innovative projects among SMEs was not necessarily increased through technological cooperation. Thus, an argument has been made that collaboration can result in unpredictable outcomes (Miles et al., 2006).

While a number of academic contributions have underlined the potential outcomes of collaboration, various knowledge gaps still remain. For example, in the SME field, Bjerregaard (2010) recognises that "little research has addressed the development of UI (university-industry) relationships" (p. 161). Similarly, very limited research exists concerning the implementation of 'e-collaboration' among SMEs (Chan et al. 2012). In addition, the SME literature does not discuss collaboration within emerging industries, as is the case of the growing craft brewing industry. Finally, research focusing on the importance of collaboration in the context of Australian SMEs is practically inexistent.

The present exploratory study addresses these last knowledge gaps, examining collaboration from the perspective of operators of mainly micro and small Australian craft breweries.

The following overarching research question (RQ) will be investigated:

RQ: To what extent do craft brewer operators collaborate?

This question is then divided into various sub-questions that are associated with research on strategic alliances (Grant and Baden-Fuller, 2004), as well as research on external collaboration (e.g., suppliers) (Johnson and Filippini, 2009). Strategic alliances embrace various collaborative forms that include supplier-buyer partnerships, common distribution agreements, or new product development (Grant and Baden-Fuller, 2004).

The following sub-questions are proposed:

RQ1a: To what extent do craft brewery operators collaborate with other craft brewers?
RQ1b: To what extent do they benefit from collaborating with other craft brewers?
RQ1c: What are the major constraints limiting collaboration with other craft brewers?

RQ2a: To what extent do craft brewery operators collaborate with other businesses (externally), for instance, with businesses operating in the hospitality industry?
RQ2b: To what extent do they benefit from such external collaboration?
RQ2c: What are the major constraints limiting this type of external collaboration?

In addition, differences between demographic characteristics (e.g., participants' age group, production level of the brewery) and benefits/challenges to collaboration are explored.

By addressing the questions above, the study makes several contributions. First, the study will provide new and useful knowledge to benefit various industry stakeholders, particularly craft brewers, their industry associations, and, ultimately, consumers. Moreover, in line with Miles et al. (2006), learning about collaboration within the craft brewing industry, or between this industry and external businesses could identify potentially generalizable benefits, for instance, solving problems, or addressing opportunities, namely, in terms of new product development.

Similarly, generating new knowledge could also assist industry, government, and chambers of commerce stakeholders in their efforts to support the development of a sustainable craft brewing industry. Various socioeconomic implications are related to these outcomes, including business and community development, for instance, through the establishment of craft breweries and potential employment.

The study also makes a theoretical contribution, by adopting various elements associated with the theory of collaboration (Wood and Gray, 1991). Despite its potential, to date, this theory has not been significantly tested or even considered to study collaboration among SMEs; such knowledge gap also includes research focusing on micro and small craft brewing firms. The inclusion of this theory has however merit, in that it could help facilitate a deeper reflection and understanding of collaborative relationships among entrepreneurs of the above businesses.

Literature Review

Collaboration and theoretical development

The strong focus of the present study on collaboration, and the relevance that the different outcomes of collaboration may have for businesses, whether significant or marginal (Bougrain and Haudeville, 2002; Chan et al., 2012; Ciasullo and Troisi, 2013; Nieto and Santamaría, 2010) justifies the adoption of the theory of collaboration.

Researchers and academics have sought to develop this theory, with the work of Wood and Gray (1991) representing one of the pioneering efforts. These authors make a strong point by implying the critical value of definitions for building theory. Accordingly, they provide a comprehensive revised definition of collaboration, extending from earlier work by Gray (1989). The definition postulates that collaboration takes place "when a group of autonomous stakeholders of a problem domain engage in an interactive process" (p. 146). This process is illustrated when the group of stakeholders use norms, structures, and shared rules to decide or act on issues associated with the problem domain (Wood and Gray, 1991). The definition is then broken down into the following elements:

Stakeholders of a problem domain: This element underlines that organisations or groups have a vested interest in a problem domain. At the beginning of collaboration, and as would be expected, stakeholders have interests that are common or different; these interests then become redefined or changed as collaboration continues (Wood and Gray, 1991). Research on supply chain collaboration (Holweg et al., 2005) aligns with 'stakeholder of a problem domain', in that collaboration can create a visible, transparent demand pattern, helping pace the whole supply chain system.

