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# **From Hobby to Business: Exploring Environmental Antecedents of Entrepreneurial Alertness using fsQCA**

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## **Abstract**

*Through a tailored survey targeting homebrewing communities in the United States, this research investigates environmental factors—feedback, collaboration offers, and awards received—triggering individuals who are not yet entrepreneurs to develop intentions of starting a business based on their hobby. The study specifically focuses on the role these factors play in influencing the three dimensions of entrepreneurial alertness phenomenon: scanning and search, association and connection, and evaluation and judgment. The results of a series of hierarchical regressions complemented by a fuzzy set qualitative comparative analysis (fsQCA) show that receiving positive feedback or collaboration offers from fellow hobbyists can stimulate individuals' entrepreneurial alertness.*

## ***Introduction***

Marketing and entrepreneurship were typically considered as two separate academic disciplines, until recent research has discovered their substantial linkages and overlaps (see Miles et al., 2015 for a review). The core of the relationship between entrepreneurship and marketing is found in value creation and value alignment within the markets (Schindehutte, Morris, and Kocak 2008; Morris, Schindehutte, and LaForge 2002), such as that new ventures, products and services are introduced, and the associated opportunities are utilized due to the combination of entrepreneurship and marketing activities. This interplay is also evident in the complementarity of entrepreneurial and market orientations in a firm (Ahmadi and O’Cass, 2016; Kocak and Abimbola, 2009). Notably, very entrepreneurial firms with a different organizational context than those that are more administrative tend to have a dissimilar perspective on marketing process and activities as such, including their size, market, speed, opportunities and uncertainty faced (Whalen et al., 2016). Interestingly, many of the marketing and management activities of such firms stem from the entrepreneurial essence and mindset (Cruz-Ros, Garzón, and Mas-Tur 2017). Our study contributes to the entrepreneurship literature from the perspective of entrepreneurial alertness development, by looking at what social and environmental triggers could make individuals more entrepreneurially alerts than others.

Entrepreneurship has been generating increasing interest from the research community as an important field of scholarly study with strong practical application worldwide (Kuratko 2005). Entrepreneurship is the process by which "opportunities to create future goods and services are discovered, evaluated, and exploited" (Shane and Venkataraman, 2000, p. 218). This process drives innovation and change, supports economic growth (Hernández-Perlines, Moreno-García, and Yáñez-Araque 2017; Pryor et al., 2016; Keyhani and Lévesque, 2016), enables marketing innovation (Cruz-Ros et al., 2017), enables the equilibration of supply and demand (Kirzner 1997), and transforms knowledge into products and services (Shane and

Venkataraman, 2000). In an effort to advance understanding of why some individuals are more entrepreneurial than others, a large number of new theoretical frameworks and approaches has been proposed (for example, Schlaegel and Koenig, 2014; Moroz and Hindle, 2012).

Scholars from different disciplines have been searching for specific individual factors that are unique to both active and prospective entrepreneurs, including cognition in the opportunity recognition process (Cuomo et al., 2017; Teng 2007; Zahra, Korrib, and Yuc 2005), emotional intelligence (Ahmetoglu, Leutner, and Chamorro-Premusic 2011), narcissism (Mathieu and St-Jean, 2013), and other personality traits (Leutner et al., 2014; Korunka et al., 2003). Although, cognitive entrepreneurship has developed into a significant area of research (Grégoire, Corbett, and McMullen 2011; Wright and Stigliani, 2013), it still suffers from the lack of comprehensive understanding of the interaction between the internal (the mind of the individual) and external (the environment) factors (Grégoire et al., 2011).

Past research has examined the role of entrepreneurial traits at managerial and firm levels that can engender growth and other marketing related outcomes. For example, Cruz-Ros and colleagues (2017) show how market and innovation orientation can foster competitive advantage, leading firms to a higher performance. Similarly, Hernández-Perlines and colleagues (2017) looked at how being entrepreneurially-oriented can boost firm's absorptive capacity and in turn help family businesses improve their performance. Under a dynamic capabilities perspective, sensing changes in the environment and being prepared to promptly react and adjust to them constitute a leads to a greater performance of the firm (Helfat and Peteraf, 2015).

Researchers, nevertheless, have yet to unravel what personal and environmental characteristics trigger individuals that are not yet entrepreneurs to act in an entrepreneurial way. Biraglia and Kadile (2017), Kim, Longest, and Lippmann (2015), and Cooper, Woo, and Dunkelberg (1989) for example, suggest how business start-up intentions could result from the

involvement in leisure activities (hobbies). This is particularly evident in an environment where individuals share common interests, communicate, work together and pursue those interests over time, creating value by bringing their ideas to life. A more detailed understanding of the value creation process pertaining to these hobby and consumption communities is vital, since these communities are often used as instruments that can help set new businesses off, introduce new products and services into the markets, as well as act as feedback mechanisms that aid in new product development (Hartmann, Wiertz, and Arnould 2015; Algesheimer et al., 2010).

Despite the fact that many studies have examined how consumers engage in value co-creation activity with companies, participate in various online communities and even interact with company representatives (Bayus 2010; Fuller et al., 2007; Berthon et al., 2007), there is a dearth of systematic understanding of specific motivational elements that trigger some of those individual consumers to shift from an amateur mode into a professional one, by starting their own business (Kibler 2013; Hoskisson et al., 2011; Ritsilä 1999). Hence, the question we put forward in this paper is the following: What makes individuals more inclined toward an entrepreneurial career starting from an amateur stage?

To address this gap in existing research, our study focuses on the construct of entrepreneurial alertness as one that involves judgment and movement toward an entrepreneurial action (McMullen and Shepherd, 2006, p.132), one that sets apart entrepreneurs from non-entrepreneurs (Dawson and Henley, 2013; Wright and Stigliani, 2013), and thus can advance understanding of prospective entrepreneurship. This research contributes to the entrepreneurship literature in a number of ways. The study investigates the external antecedents of each dimension of the entrepreneurial alertness construct, responding to the call from Tang, Kacmar, and Busenitz (2012) for more research on this phenomenon and the call from Parente et al. (2018) for research focused on external antecedents of entrepreneurial behaviors, as well as applies a holistic perspective of mind-environment-action suggested by Grégoire and

colleagues (2011). Specifically, the study examines how receiving constructive feedback, awards, and collaboration offers in relation to an individual's hobby activity influences the development of entrepreneurial alertness.

In addition, the paper makes a contribution by testing the effect of these external factors in the non-entrepreneurial context of homebrewing communities, that is, individuals producing beer at home as a hobby. The aims of applying this approach are twofold. First, entrepreneurial alertness is especially relatable to non-business contexts since entrepreneurial opportunities are domain and/or industry specific in most cases, and the industry-specific complex knowledge foundations facilitating their recognition must be understood in depth (Turner and Gianiodis, 2018). Second, the exploration of this context is in line with investigations of the phenomenon of creative industries and craft activities that comprise a wide range of sectors, including arts, crafts, design, and cultural heritage, among others (DCMS 2013). Moreover, this context has demonstrated a high potential for business start-up development due to the increasing number of new small brewing businesses in North America run by entrepreneurs who were previously homebrewers (Carroll and Swaminathan, 2000; McGrath, O'Toole, and Canning, 2019). The United Nations (UN 2010) has highlighted the impact of creative industries in job creation and innovation, suggesting that these industries stimulate economic diversification, and produce economic and employment benefits in related services and manufacturing sectors. However, entrepreneurship in creative industries is still underresearched (Chen, Chang, and Lo 2015; Chaston and Sadler-Smith, 2012).

The expansion of the craft brewery segment has exploded in the last few years, generating consistent flows of money (American Brewing Association 2019). For instance, the United States (US) market alone includes 7,347 active craft breweries, worth 27.6 billion dollars in 2018, with an estimated 500,000 people employed in this sector (American Brewing Association 2019). Homebrewers are likely to start their activity as a hobby, sometimes as one

carried out with friends or during college years. Furthermore, they might get in contact with local homebrewing clubs and a wider network on the Internet, where not only passionate individuals but also actual professional brewers provide advice and exchange recipes, forming a real social movement around their activities (Carroll and Swaminathan, 2000; Rodgers and Taves, 2017). Thus, even if these individuals are not yet entrepreneurs, they may still experience a higher level of entrepreneurial alertness due to their exposition to munificent community environments.

