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**Continued Value Creation in Crowdsourcing from Creative Process Engagement**

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# CONTINUED VALUE CREATION IN CROWDSOURCING FROM CREATIVE PROCESS ENGAGEMENT

## Abstract

- Purpose

Crowdsourcing delivers creative ideas for the issuing firm, but participants' engagement in the creative process also creates additional benefits to firms and participating customers. To investigate if these spill-over values endure over time, this study uses data from two time points, i.e. at submission and after announcement of the contest winners, to investigate the relationship between the degree of a participant's creative process engagement (CPE) and value creation from a crowdsourcing contest, and how these perceptions of value change over time.

- Design/methodology/approach

Data was collected from 154 participants in a crowdsourcing contest at two time points with an online survey: at submission, and after receiving feedback (in term of rankings, rewards, and comments) from the community. Partial Least Square (PLS) path modelling was used to estimate both main and moderating effects.

- Findings

CPE increases the perceived value of customers (social and epistemic value) and firms alike (knowledge-sharing intention and customer loyalty), though all but epistemic value decrease over time. Disconfirmation of expectations and need for recognition moderate these effects.

- Originality/value

This paper is the first longitudinal study that helps understanding the effect of CPE on value creation from crowdsourcing across time. It also uses the theoretical lens of the honeymoon hangover effect to explain how perceived value changes. The resulting insights into the role of customer engagement in crowdsourcing contests and subsequent value creation will be beneficial to the growing research stream on consumer value co-creation and user innovation.

Keywords: *Crowdsourcing, Creative process engagement, Value creation, Disconfirmation of expectation, Need for recognition*

## Introduction

Crowdsourcing is a problem-solving and production platform that enhances customer engagement and value creation (Yang et al., 2008) by using the collective intelligence of networked communities (Piller, 2008). Crowdsourcing tasks range from simple to highly complex. Leading firms such as Coca Cola, DELL, and P&G have outsourced complex tasks which demanded a higher level of cognitive capability, and required more effort in the problem-solving process, than a typical crowdsourcing activity (Dontcheva et al., 2011, Howe, 2009, Poetz and Schreier, 2012). For example, Cisco launched a billion-dollar global idea competition named Cisco I-Prize, calling for innovative ideas on technologies and markets to help Cisco widen its business scope. In 2010, Cisco invited entrepreneurs, innovators, students and technologists to submit new business ideas. The winning team earned \$250,000. More than 2,900 participants from 156 countries submitted 824 ideas to the contest (Roth, 2012).

Crowdsourcing plays an important role in service innovation (Ye and Kankanhalli, 2013, Mladenow et al., 2014, Ordanini and Parasuraman, 2011). The aim is to obtain authentic, innovative ideas and solutions of crowds that are believed to be of a professional calibre (Poetz and Schreier, 2012), though additional value from engaging in a crowdsourcing contest might be equally attractive (Piyathasanan et al., 2013) and independent from the quality of ideas generated. Value creation is considered an important manifestation of customer engagement behaviour (Kumar et al., 2010, Dong et al., 2008, Hollebeek, 2013, Hollebeek et al., 2016). Customer engagement and relationships researchers urge organisations to co-create value with their customers through a wider range of marketing activities (Venkatesan, 2017). In a crowdsourcing context, creative performance is the direct benefit of creative process engagement (CPE) (Bakker and Demerouti, 2008, Sapp, 1995, Mace and Ward, 2002), yet firms may also enjoy additional value from customer engagement

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3 over time, a notion recently acknowledged in the customer engagement literature (Pansari  
4 and Kumar, 2017). Customers may for example contribute to a firm's value by offering their  
5 knowledge (such as in creative crowdsourcing), but also through product purchases, other  
6 loyal behaviours and indirect ripple effects from customer engagement. Recent empirical  
7 evidence shows that customers' CPE in a crowdsourcing task can create other types of value  
8 for both firms and participants, such as customer loyalty (firm value), and epistemic value  
9 (customer value) (Piyathasanan et al., 2013, Djelassi and Decoopman, 2013). Indeed,  
10 customer value creation is a likely outcome of customer engagement. Such value creation is  
11 important, as many large firms are encountering challenges in monitoring and appraising  
12 whether crowdsourced solutions lead to competitive, sustainable advantages (Jones et al.,  
13 2013). Firms would benefit from a clearer understanding of how CPE can facilitate value  
14 creation in the first place, and how to sustain it over time.  
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31 To explain the challenge, the paper turns to the (dis)confirmation of expectation  
32 paradigm commonly used in the customer satisfaction literature. Since "crowdsourcing  
33 initiatives hinge on individuals' willingness to participate in these projects and their  
34 motivation to contribute valuable insight and ideas" (Füller et al., 2012, p. 137), they are  
35 typically organized as a competition or contest. A contest creates expectations for  
36 participants about the ranking of their submissions and associated monetary and non-  
37 monetary rewards. Only a few winning participants receive extrinsic recognition and rewards  
38 from the contest. The winners' expectations are seemingly met, if not exceeded, resulting in  
39 perceived value from their participation and engagement in the crowdsourcing contest, and  
40 thus subsequent satisfaction with their engagement. However, most participants are likely to  
41 experience disappointment, leading to lower value perceptions and subsequent  
42 dissatisfaction.  
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3 Accordingly, this paper aims to examine:  
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7 1. the association between customer engagement in a crowdsourcing contest, and  
8 the resulting value creation for customers and/or the firm beyond the time of  
9 submission;  
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11 2. the extent to which customer perceived value and firm value shifts between the  
12 time of submission, and once participants learn of how well they fared in the  
13 crowdsourcing contest;  
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15 3. the extent to which participants' disconfirmed expectations and their need for  
16 recognition moderate the association between customer engagement, and  
17 perceived firm and customer value following the announcement of the  
18 crowdsourcing results.  
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31 The study offers two specific contributions to the literature. First, it serves as an  
32 initial effort to investigate if and how the value created from customer engagement in  
33 crowdsourcing (operationalised as creative process engagement [CPE]) changes over time.  
34 Previous studies suggest that CPE creates value beyond the creative submission, but it is  
35 unclear how this value endures or changes over time (Piyathananan et al., 2013, Djelassi and  
36 Decoopman, 2013). This study uses longitudinal data, collected at completion of the contest  
37 (Time 1) and announcement of winners and rankings (Time 2), and applies the lens of the  
38 honeymoon-hangover effect (Collins and Coltrane 1995), which indicates that perceptions of  
39 satisfaction (and associated value) may initially be inflated in a new relationship, but  
40 deteriorates over time.  
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54 The study also empirically examines under which conditions the CPE-value link  
55 varies, as a function of a participant's disconfirmed expectations and need for recognition. In  
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3 other words, the study not only shows ‘what’ drives customer and firm value, but also  
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5 ‘when’, i.e., under what conditions. The disconfirmation of expectations paradigm emphasises  
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7 the pivotal role of expectations in the creation of customer satisfaction (Oliver, 1980).  
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9 Beltramini and Evans (1988) found that employee’s expectations in a sales contest (i.e., “I  
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11 expect to win”) were positively correlated with job satisfaction and performance; an effect that  
12  
13 might be equally applicable in a crowdsourcing context, where participants invest time and  
14  
15 effort and expect a good result. The need for recognition has previously been identified as an  
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17 important driver of customer engagement and contribution in crowdsourcing (Djelassi and  
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19 Decoopman, 2013, Brabham, 2008), because social appreciation and feedback from other  
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21 people (e.g., peers and judges), or from an activity that they engage in, leads to positive  
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23 subsequent behaviour (such as long-lived, highly-engaged participants) and value  
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25 perceptions (Sawhney et al., 2005).  
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### 30 31 **Conceptual development**