Autonomy is a critical element, because, even when stakeholders may agree to accept shared rules within their collaborative relationship, they still maintain "their independent decision-making powers" (Wood and Gray, 1991, p. 148). This notion is demonstrated in a study among directors of organisations operating in a national service program (Thompson et al., 2008). In this case, the authors revealed that autonomy was positively related to perceived growth in partner interactions, suggesting the links between collaboration outcomes and autonomy.

Interactive process: Wood and Gray (1991) refer to this element to emphasise "that a change-oriented relationship of some duration exists" (p. 148), and the fact "that all participant stakeholders are involved in that relationship" (p. 148). Interactive processes in collaboration can also be understood as the creation of structures allowing participants to make choices concerning ways to resolve problems faced collectively (Thompson et al., 2009).

Shared norms, rules, and structures. Fundamentally, those stakeholders participating in collaboration must explicitly be in agreement with norms and rules governing interactive processes (Wood and Gray, 1991). In other words, partners seeking collaboration should understand how to make decisions together concerning rules that manage their relationships and behaviour (Thompson and Perry, 2006). Partners must also create structures that lead to reaching agreement on collaborative goals and activities "through shared power arrangements" (Thompson and Perry, 2006, p. 24).

Action or decision: These two elements are needed during collaborative processes, particularly as they aim at specific objectives (Wood and Gray, 1991). Moreover, collaboration communicates the notion of sharing, and suggests collective action "oriented toward a common goal, in a spirit of harmony and trust…" (D'Amour et al., 2005, p. 116). Furthermore, collaboration exists as long as the participating stakeholders engage in processes that might result in decision or action (Wood and Gray, 1991).

Domain orientation: Collaborating participants or stakeholders should orient their actions, decisions, and processes toward matters associated with the problem domain that originally "brought them together" (Wood and Gray 1991, p. 148).

Outcomes: Collaboration may be directed to end in specific outcomes (Wood and Gray, 1991). These outcomes could also be in the form of mutual benefits, such as by sharing costs/risks, or through increased scope and scale of activities, or the ability to respond to complexity (Dodgson, 1994).

Finally, Gadja (2004), who adopts collaboration theory to assess strategic alliances, recognises the usefulness of the theory, helping "demystify meanings of collaboration" (p. 66), assess and describe various "levels of collaborative integration, and… engage stakeholders in a dialogical process…" (p. 66). According to Gadja (2004) collaboration develops in various stages, is an imperative, and a journey rather than a destination, with the personal aspect being "as important as the procedural" (p. 76).

Operationalisation of the theory of collaboration

Despite its potential usefulness, the operationalisation or application of the theory of collaboration in the context of SME research has also been very limited. Among the few studies published to date, Duarte Alonso and Bressan (2014) adopted the theory when they investigated the extent to which micro Terracotta artisan businesses in Impruneta, Italy, collaborate. Despite the unfavourable economic downturn, with severe negative impacts on their industry, very limited collaboration existed among participants. The authors identified two opposite groups perceiving collaboration very differently. On one hand, collaboration within their industry was revealed, in that a small group of artisans formed an association. These participants appeared to be benefiting from working together, joining forces and resources to participate at events or joint projects (Duarte Alonso and Bressan, 2014).

On the other hand, there were views that individualism, the absence of a culture of collaboration, and that some artisans were altering traditional production methods were hampering collaborative efforts (Duarte Alonso and Bressan, 2014). The applicability of the theory was evident in this research. Indeed, stakeholders of a problem domain, autonomy, interactive process, shared rules, action or decision, and domain orientation aligned with those entrepreneurs committed to collaborating (Duarte Alonso and Bressan, 2014).