In what follows, the paper defines key concepts and briefly reviews work on entrepreneurial alertness and factors that can lead individuals to be more alert to business opportunities. In this study we look at three specific antecedents of alertness, namely the feedback about the activity an individual receives, if this individual receives any awards for such activity and the eventual collaboration offers (for example, cooperating on a project) that are proposed by others. We first test propositions through a series of hierarchical linear regressions. Next, the paper outlines some limitations of the correlational method and highlights the need for an alternative analytical technique. Then, we discuss the application of complexity theory in this study. Subsequently, we apply a fuzzy set qualitative comparative analysis (fsQCA, Ragin 2000, 2008) to achieve a holistic overview of the interrelationships examined (Ordanini, Parasuraman, and Rubera 2014); fsQCA is a methodology used in various fields such as consumer behavior, services, sales, and entrepreneurship (e.g., Gast et al., 2018; Covin et al. 2016; Kraus et al. 2016; Mas-Verdú, Ribeiro-Soriano, and Roig-Tierno, 2015), providing the opportunity to achieve a deeper understanding of the findings (Leischnig and Kasper-Brauer, 2015; Woodside 2014; Wu, Yeh, and Woodside 2014). This study applies fsQCA in line with an ongoing rise of the method use due to its advantages (Kraus, Ribeiro-Soriano, and Schüssler, 2018), and a call from Woodside (2013) to use alternative methodologies in data analysis. We implement the proposed mechanism within the frame of complexity theory,

examining complex configurations of antecedents to gain a deeper understanding of the possible outcome (Woodside 2014). Finally, the study discusses the findings and their implications, along with future research recommendations.

### ***Theory and Hypotheses***

Entrepreneurial alertness can originate from the cognitive capacities of individuals, such as high levels of intelligence and creativity (McCaffrey 2014; Shane 2000), and various personality factors (Uy et al., 2015). According to Kirzner (1979), the process of being alert to entrepreneurial activities does not necessarily imply that individuals are analytically and rationally scanning their environment in search of opportunities. Alertness plays an active role in sensing the existence of opportunities for firm's development and growth (Helfat and Peteraf, 2015; Kontinen and Ojala, 2011). This way, alertness contributes in the development of dynamic capabilities that a firm can use to adapt to change, for example by identifying and establishing new business relationships, by moving into a new market, or by rethinking a broader business environment (Lans, Verstegen, and Mulder, 2011).

Although the search and interpretation of environmental information cues is undoubtedly central to the entrepreneurship process (Smith, Mitchell, and Mitchell 2009; Westhead, Ucbasaran, and Wright 2009), research into these factors has yet to uncover and strengthen the position of the environmental incentives behind entrepreneurial alertness formation (Minniti 2004; Busenitz 1996). In fact, entrepreneurs exhibit more alertness by spending their non-business time "searching" for opportunities and ideas (Kaish and Gilad, 1991), instead of systematically conducting market research. Different factors, such as cognitive schemas (Gaglio and Katz, 2001), the nature of the opportunities involved (Shane 2004), and the availability of information in the environment (Stewart, May, and Kalia, 2008), can influence the degree of effort individuals put into scanning, connecting, and evaluating new information.

Specifically, Tang (2008) acknowledges that in an environment rich in resources, people recognize opportunities more through a discovery process than through effortful research. Such discovery process is facilitated by various information cues that entrepreneurs are exposed to in the environment. Kirzner (1979) and Tang (2008) associate these munificent environments with different types of societies or regional clusters. Thus, particular societies and social groups foster individuals to be more alert to opportunities than others. In addition, munificent environments can provide also stronger economic structure and an easier access to credit to trigger individuals to start entrepreneurial activities (Collins and Reutzler, 2017). While being more alert and creative, compared to managers and employees, entrepreneurs do not simply discover or notice opportunities, but also possess an ability to connect specific information cues in a manner that could result in the creation of new business (Ma and Huang, 2016; McCaffrey 2014).

Using the individual factors and the social environment in which people act and interact as triggering factors, Tang, Kacmar, and Busenitz (2012) divide the alertness process into three different dimensions. First, the *scanning and search dimension* represents the activity whereby individuals collect information to expand their knowledge. This activity results in building a domain-relevant array of information. Next is the *association and connection dimension*, according to which individuals eventually link new information with seemingly unrelated domains to generate a new idea. This dimension focuses particularly on the application and extension of information in relation to the domain of interest. The process of interpreting information gathered from the first stage helps individuals make certain connections and modify their existing viewpoints. Last, within the *evaluation and judgment dimension*, individuals evaluate whether the new information gathered and associated with the existing information fits their cognitive framework, assessing the content of the new information as a business opportunity (Tang, Kacmar, and Busenitz 2012). Thus, entrepreneurially alert people

possess more complex mental schemas in relation to change, their work, and social environments than non-alert persons, because the way they process and interpret acquired information is different to those who are not entrepreneurially alert (Yu 2001). In summary, as a consequence of those complex and adaptive mental schemas, entrepreneurially alert individuals are able to engage in more lateral thinking, as opposed to persons lower in alertness (Baron 2004), and thus they recognize more opportunities. Therefore, alertness represents that important pre-actional phase of entrepreneurial behavior as it precedes the active steps towards in transforming an identified opportunity or developed idea into a business (Amato et al., 2017; Turner and Gianiodis, 2018).

### **Derivation of Hypotheses**

External factors, such as social networks, may trigger the alertness process, for instance, providing constructive feedback (henceforth ‘feedback’) concerning the eventual profitability and value of ideas, facilitating the process of scanning and search opportunities, as well as evaluating them (Cuomo et al., 2017; Valliere 2013). The feedback on an individual’s activity can act as an information source, creating signals for appropriate subsequent processes or behaviors (Goodman, Wood, and Hendrickx 2004), as receiving feedback usually facilitates an individual’s self-monitoring in relation to a specific task or objective. As such, individuals might engage in additional searches for feedback or activity-related information. Feedback, including being open to suggestions of others, is considered as a core element of the entrepreneurial competence (Lans et al., 2011), meaning that even for active entrepreneurs it can serve as an important precursor of entrepreneurial action. Feedback may either encourage people to pursue certain goals or discourage them, in turn leading them to explore alternative routes (Amato et al., 2017). Thus, receiving feedback is likely to lead individuals to associate and connect different bits of information. Finally, feedback is likely to strengthen an

individual's own perception of his or her capabilities and alertness for opportunities (Gatewood et al., 2002; Douglas and Shepherd, 2000; Gatewood, Shaver, and Gartner 1995), affecting the individual's evaluation and judgment. Based on the above:

**H1:** *Receiving constructive feedback positively affects entrepreneurial alertness dimensions.*

In addition to feedback, receiving awards has been proven to be an effective way to improve individual performance and to shape one's motivation to pursue new targets (Frey and Neckermann, 2008). Awards seem in fact to be ubiquitous in society (Jones et al., 2014), as they can be conferred by many institutions, such as education and research, arts and entertainment, and sports just to name a few. For example, many firms confer internal awards for their "employee of the month" and public bodies can award prizes for entrepreneurs that distinguish themselves in terms of innovation and productivity. In their investigation on nascent entrepreneurs, Michelsen, Wolf, and Schwartz (2013) show how individuals receiving an award early in their entrepreneurial career (or even for their start-up idea) have an easier understanding of the right path to undertake in the future and engage with more resources in the venture process.

Even if there is not a specific definition of what an award is, scholars tend to agree that they usually encompass four main components: 1) the publicity winners usually get from receiving the awards; 2) the presence of a number of official evaluation criteria; 3) a tournament character for all the contestants; and 4) the level of credibility/authority of the awarding body (Neckermann, Cueni, and Frey 2014). While not all awards comprise a monetary or tangible reward, they usually provide the recipient a sense of pride and satisfaction, sometimes triggering a "role model" image. In the case of homebrewing, these awards can comprise both tangible (for example, money or equipment) and intangible (general recognition) rewards. The

latter can even include further skills advancement opportunities, such as the possibility of experiencing a professional side of the leisure activity. For example, the American Homebrewers Association (AHA) awards an annual scholarship for a World Brewing Academy's Concise Course in Brewing Technology. Awards can, therefore, stimulate individuals to engage in activities that are more challenging in order to push their achievements even further. For example, individuals may reflect on the success received on their performance and embark in specific training programs to nurture their set of skill, or even signal their accomplishment in order to gain promotion or leverage their position within the company.