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34 We build on creativity theory, which establishes CPE as a central tenet (e.g., Gilson  
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36 and Shalley, 2004, Zhang and Bartol, 2010a), and customer satisfaction research (Oliver, 1980,  
37  
38 McKinney et al., 2002) to develop a model to explain value creation and continuance. The  
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40 conceptual model is depicted in *Figure 1*. Value creation for the customer and the firm after  
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42 the announcement of winners and rankings (Time 2) is a function of CPE at the time of  
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44 submission (Time 1). Value creation from CPE beyond participation in the contest can be  
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46 explained by disconfirmation of expectation and need for recognition. In the subsequent  
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48 section, the study reviews existing literature in creativity and customer behaviour that is  
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50 relevant to the main conceptual building blocks of the model.  
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56 - *Insert Figure 1 here* -  
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### *Creative (problem-solving) process engagement (CPE)*

In a crowdsourcing contest (i.e., a creative advertising idea generation) that is considered complex and involves extended effort in creative problem-solving processes (Gilhooly et al., 2007), creativity is instrumental. Any type of engagement requires involvement and participation in a focal object (Brodie et al., 2011). Engagement in the creative process differs from ordinary involvement with a non-creative task, though it is comparable in that it refers to positive attachment to an activity consistent with the individual's values (Zaichkowsky, 1985). As with other forms of customer engagement, the creative process entails stronger cognitive and affective commitment, by spending time and effort, to generate ideas or solutions over time (Mollen and Wilson, 2010, Gilson et al., 2005). Creative process engagement (CPE) is thus introduced as the main construct to capture participants' engagement with the crowdsourcing contest until idea submission, and consists of three crucial aspects: problem identification, information search and idea generation (Reiter-Palmon and Illies, 2004, Zhang and Bartol, 2010a).

### *CPE and value creation*

Customer engagement creates value (Dong et al., 2008, Brodie et al., 2011), an effect which also extends to CPE where value creation is either direct or indirect: besides the direct benefit of a usable creative solution, firms may enjoy additional effects from CPE beyond Time 1 (e.g., enhancing firm-customer relationships and social interactions), as may participating customers.

Firms often use online communities and social networks to host crowdsourcing contests, as these platforms fulfil the human needs for social interaction and facilitate a sense

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3 of self-fulfilment (McInnerney and Roberts, 2004). Understanding why and how individuals  
4 engage in specific media to satisfy their needs helps identify two customer value perceptions  
5 relevant to crowdsourcing: social value and epistemic value (Nambisan and Baron, 2009). CPE  
6 is therefore expected to result in social value (e.g., firm-customer relationship and reciprocity)  
7 and epistemic value (e.g., satisfy or arouse curiosity, and self-fulfilment) for participating  
8 customers (Jackson, 2002, Greaves and Farbus, 2006, Kozinets et al., 2008).  
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17 Social value arises where individuals perceive a sense of community and friendship  
18 through interaction with others (Reidpath et al., 2005), an effect well documented in studies  
19 on online collaborative communities (e.g., Chung and Buhalis, 2008). Collaborative  
20 crowdsourcing platforms enable participation and social interaction with others (Brabham,  
21 2009) due to embedded socialising functions (e.g., websites, web-board, online communities  
22 and Facebook) (Leimeister et al., 2009, Schenk and Guittard, 2011). Accordingly, a higher  
23 degree of CPE in a crowdsourcing contest should enhance the participant's perceived social  
24 value beyond Time 1:  
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36 *Hypothesis 1: The higher the CPE at submission (Time 1), the more social value is*  
37 *created after receiving feedback (Time 2).*  
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42 Epistemic value, or self-fulfilment, is created if an individual is satisfied with his/her  
43 aroused curiosity, fulfilled knowledge, and/or improved skills (Sheth et al., 1991). Epistemic  
44 value is an important outcome for various crowdsourcing types, such as Wikipedia and  
45 crowdfunding (Fallis, 2008), because the challenge of tackling creative problems arouses  
46 curiosity. Participants may then satisfy their curiosity by engaging in the creative process to  
47 solve these problems; CPE should thus enhance epistemic value perceptions (Hars and Ou,  
48 2002).  
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3 *Hypothesis 2: The higher the CPE at submission (Time 1), the more epistemic value*  
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5 *is created after receiving feedback (Time 2).*  
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9 Customer value perceptions are a key predictor of subsequent behaviours such as  
10 loyalty, satisfaction, intention to recommend and re-purchase (Fornell et al., 1996,  
11 Sirdeshmukh et al., 2002, Cronin et al., 2000). For example, customers stay loyal to a firm if  
12 they perceive greater value than they expect to obtain from competitors (Bitner and Hubbert,  
13 1994). Similarly, McDougall and Levesque (2000) suggest that perceived value leads to less  
14 brand switching and greater customer loyalty.  
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23 For firms hosting crowdsourcing contests, knowledge-sharing intentions and customer  
24 loyalty are critical outcomes of customer value perceptions, above and beyond the quality of  
25 the creative submissions. Knowledge-sharing intention is the willingness to collaborate and  
26 contribute relevant knowledge and ideas to the firm (Desouza and Awazu, 2005), for example  
27 by participating in future crowdsourcing contests. The customer engagement literature also  
28 establishes how customers' voluntary contributions, such as offering their knowledge, skill  
29 and creativity, create firm value (Harmeling et al., 2017, Hollebeek et al., 2014). Customer  
30 loyalty captures the intention to continue a good relationship with a firm, through positive  
31 word-of-mouth and repurchasing (Dick and Basu, 1994). The link between social and epistemic  
32 value perceptions, behavioural intentions and customer loyalty is well established in online  
33 marketing research (see e.g., Cheng et al., 2009, Gruen et al., 2006). Bitner et al. (2008) argue  
34 that service firms can achieve loyalty through memorable and meaningful experiences, as  
35 simply providing a superior core service no longer guarantees loyalty. Creative crowdsourcing  
36 and resultant customer value may constitute such an experience. We thus posit that social and  
37 epistemic value, as components of consumers' overall perceived value from crowdsourcing  
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3 after receiving feedback (Time 2), would equally lead to knowledge-sharing intention and  
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5 customer loyalty in a crowdsourcing context.  
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9 *Hypothesis 3: Social value perception is positively related to (a) knowledge-sharing*  
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11 *intention and (b) customer loyalty.*  
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14 *Hypothesis 4: Epistemic value perception is positively related to (a) knowledge-*  
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16 *sharing intention and (b) customer loyalty.*  
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23 *Honeymoon-hangover effect and a change in value creation over time.*  
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26 To explain how value created in a crowdsourcing contest may change over time, we  
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28 tap into a phenomenon known as the ‘*honeymoon-hangover effect*’ in social psychology. The  
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30 *honeymoon effect* is “a positive initial effect on satisfaction or performance attributed to  
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32 conditions that are most favourable at the early stages of a new relationship or venture, in  
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34 comparison to conditions encountered as the relationship or venture continues” (Dacko, 2007,  
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36 p.255). Just like in marital satisfaction during the honeymoon period (Easterlin, 2003),  
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38 novelty, anticipation, excitement, harmony, or similar positive factors, may be at play  
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40 (Collins and Coltrane, 1995, Dacko, 2007).  
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46 However, the honeymoon effect is temporary because satisfaction with  
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48 collaborative relationships may change over time, often due to unfavourable situational  
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50 factors or events such as unexpected feedback, unfulfilled expectations or misunderstanding  
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52 (McEvoy et al., 2005, Dacko, 2007). The announcement of contest winners and feedback to  
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54 all participants is a discrete unexpected event. The resulting *honeymoon-hangover effect* has  
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56 been observed in various areas, such as the attendance rate and use of new sport facilities, the  
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3 adoption of information technology, and new employment in an organization (Fichman and  
4 Kemerer, 2012, Boswell et al., 2005, McEvoy et al., 2005). For example, early in the IT  
5 development cycle, innovative technologies typically enjoy a honeymoon effect as there is  
6 widespread adoption from an immature market, then the rate of adoption drops over time  
7 (Fichman and Kemerer, 2012).  
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15 We examine the value creation from CPE in a crowdsourcing contest through the  
16 honeymoon-hangover effect, because customers' value perceptions at the time of submitting  
17 their solution (Time 1) might change once they receive the contest results, such as rewards,  
18 ranking and feedback from peers and judges about their creative performance (Time 2). That  
19 is, while initial value perceptions tend to be particularly positive, we predict a decline over  
20 time. Except for the few winners of the contest, participants may be disappointed with the  
21 unexpected feedback and unmet expectation, resulting in a decrease of value perceptions  
22 from Time 1 to Time 2.  
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34 *Hypothesis 5: When participants receive feedback (Time 2), their perceptions of (a)*  
35 *social value; and (b) epistemic value will be lower than at Time 1.*  
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40 *Hypothesis 5: When participants receive feedback (Time 2), firm's value from (c)*  
41 *knowledge-sharing intention; and (d) customer loyalty, will be lower than at*  
42 *Time 1.*  
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#### 47 *Disconfirmation of expectation paradigm*