A subsequent investigation (Duarte Alonso, 2015) used a similar approach when examining the extent to which micro cheese producers in an ultra-peripheral Spanish province collaborated. Along the lines of research by Duarte Alonso and Bressan (2015), the perceived importance of collaboration was manifested in participants' comments; however, many participants also acknowledged collaborating very marginally. As a result, one of the fundamental implications drawn from the study related to the potential impacts on quality and supply issues for the local cheese industry. Moreover, lack of or weak collaboration was suggested to have negative impacts, including on the further development of the sector through innovative initiatives conducive to the future marketing and promotion of local cheeses (Duarte Alonso, 2015).

The emerging craft brewing industry

Commercial craft brewing is now a global phenomenon (Verive, 2015). Several reports and academic studies completed in the last few years highlight the growth of the industry, for instance, in the United States (e.g., Baginski and Bell, 2011; Gnauck et al., 2014; McLaughlin et al., 2014; Reid et al., 2014). Reflecting the growth taking place in the United States,

Australia's craft brewing industry has experienced remarkable development. Indeed, while consumption of mainstream beer brands has decreased, the craft beer industry has expanded rapidly, an event which is illustrated in the number of craft breweries currently operating nationwide, approximately 200 (AEGIC, 2015).

Despite the industry's remarkable progress, very little academic research exists on craft brewers (Watne and Hakala, 2011), including investigations on the ownership or entrepreneurship side, particularly outside the United States. Only recently have researchers began to examine craft brewing elsewhere in the world. For example, Danson et al., (2015) explored micro or craft breweries in the UK, and emphasised operators' involvement in innovation, growth, and creativity. At the same time, they argue that "microbrewing continues to be underresearched" (p. 142).

The study by McGrath and O'Toole (2015) is also significant to the present research. These authors' investigation showcased interviews with micro-breweries in both the Republic of Ireland and Northern Ireland to learn about enablers and inhibitors of network development capabilities, and noticed the complexity of developing such capabilities. For example, while information sharing or past network experience were important enablers, lack of joint problem solving and knowledge sharing, and "a desire for control over decision making" (McGrath and O'Toole, 2015, p. 1141) were main inhibitors. In terms of past network history, respondents acknowledged the importance of this experience in enabling them to identify benefits and opportunities through collaboration (McGrath and O'Toole, 2015). One of the implications identified by the authors related to the need for policy makers to "address network inhibitors" (p. 1151), thus, helping encourage collaboration or co-opetition as strategic business alternatives.

The present exploratory study seeks to extend the scope of the existing academic literature, examining collaboration among predominantly micro and small Australian craft brewery operators. The study also seeks to make a theoretical contribution, adopting various elements related to the theory of collaboration in the context of this emerging industry.

Methods

This exploratory study is fundamentally concerned with the extent to which micro and small craft brewery operators are involved in collaboration with other brewers, as well as with businesses other than breweries (e.g., hotels, restaurants). Furthermore, as opposed to most existing craft brewery entrepreneurship research, which predominantly investigates United States or United Kingdom breweries, this study focuses on Australian craft brewery operators.

At the initial stages of the study, the knowledge of one of the researchers allowed for the establishment of contacts with a regional craft brewers' association located in the researchers' state. During one of the association's meetings at one brew-pub in March of 2015, the research team met with 20 craft brewers and members of the association. The meeting provided an opportunity to hear and gather comments from the different members with regard to entrepreneurial aspects of their industry. These aspects ranged from promotional ideas and efforts, quality issues, to networking and collaboration, including in terms of participating at events. The themes discussed during the two-hour meeting also assisted in the process of generating ideas, and subsequently in the preliminary compilation of a questionnaire to be disseminated among craft brewers nationwide.