On a similar note, receiving recognition for a leisure activity (for instance, receiving an award in an amateur cooking competition or a first prize for the best homebrewed beer) may activate the alertness process. As a result, individuals who seek rewards by entering a competition and prove to be successful may develop a more extrinsic motivation to capitalize on their abilities (Haynie et al., 2010). Receiving awards for a hobby may therefore lead individuals to explore the meaning of those awards and their potential impact connecting and evaluating information on how to transform their hobby into a business. An award for a hobby activity could trigger more the processes of association and connection and evaluation and judgement seem here than the scanning and search process for eventual opportunities. The event of receiving an award in fact conveys important information per se, as it signals that the individual's performance is so good that it got awarded, and therefore does not require any additional information. Hence, we hypothesize that:

**H2:** *Receiving awards positively affects the association and connection, and evaluation and judgment dimensions of entrepreneurial alertness, but not the scanning and searching dimension.*

Gaglio and Winter (2009) also posit that strong social groups often provide individuals with a source of entrepreneurial opportunities, such as collaboration offers. Munificent geographical and social environments, such as that of the US and the craft brewing industry in particular, are rich in opportunities for collaboration, and can stimulate individuals to apply their alertness skills toward potential entrepreneurial career. Previously scholars have linked collaborations with opportunity recognition (Sadler-Smith et al., 2003), learning (Inkpen 1996), and creativity (Perry-Smith and Shalley, 2003) in organizational teams. Thus, receiving a collaboration offer can help individuals recognize existing opportunities or create new ones, thus engaging in the evaluation and judgement process of such opportunities, and express their creativity in a professional domain. Collaborators can also act as filtering agents when it comes to interactions, information sharing and screening to retain their most useful elements (Robson and Bennett, 2000). For instance, a hobbyist receives an offer to collaborate on activity together with a peer. In order to make a decision, an individual is likely to engage in the evaluation of related information and details. The presence of collaboration offers is thus likely to affect people in their hobby stage, inducing them to evaluate entrepreneurial opportunities and consider pursuing business venturing. Hence, this study hypothesizes that:

**H3:** *Receiving collaboration offers positively affects the evaluation and judgment dimension of entrepreneurial alertness.*

## ***Methods***

### **Data collection and participant profile**

The study recruited respondents using the AHA database, contacting homebrewers spread all over the US. Prior to the launch of the full-scale survey, the survey instrument was pre-tested with five academics with relevant research expertise in entrepreneurship to assess the face

validity and the appropriateness of the scales. Moreover, three senior members of the AHA provided their comments on the survey. The pre-test procedures resulted in minor adjustments to the layout and style of the questionnaire. Initially, the database generated a sample of 652 eligible homebrewers, and a series of letters, telephone calls, and electronic mails resulted in a total of 213 completed questionnaires (33% effective response rate). In line with the informant competence evaluation technique (Kumar, Stern, and Anderson 1993), the authors also evaluated the respondents on the basis of their direct involvement in brewing activities, sufficient knowledge to respond to the questions, and confidence in their responses. This evaluation technique led to the exclusion of eight non-usable questionnaires, resulting in 205 usable questionnaires for this study.

The authors checked for non-response bias following the procedures suggested by Armstrong and Overton (1977). These procedures encompassed the identification of potential reasons why the subjects refused to respond to the survey and a comparison of the responses provided by the first 10% and the last 10% of respondents on the study constructs. Furthermore, the authors tested the level of similarity between the study sample and data from a national survey carried out by the AHA (2017), identifying a great level of similarity concerning the key characteristics of the samples (over 70% match in terms of gender, age, experience level, and profession). Based on these three approaches, the results allowed us to conclude that non-response bias is not an issue for this study. In addition, the authors also checked for any difference in the responses of early and late respondents (the overall time frame for responding was three months) using an independent sample T-test to determine if the key construct means of the study differed significantly. The authors compared the responses of the first 25% and last 25% respondents on the study constructs. The results demonstrated no significant differences between the means of the key study constructs.

To address potential common method bias (CMB) in our study, we used a series of preventive techniques (Podsakoff et al., 2003). First, we clearly specified the purpose of the study, ensuring respondent anonymity, while encouraging their participation. Second, we used multi-item measures in various scale formats based on well-established scales that were carefully adapted to our research context (Chang, Van Witteloostuijn, and Eden 2010). Third, we grouped construct items under general topic sections in the questionnaire to prevent respondents from identifying items measuring specific constructs or guessing the predicted links between variables. Furthermore, we employed a marker variable test to empirically assess CMB (Lindell and Whitney, 2001) in a post-hoc manner. We used the second smallest correlation among the study constructs ( $r = 0.015$ ) as an estimate of the marker variable and calculated the resulting CMB-adjusted correlations (Malhotra, Kim, and Patil 2006; Lindell and Whitney, 2001). The outcomes of this procedure indicated no change in the pattern of correlations among study variables and their statistical significance. Thus, CMB does not appear to pose a major threat with regard to the validity of our study findings.

Most respondents (94 percent) were male, primarily due to the nature of the hobby, and were within an age group ranging from 25 to 55 years. Approximately 80 percent of respondents were in a relationship, either married or living with a partner, and only 5 percent were retired or unemployed. The major occupational categories included business and management, engineering and technical, education and science, and information technology (IT).

## **Measures**

To operationalize our constructs, we adopted measures established in the entrepreneurship literature where possible. In addition to that, we have also developed measurement instruments for antecedent variables due to the lack of suitable scales in the past literature. For a full list of measures please refer to Table 1.

[Insert Table 1 about here]

*Entrepreneurial Alertness.* The study measured entrepreneurial alertness via three distinct dimensions, following the approach developed by Tang, Kacmar, and Busenitz (2012). These dimensions include *scanning and search*, *association and connection*, and *evaluation and judgment*, measured with six, three, and four items respectively, using a 7-point Likert scale anchored at 1 = “strongly disagree” and 7 = “strongly agree.” Example items for each dimension include: “I have frequent interactions with other home brewers to acquire new information,” “I see links between seemingly unrelated pieces of information,” and “I have a gut feeling for potential opportunities.” Cronbach’s alpha for the scanning and search dimension is 0.74, for association and connection is 0.91, and for evaluation and judgment is 0.90.

*Feedback.* Measurement instruments for environmental antecedents of entrepreneurial alertness, namely constructive feedback, awards, and collaboration were developed in accordance with C-OAR-SE model of scale development (Rossiter 2002). This decision was made based on the wide popularity of this approach, as well as low complexity in the definitions of variables and no anticipated difficulties of their understanding among our sample participants. The sequence of C-OAR-SE involved six recommended steps reflected in the acronym: (1) construct definition, (2) object classification, (3) attribute classification, (4) raters’ identification, (5) scale formation, and (6) enumeration. Notably, C-OAR-SE approach is based on expert content-validation without using any psychometrics or statistics (Rossiter 2011), as it places greater emphasis on the high content validity of the items and the answer scale (Rossiter 2002). Consequently, it posits content validity as necessary for reliability, contrary to the usual psychometric argument that reliability is necessary for validity.

In line with the above, the following example illustrates the development of constructive feedback measurement instrument.<sup>1</sup> First, constructive feedback was defined as feedback that provides a decision-maker with actionable evaluative information about an action, event or behavior. Next, classification of the focal object took place — defined as abstract collective object, since the constructive feedback consisted of several components, while the interpretations are not likely to differ across the sample of raters. In the third step, the main attribute of the construct was evaluated as eliciting — since it will suggest somewhat different things to the sample of raters and these differences will form the components of the scale. Following the next procedural step, raters' entity was selected as a group and experts — in this study it is a sample of entrepreneurs and academic experts in entrepreneurship, marketing and international business fields. Then, a general scale formation step took place by generating a pole of 11 items, created on the basis of the construct definition, relevant literature and qualitative interviews with seven homebrewers. Following the coding and analysis of qualitative interviews, three sub-categories were repeatedly associated with constructive feedback – regularity, level of constructiveness, and its importance. Constructive feedback was characterised with words such as 'essential', 'important', 'often received' and so on, which are mirrored in the respective scale items. Subsequent expert judging and pre-tests took place at that stage to reduce the number of items and to increase parsimony and validity. As a result of this procedure (Rossiter 2011; 2002), to capture the level feedback homebrewers were receiving and its constructiveness, the authors developed a 6-item 7-point Likert scale measure (items presented in Table 1 are those that were scored highest by expert judges on a 1 to 10 score system), anchored at 1 = “strongly disagree” and 7 = “strongly agree,” as the literature did not provide any similar measurement instrument suitable for this study. Example items include: “I

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<sup>1</sup> Full details on C-OAR-SE procedure for scale development of constructive feedback, awards and collaborations constructs are available upon request. We would like to thank one of the anonymous reviewers for suggesting providing more information regarding this matter.

regularly receive constructive feedback on my brewing results” and “I find it essential to be able to get constructive feedback on my brewing results.” Cronbach’s alpha for this measure is 0.77.

*Awards.* The study captured whether respondents had received any awards in relation to homebrewing and how important these were for homebrewers by developing a new measurement instrument. An example item from the awards measure is “The awards I have received in relation to home brewing are very important to me.” Cronbach’s alpha is 0.73.

*Collaborations.* Similarly, to measure collaborations, the authors developed an instrument comprising three items on a 7-point Likert scale, anchored at 1 = “strongly disagree” and 7 = “strongly agree,” specifically asking whether respondents had received any collaboration offers and how important they assessed them to be. Example items include: “I have received a collaboration offer from other homebrewers” and “I am not interested in the collaboration offers (reversed).” Cronbach’s alpha for this measure is 0.66.