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51 In how far the CPE-value link is subject to a honeymoon-hangover effect obviously  
52 depends on the presence and valence of unexpected feedback, i.e. the (positive or negative)  
53 disconfirmation of participants' expectations. Based on the disconfirmation of expectation  
54 paradigm, customer satisfaction depends on the consistency between an individual's initial  
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3 performance expectations and perceived performance (e.g., Oliver, 1980, Patterson, 1993).  
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5 Customers are satisfied when they experience positive disconfirmation, i.e. when perceived  
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7 performance exceeds prior expectations, and conversely dissatisfied when experiencing  
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9 negative disconfirmation (e.g., Oliver, 1980, Patterson et al., 1996). Note that customers may  
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11 be satisfied with poor performance if prior expectations are relative low. For example,  
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13 participants who receive a low ranking from a crowdsourcing contest may in fact be satisfied  
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15 with the feedback because they did not expect much. We thus argue that the association  
16  
17 between CPE and social and epistemic value is stronger when a participant's expectation  
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19 about their ranking and rewards from the contest are exceeded. Such an interaction effect  
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21 would also predict a weaker link when a participant's creative performance ranking is lower  
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23 than they initially expected.  
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29 *Hypothesis 6: The impact of CPE at Time 1 on (a) social value and (b) epistemic*  
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31 *value at Time 2 will be stronger under conditions of a positive (rather than*  
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33 *negative) disconfirmation of expectation.*  
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#### 36 *Need for recognition*

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40 The positive effect of CPE on value creation may further increase for participants  
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42 with a high need for recognition. This stable personality trait relates to “the need to have  
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44 one's self, one's works, and other things associated with one's self, known and approved by  
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46 others” (Schaffer, 1953, p. 1). Member of any community tend to satisfy their need for  
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48 recognition by seeking feedback, praise, acceptance, respect, or attention from other members  
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50 such as peers, supervisors and judges (Busch et al., 2008). Whenever recognised and praised  
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52 for an accomplishment by others, an individuals' satisfaction and enthusiasm to perform  
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54 better on the task or to have more social contact will increase (Hill, 1987, Brabham, 2008).  
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56 The positive effect of CPE on value creation is thus likely to be stronger for participants with  
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3 a high need for recognition. Receiving feedback or rewards can reinforce an individuals'  
4 perception as a valued contributor to the task (Taylor et al., 1984). For example, in their  
5 investigation of innovation creation by online basketball communities, Fuller et al. (2007)  
6 reported that designers, who are driven by the need for recognition and feedback from a  
7 knowledgeable audience, contributed significant time and effort to designing basketball shoes,  
8 and sharing their work with the online community. In turn, the designers expected to further  
9 improve and fulfil their knowledge and skills from their contributions. Nambisan and Baron's  
10 (2009) study of customer participation and value co-creation activities found that need for  
11 recognition may moderate the impact of interactions in a virtual customer environment (e.g.,  
12 online discussion forums) on future participation behaviour. Accordingly, based on earlier  
13 discussion, it is proposed that:

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29 *Hypothesis 7: The impact of CPE at Time 1 on (a) social value and (b) epistemic*  
30 *value at Time 2 will be stronger under conditions of a higher (rather than*  
31 *lower) need for recognition.*  
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## 36 **Methodology**

### 37 *Research setting and participants*

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43 Data was collected from participants in a creative crowdsourcing contest, conducted  
44 by a leading national restaurant chain in Thailand with over 350 restaurants, annual sales  
45 exceeding US\$200 million, and annual marketing spend of about US\$ 8 million. The contest  
46 called for 'new creative advertising ideas' that may be used for the firm's marketing  
47 communication campaign in the following year; it was announced via the firm's official  
48 Facebook page, which had more than 100,000 followers.  
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Potential contributors could register to participate in the crowdsourcing task via the firm's official microsite, which linked into the firm's website and Facebook. The microsite was used for registration, discussion, submission of creative ideas, and data collection. The contest duration was 75 days. 250 participants submitted a total of 212 advertising ideas either individually or as a part of a team. First- and second-place winners received a MacBook Pro and iPad, respectively. Entries ranked third to tenth received a gift voucher worth \$100 and a certificate. All submitted ideas were rated by three subject-matter experts in the field of advertising and marketing communication.