Apart from the opportunity the meeting provided to develop knowledge and content for the questionnaire, consideration was given to other sources of information, including academic studies discussing collaboration, both within and outside firms (e.g., Howard et al., 2015; Stank et al., 2001), as well as research considering various elements of the theory of collaboration to study entrepreneurs (e.g., Duarte Alonso and Bressan, 2014). One section of

the questionnaire gathered demographic data from potential respondents (e.g., age, gender, and professional background of participants). A second section sought to elicit responses regarding the extent of, benefits derived from, and challenges to collaboration with other brewers. A third section investigated the same areas with regard to collaboration with businesses other than craft breweries or external to this industry (e.g., restaurants).

Despite the limitations in using online questionnaires, such as low response rates (e.g., Dykema et al., 2013; Jin, 2011; Petchenik and Watermolen, 2011; Sexton et al., 2011), this data collection tool was considered the most appropriate in light of various constraints faced by the research team. One constraint was the significant geographic distance to travel to different states to meet and interview craft brewers, while another was the time differences between Australian states, and a third the costs involved in conducting interviews via telephone.

An initial search conducted during March 2015 in the Craft Beer Industry Association (CBIA) website identified 110 craft brewery members. Over the following weeks, all these members were contacted by individual email messages. The message sent to the businesses presented the objectives of the research and encouraged members to participate by following a URL link to the online questionnaire provided in the body of the message. The link was left active between April and June of 2015; a total of three reminders were sent during this time. As many as 59 breweries participated; however, two questionnaires were left incomplete and deemed unusable. Thus, in all, 57 usable responses were obtained, 51.8 percent response rate. This percentage is well above that of other studies using online questionnaires; however, given the fact that 48.2 percent of the association members did not participate, the results must be treated with caution.

The numerical data were exported into SPSS. Some statistical tests, including independent samples t-test, or one-way ANOVA (Scheffé post hoc) were used to identify statistically significant differences based on demographic characteristics, for instance, based on ownership status (owner, non-owner), or age group. The qualitative data provided in the form of verbatim comments or responses to open-ended questions were analysed using content analysis (Krippendorff, 2004). To manage these qualitative data, NVivo version 10.0 was used. Participants' verbatim comments provided in the following sections will be abbreviated as follows: Participant 1: P1, Participant 2: P2, and so forth.

Demographic characteristics

At the time of the study, 93 percent of participants either fulfilled ownership, brew master, or both roles (Table 1), and slightly over 50 percent had brewed commercially for five years or less. The fact that nearly 75 percent of participants had brewed commercially for less than a decade, and that 70 percent of them were at most 45 years old suggests the recent development of their industry. An almost equal percentage was identified between those who sold craft beer within their state and nationwide; only nine breweries were exporting at the time of the study. Over 50 percent of the participating breweries produced less than 100,000 litres of craft beer, and 56 (98.1%) produced less than 10 million litres of craft beer annually.

According to the CBIA (2017), a craft brewer in Australia produces less than 40 million litres of beer yearly; thus, overall, participants can be categorised as craft brewers. Further, the large majority of the participating businesses (49, 85.9%) employed fewer than 20 people. Of these breweries, 61.3 percent employed less than five individuals. Thus, the large majority of participating firms are small and micro in size, respectively, according to Australian Bureau of Statistics' (2001) definitions. Finally, there was a strong predominance of male craft brewery owners/brew masters, and over 70 percent of participants were concentrated in three states.

Table 1 Here

Results

RQ1a, RQ1b, RQ1c: Collaboration within other brewers: benefits and challenges

Asked the extent to which they collaborated with other brewers, it became evident that most participants were engaged in collaborative relationships. For example, 44 (77.2%) were collaborating with one to five other breweries, and eight (14%) with six to ten; in contrast, only five participants (8.8%) acknowledged not collaborating with other breweries. As many as eight scaled items were designed to measure participants' perceived benefits from collaborating within their industry (Table 2). Respondents were asked to indicate their agreement with regard to the items, where 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5= strongly agree. A reliability test identified a Cronbach's Alpha of .791.