*Control Variables.* The study included a series of control variables that might influence entrepreneurial alertness, namely, age, relationship status (in a relationship or not), number of children, and professional occupation (employed in manufacturing or services, or unemployed). The study controls for age due to the assumption that individuals at different age may have a variance in their fundamental psychological processes related to the entrepreneurial alertness components, for instance, information perception and processing (Kautonen, Kibler, and Minniti 2017). Similarly, we control for the relationship status and the number of children as they are likely to have an effect on the evaluation of opportunities environment can offer and individual decision-making processes. Finally, we control for professional occupation in order to capture how different career backgrounds may impact on the ability of identifying, connecting and evaluating potential entrepreneurial opportunities. The authors also added a

brewing experience control measure as the experience of homebrewers could potentially have a different impact on how alert and willing to start a business they might be.

### **Validity of measures**

We employed confirmatory factor analysis (CFA) using EQS 6.3 software to assess the validity of our measures. We estimated a measurement model containing all constructs (Anderson and Gerbing, 1988). We used the elliptical reweighted least squares estimation procedure because of its ability to produce unbiased parameter estimates for multivariate nonnormal as well as normal data (Sharma, Durvasula and Dillon 1989). We restricted each item to load on its a priori specified factor, and by default all underlying factors were allowed to correlate with one another (Gerbing and Anderson, 1988). The goodness-of-fit indices of the measurement model indicate a good model fit ( $\chi^2_{(155)} = 246.03, p < 0.001$ ; CFI = 0.97, NNFI = 0.96, RMSEA = 0.05, and AOSR = 0.05).

All factor loadings are high and significant at  $\alpha = 0.01$ , which provides evidence of convergent validity (see Table 1). The average variance extracted (AVE) of all constructs is equal to or greater than 0.50, satisfying the recommended threshold (Bagozzi and Yi, 1988, 2012). We used Fornell and Larcker's (1981) robust test for assessing discriminant validity among the measures. In all cases, the squared correlation between two constructs ( $\varphi^2$ ) was less than their respective AVE estimates, indicating discriminant validity. Furthermore, all measurement scales exhibited acceptable composite reliability, exceeding the threshold of 0.6. Table 2 shows descriptive statistics, correlations, AVEs and reliabilities of all constructs.

[Insert Table 2 about here]

## Regression analysis

The authors conducted hierarchical regressions to test the hypotheses in the form of three models. Each of the models had a different dependent variable – three dimensions of entrepreneurial alertness.

*Effects on the entrepreneurial alertness dimensions.* Three different models were used to test the impact of the selected antecedents on all entrepreneurial alertness dimensions. As presented in Table 3, feedback affects all three dimensions of entrepreneurial alertness, supporting Hypothesis 1. Next, conversely to expectations, receiving awards does not have a significant effect on entrepreneurial alertness dimensions. Therefore, the results do not confirm Hypothesis 2. With regard to collaboration offers, this variable affects only the evaluation and judgment dimension, providing partial support for Hypothesis 3. Notably, number of children negatively affects the evaluation and judgment dimension of entrepreneurial alertness, as well as profession.

[Insert Table 3 about here]

*Limitations of the correlation method.* MRA (multiple regression analysis) allows the estimation of the average effect of a variable, which can be very important if the researcher intends to estimate the size of the total net effect of each independent variable on the dependent variable. As described previously, this study used regression analysis to estimate the net effects of a set of external antecedents on entrepreneurial alertness. Table 2 illustrated the means, standard deviations, and inter-correlations of the study constructs, for which neither of the estimated correlation coefficients has a value higher than 0.60, implying that the relationships between variables are generally asymmetric (Woodside 2013). That is, in this study, even low levels of feedback, awards, and collaboration offers might induce higher levels of

entrepreneurial alertness. This assumption prompts further investigation with the aim of obtaining deeper understanding of the relationships in the study. The authors therefore decided to conduct additional investigation into the multifaceted nature of study variables and their relationships by applying the fsQCA methodology to answer the following research questions: are there any significant combinations of constructive feedback, awards and collaboration offers, and how those (if any) affect the development of entrepreneurial alertness dimensions?

As opposed to structural equation modeling or regression analyses, in which researchers estimate the effect of an independent variable on a dependent variable, fsQCA identifies the conditions that lead to a certain outcome (Chen et al., 2013), and whether only one combination or several different combinations of conditions (causal recipes) generating the same outcome exist (Ragin 2008). Thus, instead of demonstrating a limited number of solutions in which X has a positive or negative influence on Y, it is possible to strengthen the contributions of the study by providing the combinatory conditions in which X has a positive influence on Y, as well as the combinatory conditions in which X has a negative effect on Y (Kraus et al., 2017). Usually, reality includes more than one combination of conditions leading to a particular outcome (that is, high values for a dependent variable), and therefore indicates that a combination of conditions has an asymmetrical relationship with an outcome (Woodside 2013). Therefore, this methodology does not replace but supplements conventional correlation analyses (Ragin 2008) by conferring three main advantages: the relationships between independent and dependent variables are asymmetric; multiple pathways can lead to the same outcome; combinations of causal antecedents can lead to the outcome, demonstrating a combinatorial effect (Lisboa, Skarmeas, and Saridakis 2016; Skarmeas et al., 2014). Essentially, with fsQCA researcher is able to discover different configurations of interrelated variables that lead to the same outcome (Kraus et al., 2017).

Based on the above, the study will next examine external factors and their impact on entrepreneurial alertness within the complexity theory, since it posits that the relationships between variables can be non-linear, whereby various configurations of multiple variables can produce the same effect on the dependent variable. The aim here is to investigate the alternative complex antecedent conditions or causal recipes that can lead to the outcome condition, thus including the combinatorial effect of complexities of asymmetric relationships, rather than only focusing on the symmetrical net effects.

### **The application of complexity theory**

Complexity theory and fsQCA can provide a more accurate explanation of how factors such as feedback, collaboration offers, and awards affect the dimensions of entrepreneurial alertness. The rationale behind this approach is that multiple paths (combinations of antecedents) can lead to the same outcome, rather than only one path (Schmitt, Grawe, and Woodside 2017; Wu et al., 2014). Therefore, alternative asymmetric recipes of antecedents are sufficient, but no single combination is necessary for accurately predicting entrepreneurial alertness.

In addition, complexity theory proposes that “Relationships between variables can be non-linear with abrupt switches occurring, so the same ‘cause’ can, in specific circumstances, produce different effects” (Urry 2005, p. 4). Thus, a high amount of constructive feedback could be associated with a higher level of entrepreneurial alertness, but only in the presence of a high number of collaboration offers, which on its own may produce no effect at all, or even a negative one. Figure 1 depicts the complex configuration model under investigation in the study.

[Insert Figure 1 about here]

*Contrarian case analysis.* Tables 4 and 5 demonstrate examples of the presence of contrarian cases. Table 4 presents a cross-tabulation of the feedback and association and connection dimensions of entrepreneurial alertness. The analysis shows that the majority of cases with high scores for receiving feedback also score highly on engaging in association and connection activities, while similarly the majority of cases with negative scores for feedback have lower scores for association and connection activities. However, both negative and positive contrarian cases exist. A total of 27 negative and 24 positive contrarian cases occur. These findings include four cases with highly negative feedback scores, but highly positive association and connection evaluations. The findings also include four cases of highly positive feedback scores, but highly negative association and connection evaluations. Rather than ignoring such cases in the dataset due to a positive main effect, fsQCA models both positive and negative paths to high scores in the outcome condition.

Table 5 demonstrates the occurrence of both negative and positive contrarian cases for the collaboration variable and the evaluation and judgment dimension of entrepreneurial alertness. The results of the cross-tabulation demonstrate that the majority of cases with high scores for receiving collaboration offers also score highly for evaluation and judgment activities, and similarly the majority of cases with negative scores for collaboration offers have lower scores for evaluation and judgment activities. At the same time, both negative and positive contrarian cases exist. A total of 13 negative and 21 positive contrarian cases occur in this instance. The findings include seven cases with highly negative collaboration scores, but highly positive evaluation and judgment scores. They also include five cases of highly positive collaboration scores, but highly negative evaluation and judgment scores. Similarly, rather than ignoring these cases in the dataset due to a positive main effect, applying fsQCA methodology enables us to model both positive and negative paths to high scores in the outcome condition. Tables 4 and 5 demonstrate the occurrence of contrarian cases in all cross-tabulations.

[Insert Tables 4 and 5 about here]

### **fsQCA analysis**

This section explains the stages of the fsQCA implementation. These include the data calibration process and the estimation of complex causal statements.

*Calibration of the dataset.* To proceed with the analysis, the authors calibrated the data to transform variables into fuzzy sets (Woodside and Zhang, 2013) in the SPSS software using relative anchors, that is, percentiles of data (Tóth et al., 2015), representing groups of values with varying degrees of membership in a specific category or condition. Sets do not represent variables in a typical sense, but rather are groups of values that reflect the degree of membership in a particular category or the degree of membership in a specific condition (Woodside and Zhang, 2013). In fuzzy sets, the cases can take any value from the continuous range of 0 to 1, where a value of 1 refers to full membership of a case in a specific condition and the value 0 represents complete non-membership in the given condition, while the value of 0.5 indicates neither membership nor non-membership in the condition (Woodside 2013). Consequently, set membership scores represent the result of calibrating original variable scores into fuzzy set scores, which are not probabilities but rather transformations of ordinal or interval scales into degrees of membership in the given set.