Online questionnaires were used in both Time 1 (i.e., upon submitting their advertising ideas but before receiving any feedback) and Time 2 (i.e., after participants received feedback in the form of ranking and/or rewards). The questionnaires were pre-tested with 30 respondents, prior to the launch of the crowdsourcing contest, only requiring minor revisions to improve overall understanding and content. When crowdsourcing participants (N=250) submitted their advertising ideas (see examples of submitted ideas in *Appendix D*), they were asked to participate in the study, and received a link to the Time 1 online questionnaire. To minimise response bias, respondents were clearly informed that their personal information was confidential and secure, and their responses would not affect their contest results (Nestor and Schutt, 2011). Respondents were not forewarned about the Time 2 data collection, to minimize bias in responding to the second questionnaire (Churchill and Iacobucci, 2009). Total valid responses at Time 1 were 219 (87.6% response rate). One month after the closing date for idea submission, each participant received the ranking of their submission from the judges, and any rewards. They were then immediately contacted by telephone and email to seek cooperation and received a link to the Time 2 online questionnaire. Two telephone follow-ups were undertaken after one and two weeks if no

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3 response was received, leading to a total of 154 valid responses (70% of respondents from  
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5 Time 1). For each data collection, respondents received a \$5 incentive.  
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### 8 9 *Measurement development*

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11 *In both Time 1 and Time 2*, the study used the same measurement to capture value  
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13 perception, including social value, epistemic value, knowledge-sharing intention and customer  
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15 loyalty. Scales were adapted from prior relevant studies that exhibited strong construct  
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17 reliability and validity, with minor wording modifications to fit the research context. All  
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19 measures, except disconfirmation of expectation, used a seven-point Likert scale, ranging from  
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21 “strongly disagree” to “strongly agree.” Social and epistemic value were each captured with  
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23 four items from Mathwick et al. (2008) and Sheth et al. (1991). Knowledge-sharing intention  
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25 was measured by three items adapted from Kumar et al. (2010), and seven indicators measuring  
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27 customer loyalty were drawn from Zeithaml et al. (1996). Cronbach’s alphas and composite  
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29 reliability for all constructs exceeded 0.70.  
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36 *At Time 1*, we also measured CPE with 11 items from Zhang and Bartol (2010), to  
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38 capture the three dimensions of problem identification, information searching, and idea  
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40 generation, and need for recognition with five items based on Hars and Ou (2002) and Wasko  
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42 and Faraj (2005). Demographic data (gender, age, education) were also collected, and we asked  
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44 questions related to the crowdsourcing task in this study (for example, time spent on the task  
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46 and perception of task complexity) and patronage behaviour (frequency, recency).  
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50 *At Time 2*, all value perceptions were measured again with the same scales as in Time  
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52 1. In addition, disconfirmation of expectations was measured as the perceived gap between  
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54 expectation and performance (McKinney et al., 2002), on a five point “Much worse than  
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56 expected” to “Much better than expected” scale (Oliver, 1980).  
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### *Control variables*

We included individual/team submission and prior relevant creative experience as control variables, operationalized as dichotomous variables and measured at Time 1, though little evidence supports the view that they influence customers' perceived value in crowdsourcing. Inclusion of these control variables is designed to provide a more robust test of the hypotheses.

## **Analysis and Results**

### *Data analysis*

Partial Least Square (PLS) path modelling was used to estimate both main and interaction effects. PLS path modelling method was most suited to our research because it is more robust when a study has a relatively small sample size (Green and Ryans, 1990); when a multivariate normal distribution cannot be assured and variables are highly skewed (Cassel et al., 1999); and to estimate a complex model including second-order constructs with many latent and manifest indicators (Venaiik et al., 2005). To examine potential changes in value perceptions at Time 1 and Time 2, paired-sample T-tests were used to examine differences between the means for the two sets of scores from the same group of participants (Coakes and Steed, 2007).

Half of the respondents (53.2%) were female, and most (89.0%) held at least a bachelor's degree. The average age was 26.7 years (SD = 9.8 years), and average patronage was 8.5 years (SD = 5.1 years). Respondents visited a branch of the restaurant chain on average 1.87 times a month. Almost half of them (46.8%) had relevant previous creative experience, and about one quarter (26.0%) participated in this crowdsourcing task as a team of two or three.

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3 *Measurement Model: Validity and reliability*  
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6 Internal reliability was established, as composite reliability (see Table 1) for all  
7 multi-item constructs ranged from .88 to .94 and thus exceeded the recommended threshold  
8 value of .70 (Hair et al., 2011). The average variance extracted (AVE) was used to establish  
9 adequate convergent and discriminant validity (Fornell and Larcker, 1981). As seen in *Table*  
10 *1*, the AVEs for all multi-item constructs range from .51 to .85, and thus meet the proposed  
11 .50 rule-of-thumb (Bagozzi and Yi, 1988). The square root of each AVE (presented on the  
12 diagonal in *Table 2*) is higher than the inter-correlations of the focal construct and any other  
13 construct (presented off the diagonal) in the model, suggesting adequate discriminant and  
14 convergent validity.  
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28 - *Insert Table 1 here* -  
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32 As reported in *Table 1*, the R-squares of each inner latent construct ranged from .16 to  
33 .29, indicating weak to moderate values (Chin, 1998). Further, the global criterion for  
34 goodness-of-fit (GoF) describes the structural model's quality. Tenenhaus et al. (2005)  
35 suggested that the GoF ( $0 \leq GoF \leq 1$ ) can be assessed by "the geometric mean of the average  
36 communality and the average R-squares (for endogenous constructs):  
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43  $GoF = \sqrt{communality \times \overline{R^2}}$ ." The GOF value of .40 indicates large effect sizes (Wetzels et al.,  
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46 2009).  
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49 - *Insert Table 2 here* -  
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54 A PLS analysis was also conducted to determine whether interaction was present  
55 between the hypothesized moderator variables and the predictor variable. Correlation  
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3 between the two moderators (i.e., disconfirmation of expectation and need for recognition)  
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5 were also checked. The findings reveal that while disconfirmation of expectation is a pure  
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7 moderator variable, need for recognition is a quasi-moderator variable because it has a  
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9 moderate correlation with CPE ( $r = 0.56$ ). Further, we also examined multi-collinearity issues  
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11 of the structural model by assessing a set of predictors of knowledge-sharing intention and  
12  
13 customer loyalty. The tolerance values and VIF values were above .20 and below the 5  
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15 threshold respectively, i.e. multi-collinearity among the predictor constructs is not present  
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18 (Hair, 2011).  
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22 Next, we examined the  $q^2$  value, obtained by using the blindfolding procedure in  
23  
24 SmartPLS. As seen in Table 1, all  $q^2$  value of all endogenous latent constructs were larger  
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26 than zero, indicating the model's predictive relevance (Hair et al., 2011). Further, the PLS-  
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28 SEM model's results were evaluated and assessed. The  $f^2$  effect size indicated a level of  
29  
30 construct relevance in explaining selected endogenous latent constructs. Results of 0.02, 0.15,  
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32 and 0.35 were indicated - a small, medium, and large  $f^2$  and  $q^2$  effect size respectively (Hair et  
33  
34 al., 2014). As seen in Table 3, social and epistemic value has a small  $f^2$  effect size in explaining  
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36  $R^2$  value of knowledge-sharing intention. Additionally, while epistemic value has a small  $f^2$   
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38 effect size in explaining  $R^2$  value of customer loyalty, social value has a medium  $f^2$  effect size.  
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#### 47 *Results*