Five of the eight items were near the level of agreement (mean=4.00). Perceptions of quality improvements appeared to be the main benefit, closely followed by increased basic knowledge of recipes or equipment, and increased strategic knowledge of what other members of the industry were doing elsewhere in Australia. At the other end, despite its more modest mean, increasing the number of styles of one's beer selection was perceived somewhat as significant. Space provided in this section collected additional comments identifying benefits: *"Simple logistics"* (P1), *"Contracting brewing for others"* (P2), *"Market intelligence- who is doing what; what is working, what is not, who to steer clear of"* (P3).

Table 2 Here

Several statistically significant differences were identified (Table 2). Using independent samples t-test, it was found that participating craft brewery owners were more in agreement than non-owners regarding the benefit of increasing the number of styles of beer selection through collaboration ($p=0.050$). One plausible explanation for this result is that, given their status as the main stakeholders of the business, owners may have a stronger and more genuine interest to diversify their product offerings. Moreover, new craft beer profiles acquired or developed through collaboration may help operators gain more market share, find new market segments, or their products become more appealing to new consumer segments.

Participants whose craft brewery produced 100,000 litres or more indicated a higher level of agreement than those producing less than 100,000 litres concerning *'Gaining strategic knowledge of what brewers do internationally'* ($p<0.020$). In this case, with more production, participants may be interested to learn about trends emerging internationally in order to be or remain competitive domestically, and potentially consider exports of their craft beer. A more expected outcome was identified regarding the higher level of agreement of those participants who used different avenues (e.g., state, nation-wide) to sell their craft beer as compared to those who only sold their craft beer at their retail venue ($p<0.01$). Moreover, selling craft beer in various consumer environments may help learn the expectations of their intermediary buyers, who may also seek to address the expectations and demands of a variety of end consumers, as opposed to selling craft beer using only one retail venue.

Using Scheffé post hoc, it was noticed that participants aged 35 years or below agreed more than those aged 46 years and above with '*Gaining basic knowledge of recipes/new equipment/tools'* through collaboration. Possibly, the younger respondents are developing their craft-brewing skills and extending their knowledge, as opposed to the more mature participants, who may have already accumulated both knowledge and experience throughout

the years. Similarly, participants aged 35 years and below clearly agreed more than those aged 46 and above with 'L*earning more by making beers with other brewers'*. A similar argument could be made, in that the younger participants are building their repertoire of practical skills, and therefore may be more interested than the more mature participants in practicing their craft with other brewers.

A list of scaled items was also provided to identify the most significant challenges in building collaborative relationships within participants' industry (Table 3). Running a reliability test resulted in a Cronbach's Alpha of .70. While below the level of agreement (mean=3.58), lack of time appears to be participants' most significant hurdle, followed by geographic isolation/distance to other collaborators (Table 3). The factor of limited time was raised by McGrath and O'Toole (2013) when they discussed networking among micro craft brewers in both Northern Ireland and the Republic of Ireland. Regarding geographic isolation, research on corporate innovation projects (Nilsson and Mattes, 2015) found that spatial proximity was a key factor in establishing collaborative relationships, as well as 'resilient trust.'

In contrast, the perception that collaboration did not benefit them, fear of sharing information through collaboration, or the preference of being in control of their brewing, rather than disclosing information to others, were areas participants disagreed more. Again, several statistically significant differences were noticed (Table 3). For example, non-craft brewery owners agreed more than owners with lack of time being a limitation in building collaborative relationships ($p<0.020$). One explanation for this finding is that, as the key stakeholders of the business, owners might have a more vested interest, and therefore be more prone to make time investments to build collaborative relationships.

Table 3 Here

Finally, participants who did not export their craft beers agreed more than those who did export their products with geographic isolation/distance being a limitation to collaborating with other craft brewers ($p<0.030$). This result suggests that those who are already selling their products beyond their state borders have found alternative ways to overcome the issues posed by geographic isolation/distance.