*Results.* In fsQCA researchers can use different types of solutions (parsimonious, intermediate, and complex) to interpret the obtained results. The intermediate solution is typically selected when based on past literature the researcher has a strong expectation about how a condition contributes to the outcome (Elliott 2013). If this is not the case, the researcher has to decide whether to use the parsimonious solution or the complex one. The former solution

employs all possible simplifying assumptions, whereas the latter solution makes no simplifying assumptions at all (Elliott 2013). Since the complex solution engenders that no statements are put forward about the situations that did not occur empirically, this is the most conservative approach with high level of rigor. Table 6 presents the complex solutions derived for the three dimensions of entrepreneurial alertness. While raw coverage measures the proportion of memberships in the outcome explained by each configuration, unique coverage assesses the proportion of the memberships in the outcome explained solely by each individual configuration (Ragin 2008). The robustness of the results of the truth table algorithm turns on getting a balance of consistency and coverage.

Notably, before obtaining and interpreting the solutions, one must consider the cut-off values for consistency and coverage of these solutions, meaning that it is necessary to find the right balance, since the relationship between the two is inverse, and when consistency is high, coverage is low. At the same time, researchers often choose 0.75 as a minimum consistency threshold, which in turn enables sufficiently high coverage of typically > 0.90 (Schneider and Wagemann, 2012). We have therefore set the above-mentioned cut-off values in our research. In Table 6 below, each column represents an alternative combination of conditions that lead to the respective outcome, that is, a causal recipe associated with entrepreneurial alertness dimensions (Ragin and Fiss, 2008). Full circles (●) indicate presence of a condition, empty circles (○) indicate a condition's absence or negation. The results indicate two pathways or solutions, comprising the same causal recipes (Skarmeas et al., 2014; Woodside and Zhang, 2013). Namely, the first solution indicates that high feedback is related to higher scanning and search, association and connection, and evaluation and judgment activities. This pathway is highly consistent across all solutions and explains a large number of cases.

[Insert Table 6 about here]

The second pathway indicates that low number of awards but a high number of collaboration offers also results in high scanning and search, association and connection, and evaluation and judgment activities. This pathway is slightly more consistent than the previous one and explains a satisfactory amount of cases. On the whole, all three solutions exhibit high consistency ( $> 0.80$ ) and high coverage ( $> 0.93$ ), which is in line with the general recommendations for the thresholds of these metrics –  $> 0.75$  and  $> 0.90$  (Woodside 2013).

Regarding the sufficiency and necessity analyses, both causal pathways presented in Table 6 fall into the category of ‘sufficient but not necessary’ conditions for the outcome to occur (Beynon, Jones, and Pickernell 2016; Tomasino 2015). Therefore, feedback is a sufficient but not necessary condition for scanning and search, association and connection, and evaluation and judgement to occur, because alongside feedback another combination of conditions exists (that is, low number of awards and high number of collaboration offers), which causes exactly the same outcomes. On the other hand, the combination of low number of awards and high number of collaboration offers is also a sufficient but not necessary condition to activate the dimensions of entrepreneurial alertness, since there is another condition (that is, feedback) that causes the same outcomes. We therefore conclude that both solutions are sufficient but not necessary<sup>2</sup> conditions for the entrepreneurial alertness dimensions.

*Predictive validity tests.* To test for predictive validity, the authors split the sample in two: a modeling subsample and a holdout sample (Wu et al., 2014). Table 7 demonstrates the predictive validation of model 1.

[Insert Table 7 about here]

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<sup>2</sup> We further tested our causal pathways for necessity analysis and confirmed that they can be classified as sufficient but not necessary conditions, since either their consistency was below 0.9 or their coverage was lower than 0.5 (Legewie, 2013; George and Bennett, 2005)

The patterns of complex antecedent conditions are consistent indicators of high scores in scanning and search, association and connection, and evaluation and judgment outcomes using the first half of the cases in the sample of 205 cases. The graphical representations of the findings from testing the predication of models 1–3 on the data in the second sample appear in the lower half of Table 7. The findings indicate highly consistent models, with consistency scores ranging from 0.821 to 0.984, and moderate coverage, with scores ranging from 0.373 to 0.392. Therefore, the predictive test findings confirm that the highly consistent models for subsample 1 have high predictive abilities for subsample 2, and vice versa.

### *Discussion and Conclusions*

Within entrepreneurship and marketing fields, entrepreneurial alertness construct represents an important break-through in our understanding of entrepreneurial mind (Busenitz, 1996), because it can help clarify the way entrepreneurs think and make certain decisions. Research suggests that successful entrepreneurs process information and think differently from less successful entrepreneurs because they have higher levels of entrepreneurial alertness, which allow them to perform more effectively in their environment (Wright and Stigliani, 2013; Smith et al., 2009; Westhead et al., 2009). Entrepreneurs continuously adapt to rapidly changing external environment to cultivate their business and create new ventures. During this process, they interact with a complex system of numerous information cues and utilise those to transform ideas and incentives into profitable business opportunities (Minniti 2004). Similarly, hobbyists become attentive to entrepreneurial opportunities non-deliberately by actively participating in their social environment, thus being exposed to several environmental cues that can boost their entrepreneurial alertness. Thus, environmental factors and settings could stimulate entrepreneurial alertness processes even among individuals who are not yet entrepreneurs.

By implementing the MRA approach, this study finds that feedback affects all dimensions of entrepreneurial alertness, constituting a very strong determinant of entrepreneurial alertness development. The findings indicate that feedback is an external incentive that significantly affects involvement in scanning and search in particular along with association and connection, and evaluation and judgment activities. These findings are in line with those of Tang, Kacmar, and Busenitz (2012), who argue that scanning and search activities involve frequent interactions with others, as well as information processing, which in turn represents the core mechanism of receiving feedback. Without feedback, people in the hobby stage experience intrinsic motivation, leading them to engage in their hobby solely because they like it, without any contingencies attached. However, receiving feedback in relation to their hobby outcomes provides an opportunity for individuals to develop an opportunity for them to commercialize their hobby and gain monetary rewards. Contrary to expectations, receiving awards is not found to influence either of the entrepreneurial alertness dimensions. Therefore, receiving an award does not represent a strong enough incentive to develop entrepreneurial alertness.

The following outcome suggests that awards are performance-contingent rewards and foster intrinsic rather than extrinsic motivation as individuals received rewards related to excellent performance in their leisure activity, which may not provide any cue for a potential transformation into a business (Deci and Ryan, 2000; Deci, Koestner, and Ryan 1999). An alternative explanation can therefore encompass the role of an award as the “final goal” an individual has when embarking in a competition. Winning an award, in fact, can represent an external evidence of the excellence of an individual’s performance, therefore not stimulating any activity related to the improvement of personal skills or the search for further information (for example, by attending courses, studying or scanning the environment and so on). In this regard, the sense of achievement a hobbyist may have could be strictly related to the fulfillment

of the competition and not to the long-term engagement in the startup of a business out of a leisure activity.

The results also indicate that the more collaboration offers people receive, the more likely they are to become involved in the evaluation and judgment dimension of entrepreneurial alertness and skip the stages of scanning and search, and association and connection. Therefore, when individuals receive an offer for a new business partnership, they are likely to evaluate this business opportunity (Gaglio and Winter, 2009). More specifically, when individuals receive business propositions from others during the hobby stage, they are likely to consider this business opportunity and thus develop entrepreneurial alertness, at least for a certain time, while making a decision on whether to pursue the prospect or not.

With regard to control variables, the number of children a participant had was found to affect negatively the evaluation and judgment dimension of entrepreneurial alertness. This result may reflect the fact that when individuals have large family commitments and children to support, they are likely to prefer stability over the risks and challenges associated with starting their own business. Similarly, profession negatively influences the evaluation and judgment part of entrepreneurial alertness, suggesting that people who work in the manufacturing industry are more likely to evaluate and compare the job they currently hold with the potential option of entrepreneurship.

In addition to employing a more traditional MRA approach, which mainly focuses on the estimation of net effects, this study illustrates the advantages of using complex combinatorial fsQCA with the purpose of unravelling deeper insights from the data. By going beyond the methodological contribution of applying fsQCA, the study examines how complex antecedent combinations of feedback, awards, and collaboration (including the effects of contrarian cases) affect entrepreneurial alertness. This is important because net effects do not reflect all aspects

of reality in any given data set as not all cases support an exclusively positive or negative relationship between the independent and dependent variables (Woodside 2013).