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51 We conducted a paired-samples t-test to examine the extent to which consumer  
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53 perceived value and firm value shifts across two time periods (Time 1 and Time 2). As seen  
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55 in Table 4, all mean values of customer perceived value in Time 1 were higher than those in  
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57 Time 2. The findings indicated that, after completion of a crowdsourcing contest, once  
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3 participants were made aware of how well they fared in the contest, and whether or not they  
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5 received an extrinsic reward, their social value perceptions, knowledge-sharing intention and  
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7 customer loyalty decreased ( $p < .05$ ). However, their epistemic value perception did not  
8  
9 change over time. Hence, H5a, H5c, and H5d are supported, whereas H5b is rejected.  
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13 - Insert Table 4 here -  
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18 The structural model estimation results (*Figure 2*) show that all hypothesised  
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20 relationships were statistically significant (*Table 5*). The findings revealed that CPE drives  
21  
22 customers' perceptions of social value (H1:  $\beta = .195$  [ $p < .05$ ];  $R^2 = 24.5\%$ ) and epistemic  
23  
24 value (H2:  $\beta = .213$  [ $p < .05$ ];  $R^2 = 29.3\%$ ). The results also suggested that knowledge-sharing  
25  
26 intention can be explained by social value (H3a:  $\beta = .245$  [ $p < .01$ ]) and epistemic value (H4a:  
27  
28  $\beta = .220$  [ $p < .05$ ]), as can customer loyalty ( $R^2 = 26.8\%$ ; H3b:  $\beta = .385$  [ $p < .001$ ]; H4b:  $\beta =$   
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30  $.215$  [ $p < .05$ ]).  
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34 - Insert Figure 2 here -  
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39 With regard to the moderating hypotheses, we calculated interaction terms by  
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41 multiplying the mean-centred indicators CPE as the predictor and each moderator (i.e.,  
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43 disconfirmation of expectation and need for recognition) (Chin et al., 2003). The beta values  
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45 of all moderator path coefficients were statistically significant. Both disconfirmation of  
46  
47 expectation and need for recognition exhibited positive moderating effects on social value  
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49 (H6a:  $\beta = .205$  [ $p < .01$ ]; H7a:  $\beta = .365$  [ $p < .001$ ]) and epistemic value (H6b:  $\beta = .363$  [ $p < .001$ ];  
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51 H7b:  $\beta = .333$  [ $p < .01$ ]). Finally, the individual/team submission and prior creative experience  
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53 control variables were not significant.  
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## Discussion and implications

### *Key findings*

The empirical evidence summarised in Table 5 presented a number of interesting findings. Firstly, CPE indeed drives customers' social and epistemic value. This customer value also converts into positive customer behaviours that create value for the crowdsourcing host firm, namely knowledge-sharing intentions and loyalty. Extending on previous research, firms thus receive extra value from investing resources in a crowdsourcing contest, in addition to the quality of creative submissions. Value creation emerges both at the submission stage and the announcement of winners. These findings contribute to current social networking research, by illustrating a continuum of value creation over time from customer engagement.

*- Insert Table 5 here -*

However, all value decreased over time, except epistemic value, a phenomenon which can be explained by the honeymoon–hangover effect. When submitting a creative solution to a crowdsourcing contest (i.e., Time 1), it is likely that participants perceive inflated satisfaction and accompanying sense of value creation, facilitated by the excitement of new relationships with the firm and other contest participants (Collins and Coltrane, 1995). During this time, participants may see engagement in the creative process as a means to socialise with others, reach self-fulfilment and satisfy their aroused curiosity. That is, initial value perceptions at the time of submission tend to be particularly positive.

However, after the announcement of winners, when each participant receives feedback (i.e., Time 2), customers' expectations play an important role in determining

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3 subsequent perceived value. Participants who received an unexpectedly disappointing  
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5 ranking below their expectations perceive less social value, which also reduces their  
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7 intention to share knowledge with firms in future contests, as well as their brand loyalty.  
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9 Interestingly, this dissatisfaction does not affect epistemic value perception. It seems that  
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11 epistemic value tends to be stable, and it transfers across to Time 2. The empirical results  
12  
13 show that need for recognition and positive disconfirmation of expectation indeed strengthen  
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15 the impact of CPE on customer social and epistemic value perceptions beyond the submission  
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17 stage.  
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### 20 21 22 *Theoretical implications* 23

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25 Existing research in customer engagement and value creation (Venkatesan, 2017,  
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27 Harmeling et al., 2017, Hollebeek et al., 2014) highlights the need to understand and evaluate  
28  
29 customer engagement and its contribution to a firm's marketing activities. Our longitudinal  
30  
31 study answers this call and empirically examines the effect of engagement with a specific  
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33 marketing activity – a creative crowdsourcing contest - on perceived value for customer and  
34  
35 firm. Overall, our study makes three important contributions to the growing research stream  
36  
37 on consumer co-creation and user innovation. First, crowdsourcing researchers have focused  
38  
39 on examining an association between motivation (intrinsic and extrinsic) and quality of ideas  
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41 (as crowdsourcing outcome) in order to understand how customers engage in crowdsourcing  
42  
43 and how they create value (e.g., Kaufmann et al., 2011, Leimeister et al., 2009). However,  
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45 since the quality of crowdsourcing ideas is often disappointing, it is important to know  
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47 whether engagement in crowdsourcing creates value to participants and firms regardless.  
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49 With the exception of few studies measuring customer value (e.g., Djelassi and Decoopman,  
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51 2013), previous research has mostly speculated about the emergence and transition of value  
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53 creation from customer engagement in crowdsourcing. The longitudinal design of our study  
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3 showed that value is indeed created, and continues beyond idea submission, laying the  
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5 foundation for future research.  
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9 Second, the findings provide empirical support for the honeymoon-hangover effect  
10 (Collins and Coltrane, 1995) in crowdsourcing, in that perceived customer and firm value  
11 decline over time. That is, firms enjoyed the honeymoon effect (customers perceived an initial  
12 higher value from the task) for a short period of time. Once participants received feedback from  
13 the contest (in our study, about a month after the closing date for idea submission), the  
14 hangover effect was activated (i.e., customers perceived less value).  
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23 Third, the need for recognition and disconfirmation of expectations moderate the  
24 link between CPE and value creation. While prior research has only focused on ‘what’ drives  
25 value creation, this study enhances the existing crowdsourcing literature by breaking ground  
26 in understanding ‘when’ (i.e., under what condition) customer and firm value occurs. Our  
27 study supports Nambisan and Baron’s (2009) call for considering customer psychological  
28 variables that may moderate the impact of customer interaction in value co-creation activities  
29 on customer behaviors. Further, there is consistent empirical support for the disconfirmation  
30 of expectations in various contexts, and the present study also supports the proposition that  
31 initial expectations and perceived performance (i.e., feedback and rewards from judges)  
32 interact to explain customer value creation in a crowdsourcing context.  
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#### 45 46 *Managerial implications* 47