RQ2a, RQ2b, RQ2c: Extent of external collaboration: benefits and challenges

In this section, a decision was made to allow participants to indicate their responses in an open-ended format, as opposed to providing a list of scaled items. This decision was partly justified by the exploratory nature of the study, which attempted to gather new information from this emerging industry regarding collaboration outside their industry. Table 4 illustrates that, predominantly, collaborative relationships were developed with businesses outside the craft brewing industry, such as hospitality businesses (e.g., bars, pubs and restaurants). Extended comments also confirmed that, to a great extent, collaborative relationships took different forms:

> P4: *Setting up events where both parties benefit. Collaborate with [university name] and invite brewers studying to attend brew days.*
> P5: *I have a lot of friends who are chefs, bartenders, restaurant owners and pub owners.*
> P6: *Large pubs, occasionally venues, occasionally event organisers.*
> P7: *Local social group (beer enthusiasts, home brewers).*

Table 4 Here

Sales and marketing opportunities represented the predominant perceived benefits (Table 5) among participants. However, knowledge gathering and sharing about the craft brewing industry, or increasing awareness of craft brewing, for instance, in the eyes of consumers, also appeared to be significant. Other benefits, such as strengthening ties, continued exposure, or the promotion of the local area or region complemented perceived financial gains (sales). Some extended comments further illustrated a variety of perceived benefits, particularly intangible:

> P8: *Become a better brewer, [collaboration] promotes our brand/name with another community, strengthens our own community.*
> P9: *Educated (potential) consumers about differences between craft and non-craft beer; raised profile of our brewery locally.*
> P10: *Going through the licensing process is much clearer if you can get inside information.*
> P11: *Greater distribution, knowledge gathering, social/conventional media fodder.*

Table 5 Here

Similar to the results concerning collaboration with other craft brewers, participants also indicated lack of time as the fundamental barrier to collaborating with other businesses (22, 38.6%), followed by geographic isolation/distance between them and other craft brewers/breweries (9, 15.8%). Extended verbatim comments also expressed concern regarding the value of having collaborative relationships:

> P12: *"usually one way and not in our favour. Greedy… time thieves usually; wanting us to help them build their dream. Not a fan."*
> P13: *"Whether it will be a pro or con for the business, few people still have invested interests when it comes down to it."*
> P14: *"Time restraints and the [perceived] benefit of doing certain collaborations."*

Discussion

Associations between the findings and various elements of the theory of collaboration (Wood and Gray, 1991) were identified, illustrating the soundness of employing these tenets to study collaboration among micro and small firms in the craft brewing industry. The associations, which are conceptualised in the proposed framework (Figure 1) represent an important theoretical contribution of the present study. Together, both the associations and the framework address a theoretical gap, in that very limited research has considered the theory to examine collaboration among SMEs, including SMEs in an emerging industry.

Fundamentally, craft brewing is still an emerging industry; this developmental process underlines the applicability of the element of *stakeholders of a problem domain* (Wood and Gray, 1991). In turn, this element is arguably associated with the future sustainable development of commercial craft brewing, which affects- and has various implications for- craft brewers. Moreover, it can be inferred that, as stakeholders directly related to the 'problem domain', craft brewery operators view collaboration as a key element in moving forward. This notion is also based on evidence underscoring a seemingly consistent level of collaboration with other craft brewers (Table 2). As collaboration progresses, and the industry

continues to evolve, participants' interests broaden or intensify with particular groups, businesses, or industries.

Figure 1 Here

This last point was also noted in various verbatim comments, where participants acknowledged being actively involved, for instance, with social groups, or educational institutions, well beyond other, more expected collaborative relationships (i.e. with the hospitality/restaurant industry). This aspect also has links to *action or decision, outcomes, and interactive process*. Under *action or decision*, collaboration appears be conducive to such benefits as knowledge gathering and sharing, learning about changes and new trends. Thus, the action or decision to act upon common initiatives relate to the perceived benefits. In turn, these benefits represent tangible as well as intangible *outcomes* that might have significant impacts on the future of participants' business and/or industry. Moreover, without collaboration, such outcomes may not be feasible. Further, in order to achieve benefits or outcomes, participants must engage in 'change-oriented relationships,' which Wood and Gray (1991) associate with the element of *interactive process*. These relationships may demand investments, particularly in terms of time, or ways of overcoming the tyranny of distance.