Regarding the influence of external factors on entrepreneurial alertness, the first pathway indicates that high feedback is a sufficient condition for higher scanning and search, association and connection, and evaluation and judgment activities. This result is consistent with the MRA outcomes reported earlier in this study, showing that feedback represents a powerful tool enabling the activation of scanning and search, association and connection, and evaluation and judgment processes. Thus, when individuals receive feedback on their hobby performance, they are likely to engage in the search for additional information available regarding their hobby, connect the knowledge they already have with the newly acquired information, and evaluate their current position among their peers.

The study also reveals another noteworthy causal recipe indicating that a low number of awards combined with a high number of collaboration offers also results in high scanning and search, association and connection, and evaluation and judgment activities. Notably, MRA did not unearth this outcome as it is present at a deeper level of antecedent combinations. Conventional wisdom assumes that receiving awards for a hobby should motivate individuals to become more entrepreneurially alert, experiencing the recognition of their achievement. However, this study finds that under the condition of receiving a high number of collaboration offers, receiving fewer awards actually increases the likelihood of developing an entrepreneurially alert mindset. Individuals receiving a low number of awards, or even none, are more likely to develop entrepreneurial alertness provided they receive a high number of collaboration offers. As their hobby performance is not recognized in an official manner, these collaboration offers serve as an important trigger for engaging in the processes of scanning and search, association and connection, and evaluation and judgment regarding their hobby.

## **Implications**

This study is among the first to investigate various external antecedents of entrepreneurial alertness. In addition, it demonstrates the importance of the psychological and social antecedents of entrepreneurial alertness even in a setting where individuals do not have previous entrepreneurial experience. Therefore, this research advances the entrepreneurship field by explaining what factors contribute to the development of entrepreneurial alertness (Amato et al., 2017) among those individuals who are actively involved in their hobby and how this alertness could constitute a precursor to starting a business.

Considering the findings and conclusions discussed here, this study also offers several practical implications for prospective and active entrepreneurs. The findings of this study could help entrepreneurs reflect on their decisions and behaviors during the business start-up planning process in relation to the entrepreneurial alertness dimensions, namely scanning and search, association and connection, and evaluation and judgment. Furthermore, the outcomes of this study could contribute to the development of a self-assessment tool, which would facilitate entrepreneurs in distinguishing key skills and processes, and external factors that lead to starting a business. This tool could measure an individual's entrepreneurial alertness and the extent of readiness to engage in business venturing. Moreover, this enacted alertness is likely to help prospective hobbyists-entrepreneurs in marketing activities of their future businesses, when it comes to recognizing opportunities, communicating about their products and services, as well as building business networks.

From a management perspective, enhancing collaboration networks between leisure-based interest communities and existing ventures could help provide new prospects and solutions to advance the value-creation process. By offering access to the necessary resources, companies could attract knowledgeable amateurs and assist in their development in exchange for new creative insights from a user-generated perspective. Treating these communities of

individuals as potential marketing instruments when it comes to knowledge acquisition and application to company management and marketing practices is likely to allow businesses to foresee unnoticed potential opportunities. Such opportunities can result in the identification of new ways of doing business, and creating situations where new goods, services, markets, resources and/or organizing methods can be introduced. Last, this research could inspire the creation of governmental policies at a regional or national level to stimulate collaborations among non-entrepreneurs (e.g., craft brewing communities) to partner up before the business startup stage. Structuring official platforms funded by the government to reach out hobbyists could in fact stimulate both the economic and the social growth of local communities by acting as a hub for obtaining feedback and work collaboratively, especially in the most deprived regions.

### **Future Research**

This study explores only three external antecedents of entrepreneurial alertness. Therefore, future research could incorporate more factors in the analysis, such as previous experience of entrepreneurship, creativity, innovativeness, and many others. In addition, the findings represent a particular hobby context and might not be generalizable to all other settings. Therefore, future studies can explore different contexts to strengthen the causal inferences, as well use larger sample sizes in their statistical tests. Specifically, scholars could examine the importance of our environmental antecedents of entrepreneurial alertness in other hobby settings that include crafts element, such as pottery, jewelry making, gardening, cooking and so on. Future studies could also explore the spillover effect of skills and preferences on entrepreneurial alertness and subsequent business idea development; for example, being good at knitting might make an individual consider entrepreneurship in any kind of business area involving manual work, such as gardening or cooking. Whereas this study uses a cross-sectional

research design to test the hypothesized associations, future studies could investigate the findings in a longitudinal framework, for example by looking if and how feedback is implemented, how collaborations are managed and if the notoriety gained from the awards received is able to widen the hobbyist business network. Additionally, as our sample rely on individuals who may experience entrepreneurial alertness – but are not yet entrepreneurs – future studies using a longitudinal approach could indeed test whether such alertness is in fact a precursor for business set up.

Furthermore, while we found that generally receiving awards for a hobby activity does not influence the activation of alertness processes, this element may benefit by a more detailed research. While we conceptualized awards as a broader construct, future research could unravel more nuanced differences for example by contrasting the effect of monetary and non-monetary prizes or even the presence of potential professional development opportunities. Finally, the application of additional control variables or moderators could bring fruitful outcomes and strengthen the position of entrepreneurial alertness in the academic literature.

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## Tables

**Table 1.**  
**Construct Measurements and CFA Factor Loadings.**

Entrepreneurial Alertness	Standardised Loadings <sup>1</sup>
<i>Scanning and Search</i>	
• I have frequent interactions with other home brewers to acquire new information.	0.742 (11.30)
• I always keep an eye out for new business ideas when looking for information.	0.711 (10.88)
• I read news, magazines, or trade publications regularly to acquire new information.	0.821 (12.73)
• I browse the Internet every day	0.634 (9.20)
• I am an avid information seeker	0.946 (15.91)
• I am always actively looking for new information	0.929 (15.46)
<i>Association and Connection</i>	
• I see links between seemingly unrelated pieces of information	0.844 (13.46)
• I am good at “connecting dots”	0.891 (14.62)
• I often see connections between previously unconnected domains of information.	0.899 (14.81)
<i>Evaluation and Judgement</i>	
• I have a gut feeling for potential opportunities	0.743 (11.32)
• I can distinguish between profitable and not-so-profitable opportunities	0.895 (14.88)
• I have a knack for telling high-value apart from low-value opportunities	0.948 (16.33)
• When facing multiple opportunities, I am able to select the good ones	0.790 (12.32)
<i>Feedback</i>	
• I regularly receive constructive feedback on my brewing results	0.639 (8.79)
• I find it important to be able to get constructive feedback for craft brewing	0.860 (12.69)
• The feedback in brewing I receive is usually very constructive	0.617 (6.84)
• I find it essential to be able to get constructive feedback on my brewing results	0.760 (10.86)
• The feedback for my brewing is usually quite constructive	0.636 (9.24)
• I have received some constructive feedback for my brewing	0.710 (10.86)
<i>Awards</i>	
• I have received some awards for my home brewing	0.603 (6.79)
• The awards I received in relation to home brewing are very important to me	0.909 (13.80)
• The home brewing awards do not matter to me (r)	0.639 (9.89)
<i>Collaborations</i>	
• I have received a collaboration offer from other home brewers	0.803 (12.81)
• I have received a very good collaboration offer to be in the craft brewing business.	0.620 (9.02)
• I am not interested in the collaboration offers (r)	0.669 (9.97)

*Notes:* All items were measured on a seven-point Likert scale. Unless noted, items were anchored by “strongly disagree” and “strongly agree”

(r) indicates reversely-coded item

<sup>1</sup> - *t*-values are reported in parentheses

**Table 2.**  
**Descriptive Measures and Correlations.**

	<i>α</i>	Mean	SD	AVE	1a	1b	1c	2	3	4	5	6	7	8	9
<b>1a</b> <i>Scanning and Search</i>	0.74	5.86	0.78	0.65	-										
<b>1b</b> <i>Association and Connection</i>	0.91	5.65	0.93	0.77	0.494**	-									
<b>1c</b> <i>Evaluation and Judgment</i>	0.90	4.97	1.13	0.62	0.488**	0.551**	-								
<b>2</b> Feedback	0.77	5.88	0.74	0.50	0.552**	0.283**	0.312**	-							
<b>3</b> Collaborations	0.66	4.60	1.69	0.51	0.202**	0.130	0.276**	0.211**	-						
<b>4</b> Awards	0.73	4.77	1.50	0.53	0.254**	0.153*	0.169*	0.315**	0.108	-					
<b>5</b> Brewing experience	-	9.54	8.28	-	-0.092	0.071	0.005	-0.049	0.020	0.034	-				
<b>6</b> Age <sup>a</sup>	-	-	-	-	-0.080	-0.061	-0.093	-0.011	-0.098	0.034	0.461**	-			
<b>7</b> Relationship status <sup>b</sup>	-	-	-	-	-0.022	0.068	-0.031	-0.111	-0.085	0.017	-0.089	0.070	-		
<b>8</b> Number of children	-	1	1.18	-	-0.105	-0.113	-0.142*	-0.113	0.047	-0.037	-0.053	0.112	0.177*	-	
<b>9</b> Professional occupation <sup>c</sup>	-	-	-	-	-0.013	-0.079	-0.125	0.062	0.015	-0.104	0.022	0.057	0.067	-0.123	-

*Notes:*

<sup>a</sup> coded:  $\leq 35 = -1$ ,  $36-45 = 0$ ,  $\geq 46 = 1$ ;

<sup>b</sup> coded: not in a relationship = 0, in a relationship = 1;

<sup>c</sup> coded: not in employment = 0, manufacturing industry = 1, service industry = 2.