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49 There are two core managerial contributions from this study, as summarised in Table  
50 6. First, given the declining value once the contest results are released, managers should  
51 focus on converting customers’ value from participating in the crowdsourcing contest into  
52 firm value in the weeks between submission and announcement of winners. Doorn et al.  
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3 (2010) suggest several avenues to further stimulate engagement, such as through customer  
4 communities and special rewards that might be equally beneficial to sustain the creation of  
5 firm value in crowdsourcing. Indeed, online brand communities can create strong customer  
6 engagement (Brodie et al., 2013).  
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18 Second, crowdsourcing contests can be designed to take advantage of the role that  
19 need for recognition and the disconfirmation of expectation play in the CPE-value creation  
20 link. Feedback plays a central role, because engagement in crowdsourcing “can [...] give rise  
21 to feelings of being exploited and/or cheated if the crowdsourcing practices are perceived as  
22 excessive, not credible or unfair” (Djelassi and Decoopman, 2013, p.688). Recognition in  
23 terms of appraisal, social recognition, rewards and feedback from others results in positive  
24 subsequent behaviour (Jawahar, 2006), and it can be a catalyst for satisfying the need for  
25 recognition of participants. This could be in the form of clear, performance-based feedback  
26 from judges, or a multi-source feedback system that collects performance evaluation from  
27 more than one source (e.g., using crowd voting, which allows online customers and  
28 participants to vote for their favourite submitted ideas). Multi-source feedback can satisfy the  
29 need for recognition, as well as fulfil participants’ self-improvement (i.e., epistemic value  
30 perception) because (a) it helps participants better understand how they are viewed by others,  
31 and (b) it suggests areas for development and performance improvement (London and  
32 Smither, 1995).  
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52 To benefit from the value-boosting effect of positive disconfirmation, the contest  
53 should be set up in a way that maximizes positive disconfirmation, and avoids negative  
54 disconfirmation, by lowering participants’ expectations. For example, after participants  
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3 submit their creative ideas, firms could emphasize the prestigious and competitive nature of  
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5 the contest, and the large volume of submitted ideas. Only a few winners receive positive  
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7 feedback and rewards, though recognition and rewards are crucial for driving engagement  
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9 and satisfaction. Hence, firms may employ a combination of rewards (intrinsic and extrinsic)  
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11 for a crowdsourcing contest, to motivate and satisfy participants' expectations, resulting in  
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13 satisfaction (Chou, 2013). Types of rewards could include 'fixed action rewards' (participants  
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15 will receive when they complete a certain task), 'random rewards' (each participant has the  
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17 chance to receive a gift from the contest), and 'top 100-submitted-ideas rewards'.

## 21 22 **Limitations and Concluding Remarks**

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25 While this research offers insights into the drivers of value creation and its changes  
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27 over time, it is not without limitations. The first limitation is the nature of the study context,  
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29 where a firm outsourced a complex task to crowds. Hence generalization of the results to  
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31 other contexts might be limited to complex, rather than to easy tasks, where participants solve  
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33 a generic routine task, such as a short text translation, with relatively low CPE.

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37 Second, the scope of the study was limited to one product (fast-food), though future  
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39 research could look at other product or service types. Third, given the scope of the study,  
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41 there are several other customer-related variables which may further explain the nature of  
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43 value creation from crowdsourcing. Potential moderator variables to be explored in future  
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45 research are social identity and perceived organizational support.