The potential benefits reflected in the findings are also based upon the execution of strategies and initiatives participants and their collaborators may mutually have agreed upon. Thus, the element of *shared norms, rules and structures* also emerges as significant, as collaboration requires abiding by these principles. Several comments suggested the need to follow such principles, particularly in addressing changes, in strengthening ties with different bodies, or in achieving higher quality and sales. In contrast, some comments (P12-P15) identified the lack of reciprocity in collaborative relationships, or questioned their value. These comments refer to a lack of sharing norms, rules or codes of conduct among some craft brewers.

Autonomy is also evident in the context of the study. For instance, while craft brewery operators may agree to collaborate in order to attain various objectives, including higher craft beer quality, increased knowledge, or marketing/sales, they would retain decision-maker powers in regards to their business. The aspects of autonomy and individualism could have strong impacts in some industries, as Duarte Alonso and Bressan (2014) found among Italian Terracotta artisans, some of whom did not engage in collaboration due to their individualistic behaviour. Similarly, craft brewers are known to have individualistic or distinctive approaches to relating with their consumers (Wittmeyer et al., 2011).

Finally, *domain orientation* is interpreted in the context of the natural progression taking place in participants' collaborative relationships with other groups, individuals, or bodies. For instance, an argument could be made that, originally, the problem domain, brought various stakeholders together to collaborate to achieve quality improvements, share information, or learn about changes or trends in their industry. Therefore, it could be inferred that the 'problem domain' (craft brewing), which brought participants and other groups together, would continue to influence or dictate their decisions, actions, or processes (Wood and Gray, 1991).

Conclusions

The body of academic literature on collaboration is very rich (Thomson et al., 2007). While some authors identify challenges to collaboration, as well as marginal or unpredictable outcomes (Duarte Alonso and Bressan, 2014; Miles et al., 2006), many others have highlighted the numerous benefits that can be achieved through collaborative relationships

(e.g., Nieto and Santamaría, 2010; Parida et al., 2012; Robson and Benett, 2001). Despite a substantial number of publications on collaboration, there are still many knowledge gaps, including limited research on collaboration within emerging industries, such as craft brewing. In this regard, Thomson et al. (2007) posit that the literature on collaboration "lacks coherence across disciplines" (p. 23). Thus, there is a need for new and timely information that could benefit various key stakeholders of this industry, particularly craft brewing operators, their associations and end consumers.

In addition, while the use of various elements associated with the theory of collaboration could provide a scope for understanding collaborative relationships, few researchers have employed these elements to examine entrepreneurs, particularly small and micro business entrepreneurs. The present study makes a contribution in both domains, first, exploring collaboration within the Australian craft brewing industry, and second, by adopting different elements of the theory of collaboration to examine mainly micro and small entrepreneurs.

Overall, collaboration was identified as very important among participants. In particular, quality improvements, increasing knowledge of craft beer recipes and equipment, or strategic knowledge of the industry were acknowledged benefits. At the same time, various statistically significant differences were identified. For instance, participants whose breweries produced more than 100,000 litres agreed more with gaining strategic knowledge about what other craft brewers were doing on an international scale. Regarding collaborations with other businesses, participants identified sales and marketing opportunities as the main benefits. In contrast, lack of time and geographic isolation/distance were perceived as the main barriers to collaboration. Several comments also identified the downside of collaboration, for instance, through opportunistic behaviour by others.

The usefulness of the elements related to the theory of collaboration (Wood and Gray, 1991), in allowing for a more rigorous and in-depth reflection of collaboration in the context of micro and small firms operating in an emerging industry, became evident. Such usefulness at the same time underscores the merit and value of considering those elements, as well as their potential adoption in future studies exploring collaboration among micro/small firms. Overall, in assessing the elements associated with collaboration, a fit in the context of the findings was observed. One illustration is that of *stakeholders of a problem domain*, in that craft brewing entrepreneurs represent a group involved in an emerging and developing industry. Consequently, their actions are suggested to have a direct impact on the 'problem domain', namely, in influencing the present and future of their industry.