\*\*\*  $p < 0.001$

\*\*  $p < 0.01$

\*  $p < 0.05$

**Table 3.**  
**Antecedents of Entrepreneurial Alertness.**

Variables	DV: Scanning and Search		DV: Association and Connection		DV: Evaluation and Judgement	
	Model I	Model II	Model III	Model IV	Model V	Model VI
Constant	6.02***	2.64***	5.30***	3.07***	4.85***	1.83**
Control variables:						
Brewing experience	-0.09	-0.05	0.13	0.14	0.04	0.05
Age <sup>a</sup>	-0.03	-0.04	-0.11	-0.11	-0.09	-0.07
Relationship status <sup>b</sup>	-0.01	0.05	-0.12	0.15	0.02	0.06
Number of children	-0.07	-0.06	-0.13	-0.11	-0.15*	-0.14*
Professional occupation <sup>c</sup>	-0.02	-0.05	-0.10	-0.11	-0.14*	-0.16*
Main effects:						
Feedback		0.51***		0.27***		0.25***
Collaborations		0.09		0.07		0.22**
Awards		0.08		0.04		0.04
$R^2$ (Adjusted $R^2$ )	-0.02 (-0.01)	0.33 (0.31)	0.05 (0.02)	0.14 (0.11)	0.05 (0.02)	0.19 (0.16)
$F$	0.89	12.20***	1.90	4.01***	1.96	5.86***
$N$	205	205	205	205	205	205

*Notes:*

Standardized coefficients are reported in the table;  $t$ -values are in parentheses.

<sup>a</sup> coded:  $\leq 35 = -1$ ,  $36-45 = 0$ ,  $\geq 46 = 1$ ;

<sup>b</sup> coded: not in a relationship = 0, in a relationship = 1;

<sup>c</sup> coded: not in employment = 0, manufacturing industry = 1, service industry = 2.

\*\*\*  $p < 0.001$

\*\*  $p < 0.01$

\*  $p < 0.05$

**Table 4.**  
**Cross-Tabulations Findings for Feedback and Scanning and Search.**

			Scanning and Search					
			Very Low 1.00	Low 2.00	Medium 3.00	High 4.00	Very High 5.00	Total
Feedback	Very Low 1.00	Count	20	8	6	6	1	41
		% within feedback	48.8%	19.5%	14.6%	14.6%	2.4%	100.0%
	Low 2.00	Count	10	8	11	4	3	36
		% within feedback	27.8%	22.2%	30.6%	11.1%	8.3%	100.0%
	Medium 3.00	Count	2	5	11	8	3	29
		% within feedback	6.9%	17.2%	37.9%	27.6%	10.3%	100.0%
	High 4.00	Count	4	8	14	17	13	56
		% within feedback	7.1%	14.3%	25.0%	30.4%	23.2%	100.0%
	Very High 5.00	Count	3	4	7	8	21	43
		% within feedback	7.0%	9.3%	16.3%	18.6%	48.8%	100.0%
	Total	Count	39	33	49	43	41	205
		% within feedback	19.0%	16.1%	23.9%	21.0%	20.0%	100.0%

Negative contrarian cases indicating  $\sim A \rightarrow O$

Positive contrarian cases indicating  $A \rightarrow \sim O$

Notes:

A = antecedent condition (feedback); O = outcome condition (scanning and search);

$\phi = .593, p < 0.000; \phi^2 = 0.21.$

**Table 5.**  
**Cross-Tabulations Findings for Feedback and Association and Connection.**

			Association and Connection					
			Very Low 1.00	Low 2.00	Medium 3.00	High 4.00	Very High 5.00	Total
Feedback	Very Low 1.00	Count	9	10	8	10	4	41
		% within feedback	22.0%	24.4%	19.5%	24.4%	9.8%	100.0%
	Low 2.00	Count	11	6	6	8	5	36
		% within feedback	30.6%	16.7%	16.7%	22.2%	13.9%	100.0%
	Medium 3.00	Count	6	9	4	7	3	29
		% within feedback	20.7%	31.0%	13.8%	24.1%	10.3%	100.0%
	High 4.00	Count	6	10	9	16	15	56
		% within feedback	10.7%	17.9%	16.1%	28.6%	26.8%	100.0%
	Very High 5.00	Count	4	4	11	6	18	43
		% within feedback	9.3%	9.3%	25.6%	14.0%	41.9%	100.0%
	Total	Count	36	39	38	47	45	205
		% within feedback	17.6%	19.0%	18.5%	22.9%	22.0%	100.0%

Negative contrarian cases indicating  $\sim A \rightarrow O$

Positive contrarian cases indicating  $A \rightarrow \sim O$

Notes:

A = antecedent condition (feedback); O = outcome condition (scanning and search);

$\phi = .385$ ,  $p = 0.016$ ;  $\phi^2 = 0.15$ .

**Table 6.**  
**Causal Configurations for Entrepreneurial Alertness.**

**a) Causal Configurations for Scanning and Search**

Conditions	Causal Configurations	
	S1	S2
Feedback	•	
Awards		◦
Collaborations		•
Raw Coverage	0.934584	0.273441
Unique Coverage	0.664909	0.003766
Consistency	0.972896	0.981463
Overall Solutions' Coverage	0.938350	
Overall Solutions' Consistency	0.969864	

**b) Causal Configurations for Association and Connection**

Conditions	Causal Configurations	
	S1	S2
Feedback	•	
Awards		◦
Collaborations		•
Raw Coverage	0.932127	0.281245
Unique Coverage	0.657929	0.007047
Consistency	0.925968	0.963313
Overall Solutions' Coverage	0.939174	
Overall Solutions' Consistency	0.926328	

**c) Causal Configurations for Evaluation and Judgement**

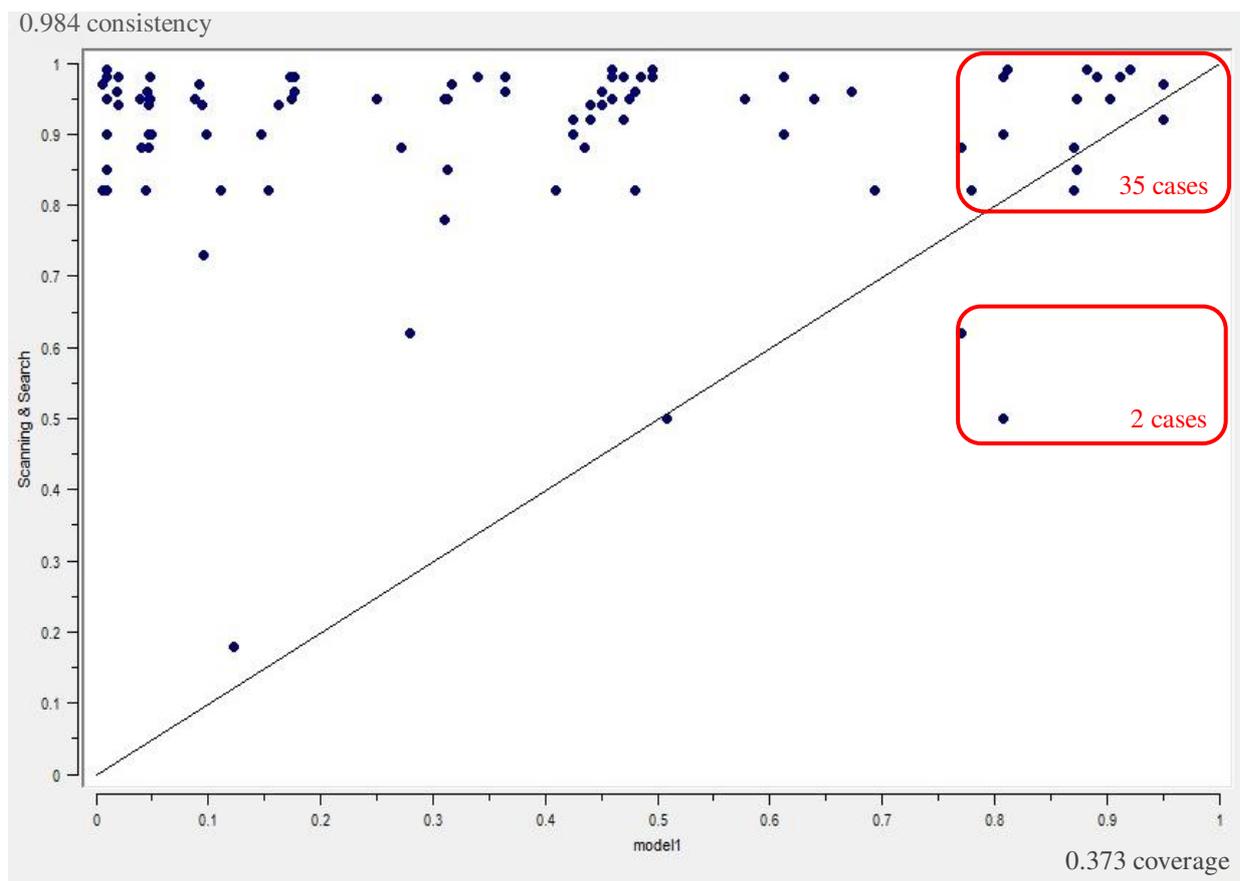
Conditions	Causal Configurations	
	S1	S2
Feedback	•	
Awards		◦
Collaborations		•
Raw Coverage	0.949321	0.305215
Unique Coverage	0.652407	0.008301
Consistency	0.794086	0.880286
Overall Solutions' Coverage	0.957622	
Overall Solutions' Consistency	0.795329	