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49 Whereas we collected data from participants at two different times, future research  
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51 may investigate changes in value creation in more than a single time lag, or may examine the  
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53 transition of value creation across more than one crowdsourcing project hosted by a firm.  
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55 Similarly, other drivers unrelated to the crowdsourcing contest might account for changes in  
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3 value between Time 1 and Time 2, such as an unpleasant customer experience when visiting  
4 the restaurant, negative word of mouth or general publicity, or unwelcome firm activities  
5 such as price or product changes. Last, if marketers can understand the duration of the  
6 honeymoon-hangover effect on value creation in a crowdsourcing context, firms can know  
7 when to intervene and put in place effective avoidance strategies (e.g., launching a new  
8 activity, providing personal feedback, or motivating with tangible or intangible rewards).  
9 However, duration was not considered here, though points out a promising direction for future  
10 research to investigate the duration of the honeymoon-hangover effect in a crowdsourcing  
11 context.  
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24 In summary, our study makes three main contributions. First, we show that customer  
25 engagement drives customer and firm value following the announcement of crowdsourcing  
26 results, beyond the creative submission. Second, we established that except for epistemic  
27 value, all crowdsourcing value suffers to some extent from a honeymoon-hangover effect.  
28 Once participants were aware of their performance, social value perception, knowledge-  
29 sharing intention and customer loyalty decreased over time.  
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39 Last, the relationship between customer engagement and firm and customer value is  
40 contingent on disconfirmation of expectations, and the need for recognition. When a  
41 participant's expectation about their ranking and rewards from the contest are exceeded,  
42 and/or when a participant's need for recognition is high, the links between CPE and customer  
43 value are strengthened. The findings should inspire future researchers to better understand the  
44 nature of value creation in various crowdsourcing contexts.  
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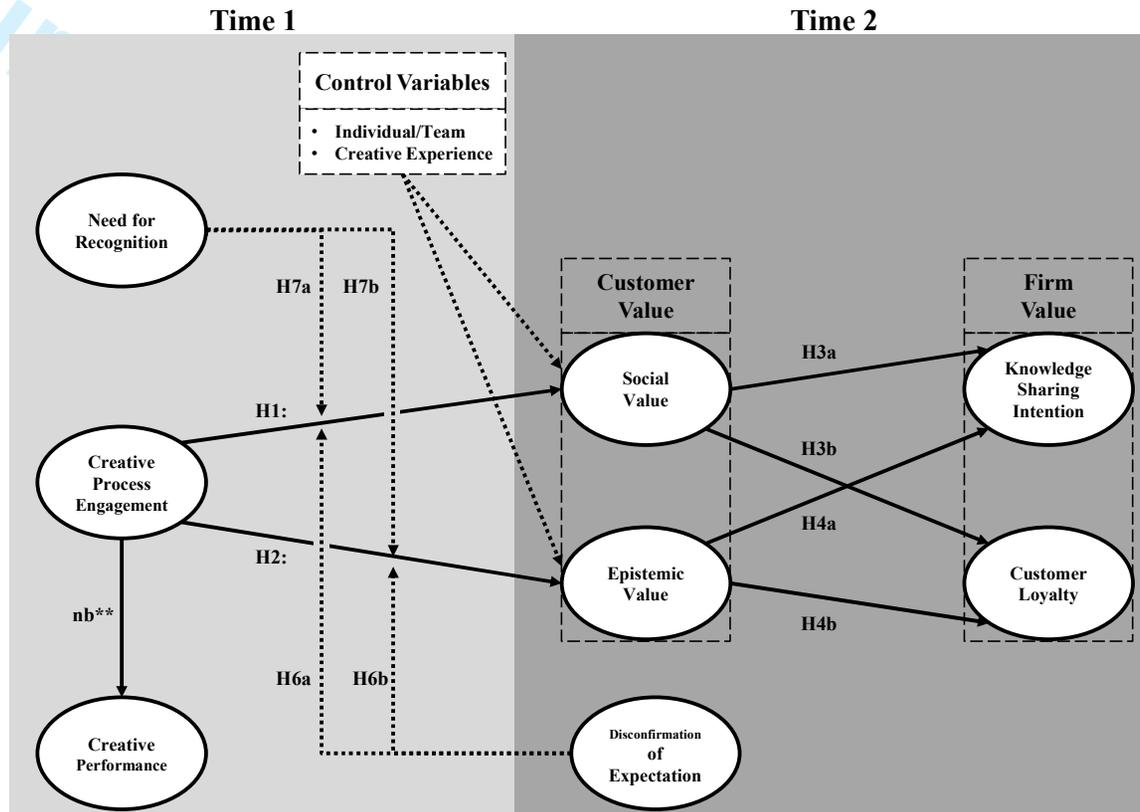
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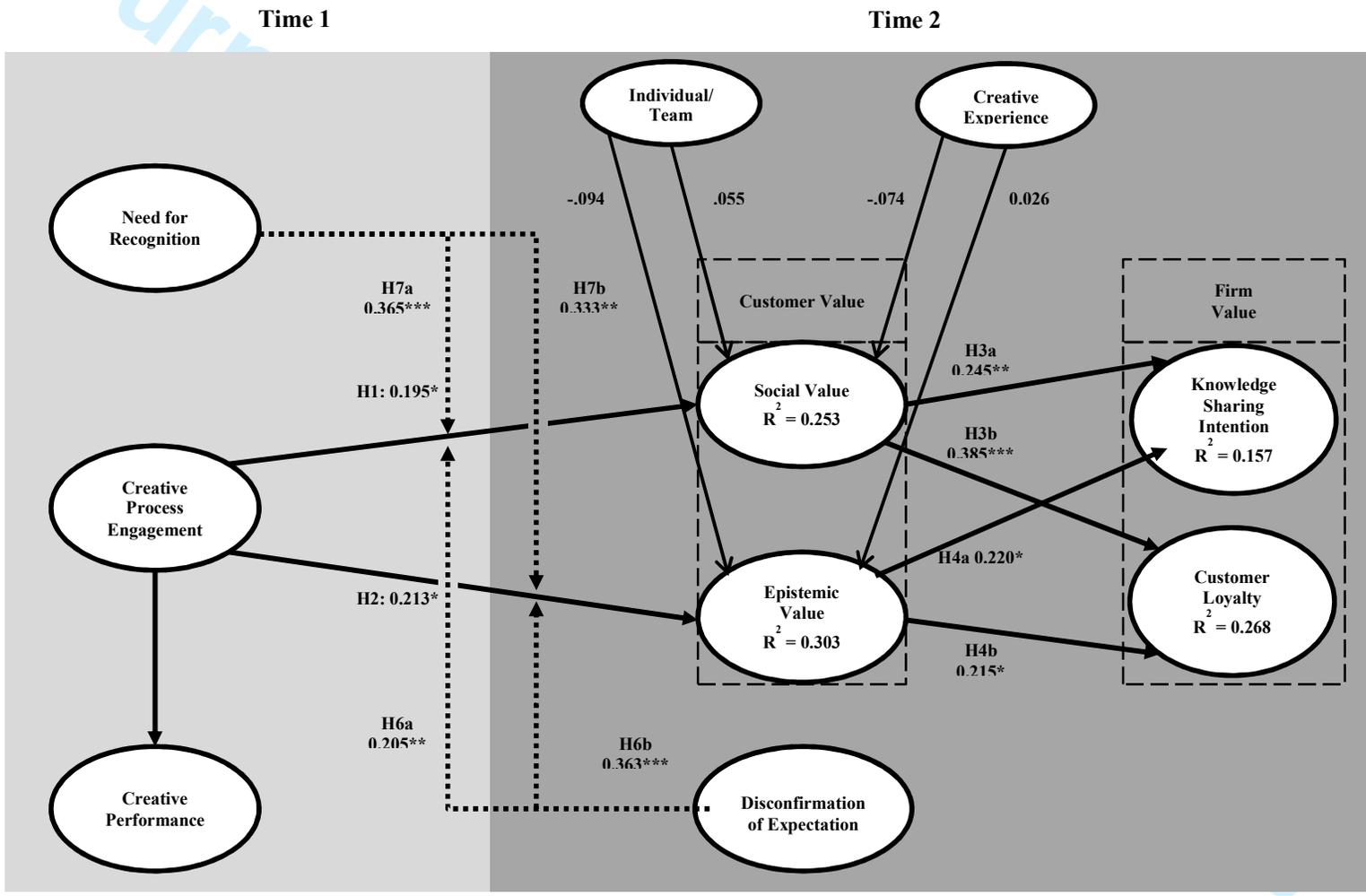
Figure 1: Conceptual Model and Hypotheses



nb\*\*: The creative performance (quality of submission) was empirically examined in Time 1. It is shown here only to illustrate the overall process.

Hypotheses 5a-d test the difference of customer and firm value between Time 1 and Time 2, and are thus not included.

Figure 2: Structural Model Estimation Results



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Table 1: Assessment of measurement for reflective and endogenous constructs

Endogenous Latent Variable	R <sup>2</sup> Value	q <sup>2</sup> Value	Communality	Redundancy	Composite Reliability	Cronbach Alpha	AVE
CPE	0.00		0.51	0.00	0.90	0.88	0.51
Epistemic Value	0.29	0.16	0.67	0.06	0.89	0.84	0.67
Knowledge-sharing Intention	0.16	0.12	0.85	0.08	0.94	0.91	0.85
Customer Loyalty	0.27	0.18	0.70	0.08	0.93	0.91	0.70
Need for Recognition	0.00		0.60	0.00	0.88	0.84	0.60
Social Value	0.24	0.15	0.72	0.01	0.91	0.87	0.72
Average	0.24		0.67	0.06			
GOF	0.40						

Note:

Disconfirmation of Expectations is a single item construct

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Table 2: Correlation matrix

	1	2	3	4	5	6	7
1. Creative Process Engagement	0.71						
2. Disconfirmation of Expectation	-0.13	Single item					
3. Epistemic Value	0.31	0.05	0.82				
4. Knowledge-sharing Intention	0.08	0.61	0.33	0.92			
5. Customer Loyalty	0.21	0.31	0.39	0.45	0.84		
6. Need for Recognition	0.56	0.02	0.26	0.09	0.19	0.76	
7. Social Value	0.15	0.22	0.44	0.34	0.48	0.10	0.85

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Table 3: Summary of results for model evaluation