Implications

From a practical perspective, both the studied ways of collaboration have direct implications for quality control, and potentially, for the delivery of a high-quality, consistent end product, which has impacts for added value, and for breweries' competitive advantage. This notion is supported by participants' level of agreement with regard to gaining basic and strategic knowledge, learning what other brewers do, and, to a lesser extent, with regard to the significance of collaborative relationships, particularly domestically. Together, these components of collaboration with other craft brewers help update knowledge, identify trends, and build resilience to respond to new demands and challenges. At the same time, collaboration with other businesses outside the craft brewing industry transforms knowledge into practical outcomes. Moreover, apart from financial gains (sales), collaboration also represents a key vehicle 'connecting' craft breweries and end consumers; consequently, collaboration can contribute to addressing these stakeholders' needs and wants more consistently and continuously. According to Johnson and Filippini (2009), firms that are

involved in collaboration within (departmental) and outside (suppliers, customers) are very well equipped for success.

Despite participants' perceived importance of collaboration, lack of time and geographic isolation appear to be limiting collaborative capabilities, with potential implications for the future of the craft brewery industry. The practical nature of the industry, including trial and error experimenting new craft beer styles, may also consider 'virtual' collaboration through internet or telephone technologies. Further, local events and gatherings, especially near larger (urban/sub-urban) centres, where craft breweries abound, might, if only partly, minimise the identified limitations.

From a theoretical perspective, the adoption of various elements associated with the theory of collaboration have important implications in informing research, including in the craft brewing or other emerging industries, particularly in cases where the 'problem domain' may still be in its initial stages. For instance, the aspect of increased knowledge through collaborations with other brewers illustrates alignment with the element of *shared norms, rules and structures*. By agreeing to abide by these rules, collaboration can help build the foundation of rigorous processes helping craft brewery operators and their industry to gain in quality, appeal and exposure (brand image), and increase knowledge among consumers, with clear socioeconomic implications. The findings are also aligned with the elements of *action or decision*, *outcomes*, and *interactive process*. The last element represents 'change-oriented relationships,' which suggests that collaborative efforts are operationalized by gathering new knowledge and improving processes and end products. Further, *action or decision,* and *outcomes* indicate the importance of executing initiatives that may have an impact on the 'problem domain' (Wood and Gray, 1991).

Limitations and Future Research

Several limitations are recognised in the present research; these limitations could be addressed in future research. First, 57 craft brewery operators participated in the study; while this number represents over half of the contacted businesses, it is nevertheless modest. Furthermore, the contact details of the participating craft breweries were gathered from the CBIA's website, which, to the date of the study, identified as many as 110 members. However, according to other sources (e.g., AEGIC, 2015), at the time of the study there were some 200 operating craft breweries throughout Australia, both members and non-members of the CBIA. Future studies could attempt to identify and contact these and other additional brewers that may have started operating since the study was conducted. Second, the study only focuses on Australia's craft brewery industry; because of this limitation, the findings do not allow for comparisons with other countries. Thus, future research could expand the scope of the present study to include other countries, not only to enrich the data, but also to allow for identifying patterns of collaboration, as well as making comparisons of benefits from- or challenges in- collaborating.

Similarly, future studies could explore the craft brewing industry in other countries, for instance, in Brazil, Mexico, or Russia, where this industry is also experiencing remarkable growth. Gathering the perceptions of entrepreneurs in different environments could contribute to a broader knowledge of craft brewing, which would better inform the industry, business development agencies, academics, and end consumers worldwide. The massive internationalisation of the wine industry, including micro, small and medium wineries, provides a precedent for the craft brewing industry in terms of future potential. Finally, future investigations in commercial craft brewing could employ the elements associated with the theory of collaboration as a theoretical framework. This adoption could help enhance future

understanding of collaboration within emerging industries, as well as contribute to theory development.

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