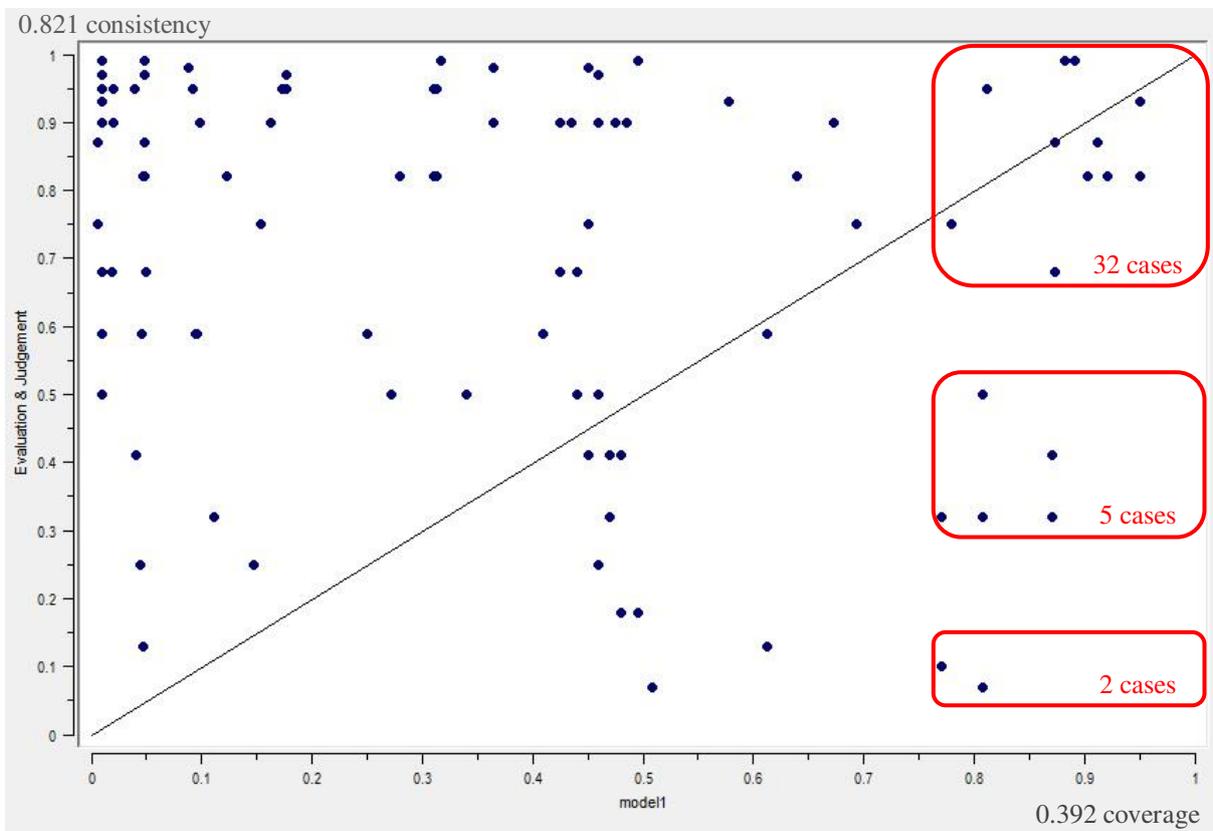
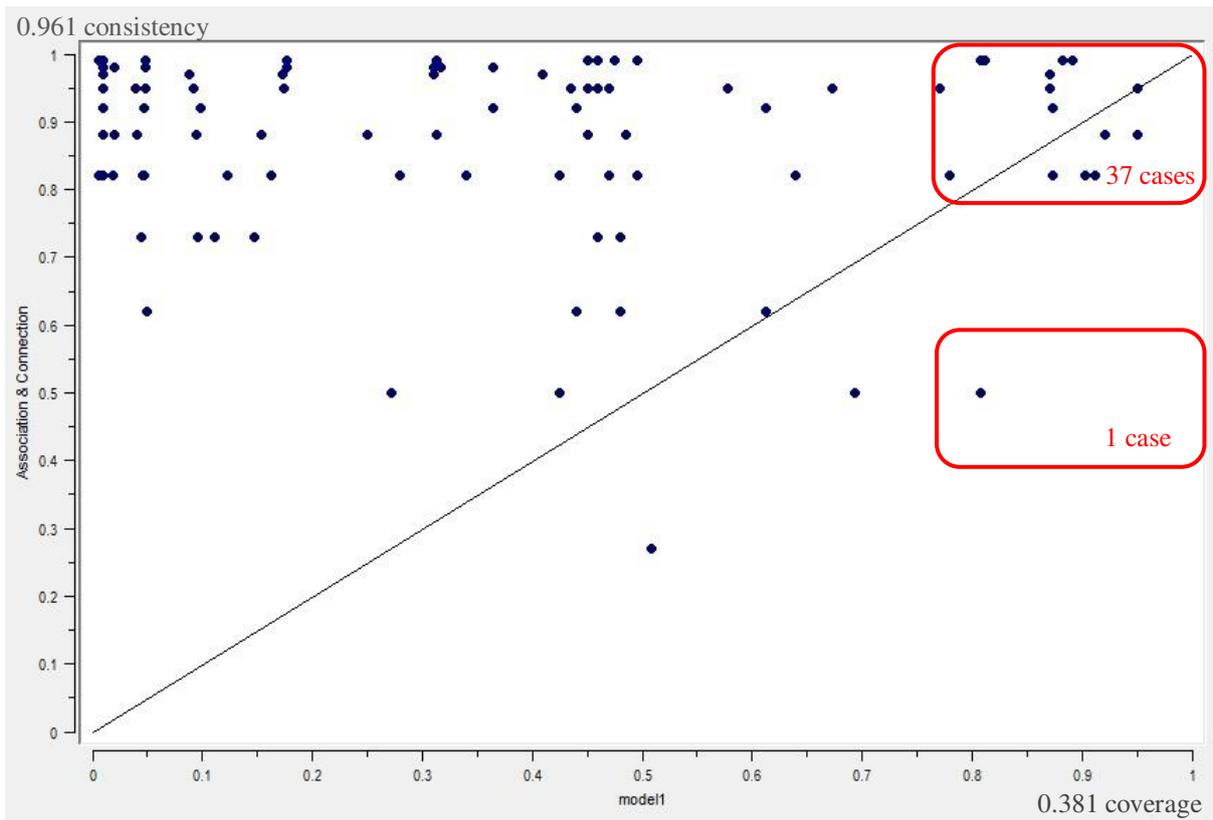
Notes:

Black circles “•” indicate the presence of causal conditions (i.e., antecedents). White circles “◦” indicate the absence or negation of causal conditions. The blank cells represent “don’t care” conditions.

**Table 7.**  
**Complex Configurations of Antecedent Factors Indicating High Scores for**  
**Entrepreneurial Alertness in Subsample 1.**

Models from Subsample 1	Raw coverage	Unique coverage	Consistency
<b>Scanning and Search findings</b>			
1 ~collab*feedback	0.356895	0.213790	0.982687
2 ~awards*collab	0.297051	0.153946	0.969912
Solution coverage: 0.510841; solution consistency: 0.971747;			
<b>Association and Connection findings</b>			
1 ~collab*feedback	0.368948	0.218114	0.968060
2 ~awards*collab	0.304017	0.153146	0.945841
Solution coverage: 0.522130; solution consistency: 0.946381;			
<b>Evaluation and Judgement findings</b>			
1 ~collab*feedback	0.377482	0.207062	0.845672
2 ~awards*collab	0.336309	0.165889	0.893451
Solution coverage: 0.543371; solution consistency: 0.840998;			





**Figures****Figure 1.****Complex Configurational Model.**