	Endogenous Latent Variables					
	Knowledge-sharing Intention			Customer Loyalty		
	Path Coefficients	$f^2$ Effect Size	$q^2$ Effect Size	Path Coefficients	$f^2$ Effect Size	$q^2$ Effect Size
Social Value	0.25	0.06	0.04	0.39	0.15	0.10
Epistemic Value	0.22	0.05	0.02	0.22	0.05	0.03

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Table 4: Test for differences in Mean with paired-samples T-test for H5a-d

Construct	Time 1		Time 2		$\Delta$ Change in Mean	Sig.
	Mean	SD	Mean	SD		
Social Value perception	5.28	0.94	4.95	1.01	-0.33	0.00
Epistemic Value perception	5.88	0.74	5.87	0.80	-0.01	0.86
Knowledge-sharing Intention	4.40	0.58	4.13	0.91	-0.27	0.00
Customer Loyalty	5.78	0.92	5.61	0.94	-0.17	0.03

\* Average score of the 7-point Likert scale

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Table 5: Summary of hypotheses tested

Hypotheses	Finding	Supported
H1: The higher the CPE, the more social value is created.	$\beta=.195$ [ $p<.05$ ]	Yes
H2: The higher the CPE, the more epistemic value is created.	$\beta=.213$ [ $p<.05$ ]	Yes
H3a: Social value is positively related to knowledge-sharing intention	$\beta=.245$ [ $p<.01$ ]	Yes
H3b: Social value is positively related to customer loyalty	$\beta=.385$ , [ $p<.001$ ]	Yes
H4a: Epistemic value is positively related to knowledge-sharing intention	$\beta = .220$ [ $p<.05$ ]	Yes
H4b: Epistemic value is positively related to customer loyalty	$\beta = .215$ [ $p<.05$ ]	Yes
H5: After completion of crowdsourcing, when participants receive feedback (Time 2),		
a: social value perception will be lower than at Time 1	Sig. = .00	Yes
b: epistemic value perception will be lower than at Time 1	Sig. = .86	No
c: knowledge-sharing intention will be lower than at Time 1	Sig. = .00	Yes
d: customer loyalty will be lower than at Time 1	Sig. = .03	Yes
H6a: The impact of CPE on social value will be stronger under conditions of a positive (rather than negative) disconfirmation of expectation	$\beta = .205$ [ $p<.01$ ]	Yes
H6b: The impact of CPE on epistemic value will be stronger under conditions of a positive (rather than negative) disconfirmation of expectation	$\beta=.363$ [ $p<.001$ ]	Yes
H7a: The impact of CPE on social value will be stronger under conditions of a higher (rather than lower) level of need for recognition.	$\beta= .365$ [ $p<.001$ ]	Yes
H7b: The impact of CPE on epistemic value will be stronger under conditions of a higher (rather than lower) level of need for recognition.	$\beta = .333$ [ $p<.01$ ]	Yes

Table 6: Summary of managerial takeaways

Finding	Managerial Implication
Perceived customer value declines once contest results are released.	<p>Campaigns to achieve firm value (repeat purchase, word of mouth, knowledge sharing) most effective in the weeks between submission and announcement</p> <p>Maintain engagement after crowdsourcing contest results are released, e.g. with customer communities and special rewards.</p>
Customers' need for recognition strengthens customer value creation from CPE.	Feedback and recognition is critical. Multi-source feedback and social recognition can boost firm value.
Positive disconfirmation of expectations strengthens value creation from CPE	Contest design should minimise the risk of disappointment with results, e.g. through lower expectations and different reward types not linked to performance.

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## APPENDICES

### Appendix A: Construct and scale items

Constructs and items	Factor loading	Reliability
<b>Creative Process Engagement (CPE)</b>		<b>0.90</b>
<u>Problem Identification</u>	<b>0.81</b>	<b>0.88</b>
1. I thought about how to create new advertising idea for MK restaurant from multiple perspectives	0.88	
2. I decomposed a difficult requirement into parts to obtain greater understanding	0.89	
3. I spent considerable time trying to understand the requirement (e.g., rules, outcome) of this contest	Omit	
<u>Information Search</u>	<b>0.79</b>	<b>0.76</b>
1. I created new advertising idea by searching for new advertising idea from multiple sources (e.g., documentation, Internet, etc.)	0.78	
2. I retained large amounts of detailed information in my area of expertise for designing the advertising idea	0.79	
3. To create new advertising idea, I consulted a wide variety of information	Omit	
<u>Idea Generation</u>	<b>0.95</b>	<b>0.89</b>
1. I considered diverse sources of info in developing new Ad Idea for MK	0.85	
2. I looked for connections with solutions used in seeming diverse areas	0.89	
3. I created a significant number of alternatives Idea before I choose the best one	0.65	
4. I tried to create advertising idea that is unique and creative	0.78	
5. I spent considerable time shifting through info that helps to design creative Idea	0.78	
<b>Social Value</b>		<b>0.91</b>
1. I think of the other participants in this contest as my extended circle of friends	0.86	
2. Participating in the contest provided an important source of camaraderie for me	0.90	
3. This contest provided a sounding board for my ideas	0.83	
4. I relied on the personal support I got from others (e.g., staff, members of the firm)	0.81	

<b>Epistemic Value</b>	<b>0.89</b>
1. I think that participating in this contest was important because it stimulated my thinking	0.78
2. This contest gave me the opportunity to learn to solve creative problems.	0.83
3. This contest gave me the opportunity to satisfy my own curiosity	0.85
4. Participating in the contest helped to improve my skills and knowledge	0.81
<b>Knowledge Sharing Intention</b>	<b>0.94</b>
1. If there is an opportunity, I would provide my ideas to MK	0.92
2. If there is an opportunity, I would contribute my knowledge to MK	0.92
3. If there is an opportunity, I would collaborate more with MK	0.92
<b>Customer Loyalty</b>	<b>0.93</b>
1. I am loyal to MK restaurant	0.68
2. I consider MK as my first choice to dine	0.81
3. I am dedicated to continue to dine at MK	0.87
4. I will say positive things about MK to other people	0.88
5. I will recommend MK to someone who seeks my advice	0.88
6. I will encourage friends and relatives to dine at MK	0.89
<b>Need of Recognition</b>	<b>0.88</b>
1. Recognition from others in this contest is my greatest reward	0.81
2. I earned respect from others by participating in this contest	0.75
3. I would be very proud if my idea is acknowledged by the jury	0.78
4. Participating in this contest improved my status in the profession	0.75
5. Participating in the contest improved my reputation in profession	0.79

Appendix B: Contest Details

“[The firm] would like to invite you submit creative advertising idea(s) under a theme of “Happiness with [the firm]”. In order to present your idea, you can submit your ideas in several formats such as a description, a story, a picture, a video clip, or a sound clip. We will score your idea(s) base on novelty and usefulness.”

Examples of ideas submissions via the Firms’ microsite that was embedded in their Facebook Fanpage. Participants can submit idea(s) (e.g., advertising storyboard and storyline), share them with friends, and vote for their favorite creative advertising ideas.

